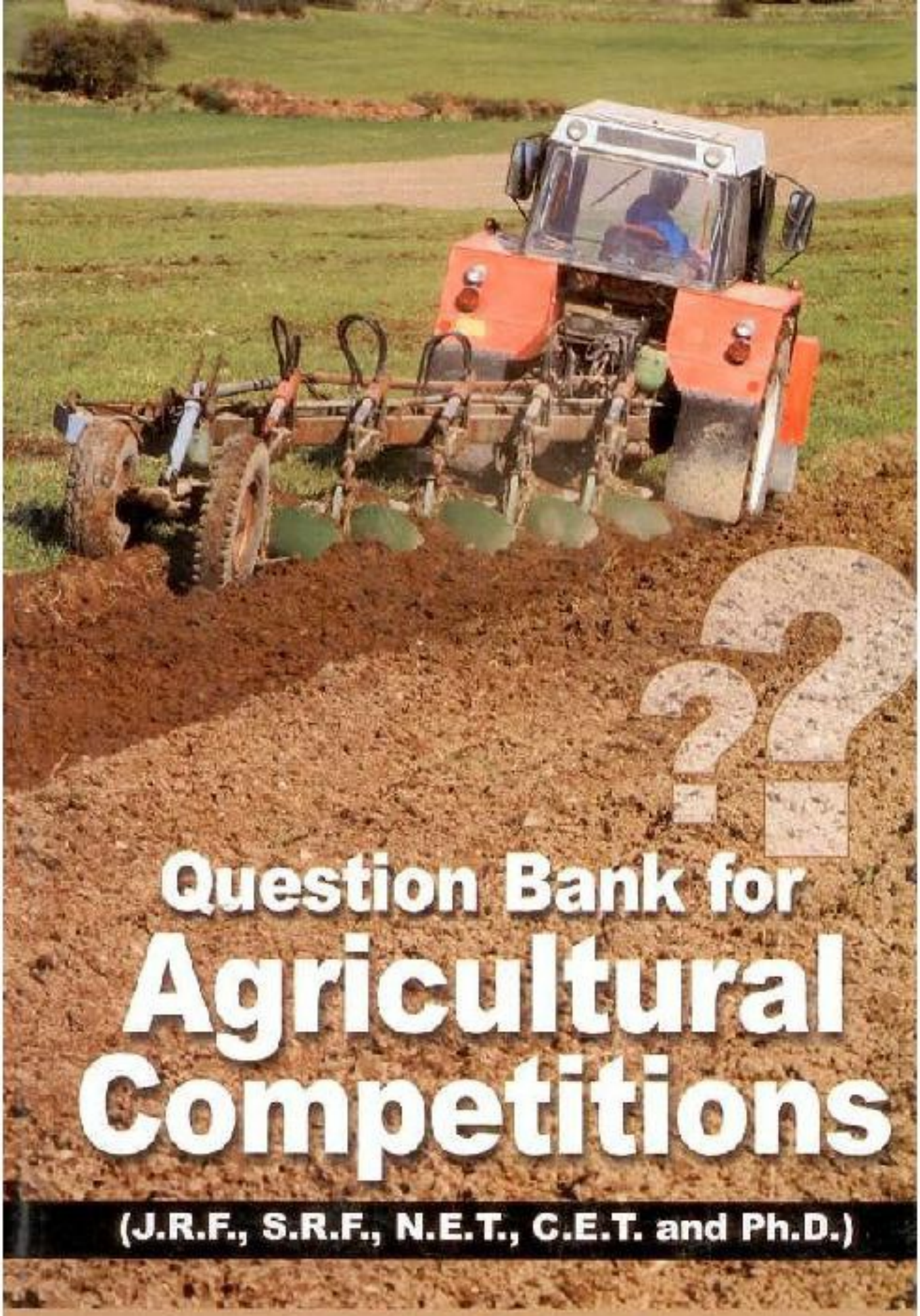

Question Bank for Agricultural Competitions

(J.R.F., S.R.F., N.E.T., C.E.T. and Ph.D.)

Author **R. K. Sharma**

Co-Authors **H.P. Agrawal, G. Sharma, N.K.S. Narvaria and A. Tripathi**

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- *ADA and Bank AO Examinations*

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Preface

Agriculture plays an important role to cover primary aims of mankind like food, fibre, fuel etc by optimum use of terrestrial resources. The Indian Council of Agricultural Research (ICAR), New Delhi is conducting All India Competitive Examination every year for awarding JRF, SRF, NET, ARS etc. in addition to that Common Entrance Test for competitive examinations for post-graduate degree, Doctor of Philosophy courses of various State Agricultural Universities, RAEO, ADO, SEDO, ADA of State Boards, Administrative and Banking AO Services are being conducted for selection of suitable candidates. All theses examinations are mostly objective based and students always look for study material that is ready to use and easy to grasp.

It is facing that there is hardly any book available in the market on agriculture which completely satisfy the requirement of the students particularly for those who are preparing for competitive examinations.

Keeping in view, the prevailing situation, it was deeply felt to publish such a book which could serve the basic and innovative knowledge of various fields of agriculture.

The present book "*Question Bank For Agricultural Competitions*" has been prepared in most simple, clean and appropriate manner which covers all courses of competitive made with the students, teachers and scientists. We hope that the book will fulfill your need on agriculture.

The cooperation and encouragement extended by our family members during the completion of this book is highly appreciable.

We are heartily thanks to all our friends who have taken sincere efforts to do creative works like this.

We humbly welcome the valuable suggestions from reader for further improvement of this book.

Rakesh Sharma

Contents

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Chapter 1

Current Agricultural Trends

Quest.Total Geographical Area (TGA) of India
***Ans*.329 Mha**

Quest.Net cultivated/sown area of India.
***Ans*.143 Mha**

Quest.Net Irrigated area in India
***Ans*.56.3 Mha**

Quest.Per Capita Agril. land availability
***Ans*.0.16 ha**

Quest.Cropping Intensity of India
***Ans*.136%**

Quest.Total degraded land of India
***Ans*.174 Mha**

Quest.Area threatened by land degradation
***Ans*.50% of TGA**

Quest.Area potential for biological production
***Ans*.256 Mha**

Quest.% geographical area of India used for agricultural activity
***Ans*.43%**

Quest.India's position on world's total population
***Ans*.2nd (1st - China)**

Quest.India's support on forest area over world
***Ans*.1.5%**

Quest.As per National Forest Policy, the forest cover of the country should be on
***Ans*.33%**

Quest.India's support on world's total livestock
***Ans*.15%**

Quest.India's support on world's TGA
***Ans*.2%**

Quest.India's support on world's total water resources
***Ans*.4%**

Quest.India's position on world's total agricultural area (2009-10)
***Ans*.7th**

Quest.India's position on world's total arable land (2009-10)
***Ans*.2nd (159 Mha)**

Quest.India's position on world's total irrigated area (2009-10)
***Ans*.1st**

Quest.India's position in world's total cereal production (2009-10)
***Ans*.3rd (China > USA > India)**

Quest.India's position on world's total rice production (2009-10)
***Ans*.2nd (1st - China)**

Quest.India's position on world's total wheat production (2009-10)
***Ans*.2nd (1st - China)**

Quest.India's position on world's total coarse grains production (2009-10)
***Ans*.4th**

Quest.India's position on world's pulse production (2009-10)
***Ans*.1st**

Quest.India's position on world's total oilseed production (2009-10)
***Ans*.2nd (1st - China)**

Quest.India's position on world's total cotton production (2009-10)
***Ans*.2nd (1st - China)**

Quest.India's position on world's sugarcane production (2009-10)
***Ans*.2nd (1st - Brazil)**

Quest.India's position on world's total fruit area and production (2009-10)

***Ans*.2nd (1st - China)**

Quest.Rank of India on world's total vegetable production (2009-10)

***Ans*.2nd (1st - China)**

Quest.India's rank on world's total milk production (2009-10)

***Ans*.1st (108.5 Mt., 2009)**

Quest.India's rank on world's total egg production (2009-10)

***Ans*.3rd (55 Billion)**

Quest.India's position on livestock population in world (2009-10)

***Ans*.1st**

Quest.Rank of India for transgenic plant in world (2009-10)

***Ans*.4th (1st-USA)**

Quest.India's rank on world's total fertilizer consumption (2009-10)

***Ans*.3rd**

Quest.India gets 1st position in world's agriculture on

***Ans*.Production of Pulse Jute, Buffalo population, milk, irrigated area**

Quest.India gets 2nd position in world agriculture on

***Ans*.Rice, Wheat, Groundnut, Sugarcane, Cotton, Fruits and Vegetables, Potato, Onion, Arable land, total population, Cattle and Goats, Tractor in-use**

Quest.India gets 3rd position on world's agriculture on

***Ans*.Production of Total cereals, Rapseed, Tea, Tobacco leaves, Sheep, Egg**

Quest.Irrigation potential of India (March, 2010)

***Ans*.108.2 Mha**

Quest.State having maximum area under irrigation

***Ans*.Punjab**

Quest.Major source of irrigation in India

***Ans*.Canal**

Quest.State having highest Net Irrigation Potential in India under canal and tubewell

***Ans*.UP**

Quest.Area under Micro irrigation system in India (2008-09)

***Ans*.3.96 Mha**

Quest.Area under Drip irrigation in India (2008-09)
***Ans*.1.42 Mha**

Quest.State having highest area under Drip irrigation in India
***Ans*.Maharashtra**

Quest.Area under Sprinkler irrigation in India (2008-09)
***Ans*.2.54 Mha**

Quest.State having highest area under Sprinkler irrigation in India
***Ans*.Haryana**

Quest.% National water use efficiency
***Ans*.40%**

Quest.% growth rate in production of Indian agriculture
***Ans*.5.7%**

Quest.Which crop having highest acreage in the world?
***Ans*.Wheat > Rice > Maize**

Quest.Which crop having highest acreage in India?
***Ans*.Rice > Wheat > Maize > Sorghum**

Quest.Leading crops in total acreage and production in India
***Ans*.Rice > Wheat > Maize**

Quest.Crop having the maximum yield potential in the world
***Ans*.Maize**

Quest.Crop having the maximum yield potential in India
***Ans*.Wheat**

Quest.Crop having highest Net sown Irrigated area
***Ans*.Sugarcane**

Quest.Crop having highest Grass cropped Irrigated area
***Ans*.Wheat**

Quest.Irrigated area under sugarcane in India (2008-09)
***Ans*.4.5 Mha (93.7%)**

Quest.Irrigated area under wheat in India (2008-09)
***Ans*.25.5 Mha (91.3%)**

Quest.Irrigated area under rice in India (2008-09)
***Ans*.26.5 Mha (58.7%)**

Quest.Production of total food grains in India (2009-10)
***Ans*.218.20 Mt.**

Quest.Production of Rice in India (2009-10)
***Ans*.89.13 Mt.**

Quest.Leading state in production of Rice in India (2008-09)
***Ans*.WB > AP > UP**

Quest.Production of Wheat in India (2009-10)
***Ans*.80.71 Mt.**

Quest.Leading state in production of Wheat in India (2008-09)
***Ans*.UP > Punjab > Haryana**

Quest.Production of Maize in India (2009-10)
***Ans*.19.73 Mt.**

Quest.Leading state in production of Maize in India (2008-09)
***Ans*.AP > Karnataka > Rjs**

Quest.Production of total course cereals in India (2009-10)
***Ans*.33.77 Mt.**

Quest.Leading state in total course cereals in India (2009-10)
***Ans*.Rjs > Karnataka > Maharashtra**

Quest.Production of total pulse in India (2009-10)
***Ans*.14.66 Mt.**

Quest.Leading state in production of total pulses in India (2008-09)
***Ans*.MP > UP > Rjs**

Quest.Leading state in production of Groundnut in India (2008-09)
***Ans*.Gujarat > AP > TN**

Quest.Leading state in production of Rapseed and Mustard in India (2008-09)
***Ans*.Rjs > UP > Haryana**

Quest.Leading state in production of Soybean in India (2008-09)
***Ans*.MP > Maharashtra > Rjs**

Quest.Leading state in production of Sunflower in India (2008-09)
***Ans*.Karnataka > AP > Maharashtra**

Quest.Production of total oilseeds in India (2009-10)
***Ans*.24.93 Mt.**

Quest.Leading state in production of total oilseeds in India (2008-09)
***Ans*.MP > Rjs > Gujarat**

Quest.Production of Cotton (2009-10)
***Ans*.24.22 Mt.**

Quest.Leading state in production of Cotton in India (2008-09)
***Ans*.Gujarat > Maharashtra > AP**

Quest.Production of Sugarcane in India (2009-10)
***Ans*.292.30 Mt.**

Quest.Leading state in production of Sugarcane in India (2008-09)
***Ans*.UP > Maharashtra > TN**

Quest.Production of Jute and Mesta in India (2009-10)
***Ans*.11.82 Mt.**

Quest.Leading state in production of Potato in India (2008-09)
***Ans*.UP > WB > Punjab**

Quest.Area under Bt-cotton in India (2009)
***Ans*.8.4 Mha**

Quest.% Share of crops in Total Horticultural area of India (2009-10)
***Ans*.Vegt. (40%) < fruits (30%) < Plantation (15%)**

Quest.Leading fruits in area in India (2009-10)
***Ans*.Mango > Citrus > Banana**

Quest.Leading state in fruits crop area in India (2009-10)
***Ans*.MH > AP > UP**

Quest.Leading fruits in production in India (2009-10)
***Ans*.Banana > Mango > Citrus**

Quest.Leading states in fruits crop production in India (2009-10)

***Ans*.AP > MH > TN**

Quest.Leading fruits in productivity in India (2009-10)

***Ans*.Papaya > Banana > Grape**

Quest.Leading vegetable in area in India (2009-10)

***Ans*.Potato > Tomato > Onion**

Quest.Leading state in vegetable crop area in India (2009-10)

***Ans*.WB > UP > Bihar**

Quest.Leading states in vegetable production in India (2009-10)

***Ans*.WB > UP > Bihar**

Quest.Leading vegetables in productivity in India (2009-10)

***Ans*.Tapioca > Cabbage > Potato**

Quest.Which two crops together constituted 78 % of total foodgrains production in India (2009-10)

***Ans*.Rice and Wheat**

Quest.Which two crops are the major contributors to the total pulse production?

***Ans*.Gram and Arhar**

Quest.Contribution of Indian agriculture to livelihood

***Ans*.65%**

Quest.Share of agriculture and allied sectors to the National GDP (2009-10)

***Ans*.14.6%**

Quest.Share of livestock and fisheries to the National GDP (2009-10)

***Ans*.4.07%**

Quest.Share of agriculture to National exports

***Ans*.10.23% (2008-09)**

Quest.Share of agriculture to National imports

***Ans*.2.74% (2008-09)**

Quest.Annual export of high quality basmati rice from India

***Ans*.0.5-0.7 Mt.**

Quest.Export of non-basmati rice has been prohibited since

***Ans*.15 October 2007**

Quest.Export of wheat has been prohibited since
***Ans*.8 October 2007**

Quest.All India avg. fertilizer consumption is
***Ans*.128.8 Kg/ha (2008-09)**

Quest.Highest avg. fertilizer consumption is found in
***Ans*.Punjab (212Kg/ha)**

Quest.Nutrient consumption ratio of India (2009)
***Ans*.6.5 : 2.5 : 1**

Quest.100% imported fertilizer in India
***Ans*.Potash (K_2O)**

Quest.% Govt subsidy provided to farmers on fertilizers prices
***Ans*.60-75%**

Quest.Net availability of cereals per capita/day (2009-10)
***Ans*.407 gm**

Quest.Net availability of pulses per capita/day (2009-10)
***Ans*.37 gm**

Quest.Net availability of Fruits per capita/day (2009-10)
***Ans*.120 gm**

Quest.Net availability of Vegetables per capita/day (2009-10)
***Ans*.140 gm**

Quest.Net availability of Milk per capita/day (2009-10)
***Ans*.263 gm**

Quest.Net availability of Egg per capita/day (2009-10)
***Ans*.45 (no)**

Quest.The annual rate of interest received by the farmers on crop loans from govt.
***Ans*.5%**

Quest.To be self reliant in agriculture, the necessary growth rate per year is
***Ans*.4%**

Quest.ICAR day is celebrated every year on

***Ans*.16th July**

Quest.World Food Prize (2009) was awarded to

***Ans*.Gebisa Ejeta (Ethiopia) for 1st sorghum hybrid for drought and Striga weed.**

Quest.Indian scientist shared World Food Prize for Miracle Maize

***Ans*.Dr. Sruinder K. Vasal**

Quest.Nobel Peace Prize was awarded to Dr. Norman Borlaug in

***Ans*.1972**

Quest.National Rural Employment Scheme was started on

***Ans*.2006**

Quest.National Agriculture Policy was started on

***Ans*.2000**

Quest.National Seed Policy was started on

***Ans*.2002**

Quest.National Food Security Mission (NFSM) was launched on

***Ans*.Rabi, 2007-08**

Quest.Rashtriya Krishi Vikas Yojana (RKVY) was launched on

***Ans*.2007-08**

Quest.National Horticulture Mission (NHM) was launched on

***Ans*.2005-06**

Quest.Integrated Scheme on Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) started since

***Ans*.1 April, 2004**

Quest.National Mission on Micro Irrigation (NMMI) was launched on

***Ans*.June, 2010**

Quest.National Bamboo Mission (NBM) is implemented from

***Ans*.2006-07**

Quest.Kishan Credit Card Scheme was launched on

***Ans*.1998-99**

Quest.National Agricultural Insurance Scheme was launched on

***Ans*.1999-2000**

Quest.Green revolution is mainly related with the crops
***Ans*.Wheat and Rice**

Quest.'Rainbow revolution' refers to
***Ans*.Overall development of agril. sectors**

Quest.Yellow revolution is associated with
***Ans*.Oilseeds production**

Quest.Operation Flood denotes
***Ans*.3 fold increase in milk production in India**

Quest.FCI is specially launched for
***Ans*.Rice, Wheat and Course millets**

Quest.Hybrid rice for commercial production was first evolved at
***Ans*.China**

Quest.Minimum support price of Paddy (2011-12)
***Ans*.1080 Rs/qt**

Quest.Minimum support price of Grade A-Paddy (2011-12)
***Ans*.1110 Rs/qt**

Quest.Minimum support price of Wheat (2011-12)
***Ans*.1285 Rs/qt**

Quest.Minimum support price of Maize, Hybrid Jowar and Barley (2011-12)
***Ans*.980 Rs/qt**

Quest.Minimum support price of Gram and Lentil (2011-12)
***Ans*.2800 Rs/qt**

Quest.Minimum support price of Arhar (2011-12)
***Ans*.3200 Rs/qt**

Quest.Minimum support price of Moong (2011-12)
***Ans*.3500 Rs/qt**

Quest.Minimum support price of Urd (2011-12)
***Ans*.3300 Rs/qt**

Quest.Minimum support price of Cotton (2011-12)
***Ans*.2800 Rs/qt (F-414/H-777, J34) and 3300 Rs/qt (H-4)**

Quest.Minimum support price of Soybean (2011-12)
***Ans*.1650 Rs/qt (Black) and 1690 Rs/qt (Yellow)**

Quest.Minimum support price of Mustard and Sunflower (2011-12)
***Ans*.2500 Rs/qt**

Quest.Minimum support price of Safflower (2011-12)
***Ans*.1800 Rs/qt**

Quest.Minimum support price of Jute (2011-12)
***Ans*.1600 Rs/qt**

Quest.Minimum support price of Sesamum (2011-12)
***Ans*.3400 Rs/qt**

Quest.Minimum support price of Groundnut in shell (2011-12)
***Ans*.2700 Rs/qt**

Quest.Minimum support price of Sugarcane (2011-12)
***Ans*.139.12 Rs/qt**

Quest.First agriculture census in India conducted in
***Ans*.1970**

Quest.First livestock census in India conducted in
***Ans*.1919**

Quest.First All-India Co-ordinate Research Project (ACRIP) on
***Ans*.Maize (1957)**

Quest.First State Agricultural University of India
***Ans*.GBPAUT, Pantnagar (1960)**

Quest.First Krishi Vigyan Kendra (KVK) was established at
***Ans*.Puducherry (Pondicherry, 1974)**

Quest.Total no. of KVK in India
***Ans*.568 (Dec.2009)**

Quest.Union Minister of Agriculture (2010-11)
***Ans*.Sharad Pawar**

Quest.New Director-General of ICAR (2010-11)
***Ans*.Dr. S. Ayyappan**

Quest.Chairman of Agricultural Scientists' Recruitment Board (ASRB) of ICAR
***Ans*.C. D. Mayee**

Quest.Insecticidal Act was passed by the Government of India in
***Ans*.1968**

Quest.Pesticides restricted for use in India
***Ans*.13**

Quest.No. of Insecticides approved to control household pests
***Ans*.39**

Quest.The rice having richness in beta-carotene and also contain vitamin A
***Ans*.Golden rice**

Quest.The rice which can alleviate anaemia problem through dietary intake
***Ans*.Ferritin rice**

Quest.The genetic modified egg with medicinal values is
***Ans*.Golden egg (developed in Australia in 1999)**

Quest.Irritation of eye due to cutting onion is corrected by
***Ans*.Super Sweet Onion (developed in UK)**

Quest.'Indian farming' is a publication from
***Ans*.ICAR**

Chapter 2

Agronomy

(I) Basic Principles of Crop Production

Quest.A very broad term encompassing all aspects of crop production, livestock farming, fisheries, forestry etc.

***Ans*.Agriculture**

Quest.'*Agriculture*' word is derived from

***Ans.Latin word* (*agri*+*culture*)**

Quest.A branch of agricultural science which deals with principles and practices of soil, water and crop management.

***Ans*.Agronomy**

Quest."Agronomy" word is derived from words?

***Ans.Greek* (*agros*+*nomos*)**

Quest.Crops which are cultivated on ploughed land?

***Ans*.Arable crops**

Quest.An agroforestry practice in which perennial, preferably leguminous trees or shrubs are grown simultaneously with arable crop?

Ans*.Alley crops or *hedge-row intercrops

Quest.Crops which are grown to supplement the yield of the main crops?

***Ans*.Augment Crops**

Quest.Crops, which protect another crops from trespassing of animals or restrict the speed of wind and are mainly grown as border

***Ans*.Border/Guard Crops**

Quest.A crop, grown for direct sale rather than for livestock feed or a crop grown by a farmer primarily for sale to others rather than for his or her own use?

***Ans*.Cash Crops**

Quest.Two major commercial crops are

***Ans*.(i) Cotton (ii) Sugarcane**

Quest.Crops which are cultivated to catch the forthcoming season when main crop is failed?

***Ans*.Catch/Contingent Crops**

Quest.A close-growing crop, grown primarily to improve and protect the soil from erosion through their ground covering foliage and/or rootmats between periods of regular crop production?

***Ans*.Cover Crops**

Quest.When both main and intercrop is benefited to each other?

***Ans*.Complementary Crops**

Quest.The crops leave the field exhaustive after growing?

***Ans*.Exhaustive Crops**

Quest.Any crop or combination of crops is grown for grazing or harvesting for immediate or future feeding to livestock?

***Ans*.Ley Crops**

Quest.Such crops are grown to conserve the soil moisture through their ground covering foliage?

***Ans*.Mulch Crops**

Quest.The seed of succeeding crops is sown broadcast at 10 to 15 days before harvesting rice crop?

***Ans*.Paira/Utera Crops**

Quest.Generally, the third row of crop is removed or growing of crop in pair row and the third row is escaped with an object to conserve the soil moisture in Dryland areas?

***Ans*.Paired row Crops**

Quest.Such cops are neither complementary nor competitive?

***Ans*.Supplementary Crops**

Quest.Crops, those are grown to protect the main cash crop from a certain pest or several pests?

***Ans*.Trap Crops**

Quest.Cereals are botanically

***Ans*.Caryopsis**

Quest.The more nutrient exhaustive family is

***Ans*.Poaceae (Graminae)**

Quest.The non-conventional oilseed crop is

***Ans*.Sunflower**

Quest.The non-edible oilseed crops are

***Ans*.Castor and Linseed**

Quest.The Indian originated field crops are

***Ans*.Arhar, Mung, Urd, Cotton, Jute, Kodo, Kutki, Oat etc.**

Quest.Kharif crops are generally denoted as

***Ans*.Short day plants**

Quest.Rabi crops are generally denoted as

***Ans*.Long day plants**

Quest.Day neutral Plants are

***Ans*.Cotton, maize, sunflower, safflower, groundnut, buck wheat, tomato.**

Quest.Optimum time of sowing for Kharif crop

***Ans*.June-July**

Quest.Optimum time for Rabi crop

***Ans*.Last week of October to first week of November**

Quest.Optimum depth of sowing for most of field crops

***Ans*.3-5 cm**

Quest.The recommended fertilizer dose (N:P:K) for cereal crops are

***Ans*.4:2:1**

Quest.The recommended fertilizer dose (N:P:K) for pulse crops are

***Ans*.1:2:1 or 1:2:2**

Quest.The recommended fertilizer dose (N:P:K) for oilseed crops are

***Ans*.3:2:1**

Quest.The recommended fertilizer dose (N:P:K) for fodder and fibre crops are

***Ans*.2:1:4**

Quest.The C_3 Plants are

***Ans*.Rice, Wheat, Barley, Pea, Gram, Mustard and Rye, Cotton, Arhar, Soybean, Sunflower, Lentil, Sugarbeet, Tomato etc.**

Quest.The C_4 Plants are

***Ans*.Maize, Sorghum, Bajra, Sugarcane, Millets.**

Quest.The CAM Plants are

***Ans*.Pineapple, khajur, cactus, sisal.**

Quest.The optimum temperature for better crop production is between

***Ans*.18 – 240 C**

Quest.The weight of 1000 seeds of a crop?

***Ans*.Test weight**

Quest.The weight of 100 seeds of a crop?

***Ans*.Seed Index**

Quest.The net assimilation rate is express in terms of

***Ans*.g cm^{-2} day^{-1}**

Quest.Which of the following crop geometry ensures uniform solar radiation availability to crop?

***Ans*.Square**

Quest.Wavelength longer than _____ m/μ is not visible to the eye, and are called infrared

***Ans*.750**

Quest.The development stage of a plant after which no further increase in dry matter occurs in the economic part is known as

***Ans*.Physiological maturity**

(II) Modern Concepts of Tillage

Quest.The mechanical manipulation of the soil is k/s as

***Ans*.Tillage**

Quest.The good physical condition of soil after tillage is

***Ans*.Tilth**

Quest.Who is the father of tillage?

***Ans*.Jethro Tull**

Quest.The tillage operation mainly aims to break, open and turn the soil

***Ans*.Primary/tillage**

Quest.The primary tillage implements are

***Ans*.Deshi plough, MB plough, Ridge plough, Disk plough etc.**

Quest.The tillage operation, done *to create a good seedbed for proper seeding/planting*

***Ans*.Secondary tillage**

Quest.The secondary tillage implements are

***Ans*.Cultivator, Harrows, Hoe, Planker, Roller etc.**

Quest.The optimum range of available soil moisture for convenient and effective ploughing

***Ans*.50-75%**

Quest.An ideal condition of soil for crop growth?

***Ans*.Seed-bed**

Quest.Conventional tillage involves

***Ans*.Minimum tillage, Zero tillage and Conservation tillage.**

Quest.The tillage aims to reduce tillage to the minimum necessary for ensuring a good seed-bed, rapid germination, satisfactory stands and favourable growing condition?

***Ans*.Minimum tillage**

Quest.The tillage referred as no tillage in which the crop is planted in unprepared soil

***Ans*.Zero tillage**

Quest.The word 'Zero tillage' was termed by

***Ans*.Jethro Tull**

Quest.A system of tillage in which organic residues are not inverted into the soil and used as a protective cover against erosion and evaporational losses of soil moisture?

Ans*.Conservation tillage or *stubble mulch tillage

Quest.Conservation tillage tends to encourage

***Ans*.Higher microbial population**

Quest.The tillage implement used to break subsoil is

***Ans*.Chisel plough**

Quest.Ridge plough is used for

***Ans*.Earthing-up and form ridges and furrows.**

Quest.Star weeder is used for

***Ans*.Weeding in dry lands and groundnut fields**

Quest.Disc plough is used for

***Ans*.Deep ploughing in grassed field**

Quest.Rotary plough is used for

***Ans*.Cut and pulverizes the light soil.**

Quest.Harrows are used for
***Ans*.Preparation of seedbed, destroy weeds**

Quest.Mechanization index is found highest in
***Ans*.Wheat crop**

(III) Cultivation of Field Crops

1. Paddy

Quest.The botanical name and family of paddy
***Ans*.*Oryza sativa*, Poaceae**

Quest.The chromosome number of paddy
***Ans*.2n = 24.**

Quest.The cultivated spp. of paddy
***Ans*.O. sativa and O. glaberima**

Quest.The protein (Oryzein) content in paddy
***Ans*.6-7%**

Quest.*Indica* rice is grown in
***Ans*.India**

Quest.*Japonica* rice is grown in
***Ans*.Japan**

Quest.*Javanica* rice is grown in
***Ans*.Indonesia**

Quest.Rice inflorescence is called as
***Ans*.Panicle**

Quest.Optimum temperature for good rice crop growth is
***Ans*.30-320C**

Quest.Best pH for cultivation of rice is
***Ans*.4-6 pH**

Quest.Sowing of paddy in April-May and harvesting in August-Sept. is called as
***Ans*.Aus/Autumn/Pre kharif paddy**

Quest.Sowing of paddy in June-July and harvesting in October is called as
***Ans*.Aman/Kharif/Aghani**

Quest.Sowing of paddy in January-Feb and harvesting in April-May is called as
***Ans*.Boro/Summer/Spring**

Quest.The best system of rice culture is
***Ans*.Transplanting**

Quest.The tillage implement, most suitable for rice cultivation is
***Ans*.Power tiller**

Quest.Hulling percentage of rice is
***Ans*.70-75%**

Quest.The gene responsible for dwarfness in rice is
***Ans*.Dee-gee-woo-gene**

Quest.First intervarietal cross variety of rice?
***Ans*.Jaya (TN1 = T141)**

Quest.The rice variety called 'miracle rice' is
***Ans*.IR-8**

Quest.Normally rice plant is transplanted at
***Ans*.21-25 days after sowing (3-4 leaf stage)**

Quest.Under SRI method, rice plant is transplanted at
***Ans*.10-12 DAS (Days After Sowing)**

Quest.SRI denotes
***Ans*.System of Rice Intensification**

Quest.In rice 'Dapog seedlings' are ready for transplanting
***Ans*.11-14 DAS**

Quest.Dapog method is most commonly prevalent in
***Ans*.Philippines**

Quest.The nursery area required for providing seedlings for transplanting 1 ha rice field
***Ans*.1000 m^2 (1/10 ha)**

Quest.Most prominent cropping pattern of rice in India?
***Ans*.Rice-Wheat**

Quest.Rice prefer nitrogen uptake in

***Ans*.Ammonical form (NH_4).**

Quest.The best fertilizer for top dressing in rice?

***Ans*.Ammonium sulphate**

Quest.The recommended dose of N, P and K for rice crop

***Ans*.100:60:40 kg ha–1**

Quest.For correction of iron chlorosis in rice, following spray is recommended

***Ans*.1% solution of ferrous sulphate**

Quest.The nitrogen fixing bacterium found on root surface of rice

***Ans*.Azospirillum**

Quest.The most important critical stage of rice for irrigation

***Ans*.Tillering to flowering stage**

Quest.In low land rice, fertilizer is applied in

***Ans*.Reduced zone only**

Quest.Nitrogen use efficiency in rice is around

***Ans*.30-40%**

Quest.Aroma in rice is due to presence of

***Ans*."*Di-acetyl 1 propaline*" chemical**

Quest.Anaerobic environment in rice soil is responsible for gaseous loss of fertilizer nitrogen by

***Ans*.Denitrification**

Quest.The Gall midge resistance varieties of rice is

***Ans*.Phalguna, Surekha, Suraksha**

Quest.The Blast resistance varieties of rice is

***Ans*.Tulsi, IR_{64}**

Quest.The deep water rice are

***Ans*.Punkaj, Jagannath**

Quest.Rice varieties suitable for Saline-alkaline soil are

***Ans*.CSR-10, CSR-13, CSR-27**

Quest.Super rice variety is

***Ans*.Lunishree**

Quest.Gas emitted from rice field is
***Ans*.CH_4 (Methan).**

Quest.Weed caused relatively more loss in rice productivity, when it is
***Ans*.Direct seeded**

Quest.Most dominated weed species in rice field is
***Ans*.*Echinochloa spp*.**

Quest.Common herbicide used in rice crop field?
***Ans*.Anilophos and Butachlor.**

Quest.Polish percentage of rice is
***Ans*.2%**

Quest.Khaira disease is caused by
***Ans*.Zn deficiency.**

Quest.Akiochi disease is caused by
***Ans*.H_2S toxicity.**

Quest.White eye of rice is caused by
***Ans*.Fe deficiency.**

Quest.Dead heart and white ear of rice is caused by
***Ans*.Yellow stem borer**

Quest.Killer disease of rice are
***Ans*.Bacterial Leaf Blight (BLB) and Tungro virus**

Quest.Hydrothermal process of rice which saves vitamin B_{12}?
***Ans*.Parboiling**

2. Wheat

Quest.The botanical name and family of wheat
***Ans*.*Triticum spp*., Poaceae**

Quest.Wheat is a
***Ans*.Hexaploid plant. (2n = 42).**

Quest.The Mexican dwarf wheat is

***Ans.T. aestivum* (2n = 42).**

Quest.The bred wheat is
***Ans.T. vulgare* (2n= 42)**

Quest.Marconi wheat is
***Ans.T. durum* (2n= 28)**

Quest.Emmer wheat is
***Ans.T. dicocum* (2n= 28)**

Quest.Indian dwarf/Club wheat is
***Ans.T. spherococum* (2n= 28)**

Quest.The highest grown wheat species in India
***Ans*.T. aestivum**

Quest.The optimum temperature range for sowing of wheat crop
***Ans*.20 to 25°C**

Quest.Wheat protein is called as
***Ans*.Gluten**

Quest.The protein content in wheat
***Ans*.8-11%**

Quest.The flowering portion of wheat
***Ans*.Head/Ear/Spike**

Quest.Permanent roots of wheat, appeared after 20-22 days of sowing?
***Ans*.Crown roots**

Quest.The shelling percentage of wheat
***Ans*.60%.**

Quest.Pearling index in wheat measures
***Ans*.Kernel hardness**

Quest.Gene responsible for dwarfness in wheat?
***Ans*.Norin**

Quest.Sowing depth of dwarf wheat is directly depend upon
Ans.Length of coleoptyle

Quest.Triple gene dwarf wheat varieties were released during?
***Ans*.1970**

Quest.The Row to row spacing of wheat
***Ans*.22.5 - 23.0 cm**

Quest.The seed rate of timely sown wheat
***Ans*.100 -125 kg/ha**

Quest.The seed rate of Late sown wheat
***Ans*.125 -150 kg/ha**

Quest.The most important critical stage of wheat is
***Ans*.Crown root initiation (CRI 20-25 DAS)**

Quest.Single gene dwarf varieties are
***Ans*.Sonalika, UP-262, WL-711, Girja**

Quest.Double gene dwarf varieties are
***Ans*.Kalyansona, UP-215, Arjun, Pratap, Janak**

Quest.Triple gene dwarf varieties are
***Ans*.Jawahar, Jyoti, Hira, Moti, Sangam, UP-301, UP-319**

Quest.The variety best suited for sowing in Rainfed areas?
***Ans*.C-306, Sujata, Shera, Mukta**

Quest.Marconi wheat varieties are
***Ans*.Jayraj, Meghdoot, Malvika, HD-4530 etc.**

Quest.Both blight and Rust resistant varieties are
***Ans*.UP 2425, PBW 273, WH 291**

Quest.Most important crop variety during green revolution
***Ans*.HD 2329**

Quest.Zinc and sulphates deficiency in wheat field reported in
***Ans*.Punjab**

Quest.Most suitable cropping system for wheat crop
***Ans*.Mixed cropping**

Quest.Objectionable weed of wheat
***Ans*.Convolvulus arvensis**

Quest.Associated weeds of wheat
***Ans*.Phalaris minor, Avena fatua and Chenopodium album**

Quest.Common herbicide used to control weeds in wheat
***Ans*.2, 4-D**

Quest.Initial distinguishing character for identification of *Phalaris minor*
***Ans*.It is basal node is pink upto 50 days**

Quest.The moisture content at harvesting stage of wheat
***Ans*.25-30%**

3. Maize

Quest.The botanical name of maize is
Ans*.*Zea mays

Quest.Maize crop is also referred as
***Ans*.Queen of cereals**

Quest.The maize protein is known as
***Ans*.Zein**

Quest.Protein and oil per cent in Maize grain
***Ans*.8–10 per cent and 4–5 per cent**

Quest.Most widely grown maize spp. in India?
***Ans*.*Zea mays indurate* (Flint corn)**

Quest.Leading state of rabi maize?
***Ans*.Bihar**

Quest.Maize variety widely grown in USA?
***Ans*.*Zea mays identata* (Dent corn)**

Quest.The sweetest maize species
***Ans*.*Zea mays sacchrata* (Sweet corn)**

Quest.Maize species produce starch similar to tapioca
***Ans*.*Zea mays ceretina* (Waxy corn)**

Quest.Seed rate of Hybrid maize
***Ans*.20 to 25 kg/ha**

Quest.Seed rate of Composite maize is
***Ans*.15 to 20 kg/ha**

Quest.First maize hybrid released in India?
***Ans*.1961**

Quest.Single cross technology of maize is given by
***Ans*.East and Shull (1910)**

Quest.Double cross technique of maize is given by
***Ans*.D.F. Jones (1920)**

Quest.Fodder crop maize varieties are
***Ans*.African tall, J1006**

Quest.Pop corn maize varieties are
***Ans*.Amber pop, V L Amber. Pop, Pearl pop corn**

Quest.Quality Protein Maize (QPM) varieties released by using
***Ans*.Opaqua-2 genes**

Quest.QPM varieties are
***Ans*.Sakti, Shaktiman 1 & 2, HQPM**

Quest.Hybrid varieties of maize
***Ans*.Ganga-1, 3, 5, 101, Ganga safed-2, Ranjit, Ganga-4**

Quest.Composite varieties of maize
***Ans*.Jawahar, Vikram, Kishan, Ambar, Sona, Vijay.**

Quest.The most critical stages for irrigation in maize
***Ans*.Silking stage.**

Quest.Maize crop leaves show red and purple colour due to deficiency of
***Ans*.Phosphorus (P)**

4. Sorghum/Jowar

Quest.Botanical name of sorghum is
***Ans*.Sorghum bicolor**

Quest.Sorghum crop is also referred as
***Ans*.Camel crop**

Quest.The seed rate of sorghum
***Ans*.12-15 kg/ha**

Quest.1st Hybrid variety of sorghum
***Ans*.CSH-1 (released in 1965)**

Quest.Alkaloid content present in sorghum leaves
***Ans*.HCN (Dhurin alkaloid)**

Quest.Sweet sorghum varieties
***Ans*.RSSV 46, 53, 59, 84, 96, NSS 216**

Quest.Varieties suitable for both grain and fodder purpose
***Ans*.CSH 13 and CSV 15**

5. Pearlmillet/Bajra

Quest.Botanical name of Pearlmillet
***Ans*.Pennisetum glaucum**

Quest.Pearlmillet is also known as
***Ans*.Bulrush millet**

Quest.The seed rate of Pearlmillet
***Ans*.5 kg/ha**

Quest.1st Hybrid variety of Pearlmillet
***Ans*.HB-1 in 1965**

Quest.Hybrids varieties of Pearlmillet
***Ans*.HB- 1 to 5 and Pusa 23.**

Quest.80 per cent phosphorus in bajra grains stored in the form of
***Ans*.Phytate**

Quest.Productivity of Bajra is highest at
***Ans*.UP**

6. Barley

Quest.Botanical name of two rowed barley
Ans.Hardium distichoum

Quest.Six rowed barley is

Ans.Hardium vulgare

Quest.The seed rate of barley is
***Ans*.75-80 kg/ha**

Quest.Critical stage for irrigation in barley
***Ans*.Active Tiplering Stage (30–35 DAS)**

Quest.'Pearl Barley' is suited for
***Ans*.Kidney disorders**

Quest.Molya disease resistant variety of barley is
***Ans*.RD 2052**

Quest.Melting quality is high in variety
***Ans*.Rekha**

Quest.Grassy weed in barley field can be effectively controlled by
***Ans*.Both Isoproturon and 2,4-D**

Quest.Lugri is a fermented drink developed from
***Ans*.Hull less barley grains**

7. Chickpea/Gram

Quest.Botanical name of Desi/Brown Chickpea?
Ans.Cicer aeritinum

Quest.Botanical name of Kabuli/White Chickpea?
Ans.Cicer kabulium

Quest.The most frost affected crop among all field crops?
***Ans*.Gram**

Quest.The sour taste in leaf of chickpea is due to presence of?
***Ans*.Maleic and Oxalic acid**

Quest.The type of root system in chickpea is
***Ans*.Tape root system**

Quest.The requirement of seedbed for better cultivation of chickpea is?
***Ans*.Rough seedbed**

Quest.Best soil for cultivation of chickpea?

***Ans*.Light alluvial soil (a loose and well aerated soil)**

Quest.The optimum time of sowing of chickpea is?

***Ans*.15th to 20th October**

Quest.The seed rate for early sown chickpea is

***Ans*.75-80 kg/ha**

Quest.Chickpea variety suitable for rainfed condition?

***Ans*.Vishal, Anubhav**

Quest.The early maturing variety of gram is?

***Ans*.Chaff chaff, JG-62**

Quest.Chickpea variety resistant to Wilt?

***Ans*.JG-74, JG-315, BG-256, Awarodhi**

Quest.Most suitable variety of chickpea to drought resistant?

***Ans*.NP-58**

Quest.Late planting of chickpea is done to protect the seedlings from?

***Ans*.Wilt disease**

Quest.A process of removal/tipping of apical buds of Chickpea is termed as

***Ans*.Nipping**

Quest.The average yield of chickpea in irrigated condition in India

***Ans*.12-15 qt/ha.**

8. Pigeonpea/Arhar

Quest.Early maturing pigeonpea is

Ans*.*Cajanus cajan flavus

Quest.Late maturing pigeonpea is

***Ans*.Cajanus cajan bicolor**

Quest.Pigeonpea belongs to the family of

***Ans*.Papilionaceae**

Quest.The type of seed germination in pigeonpea is

***Ans*.Hypogeal**

Quest.The sowing time of late maturing pigeonpea is

***Ans*.1st week of July**

Quest.The normal seed rate of pigeonpea?
***Ans*.10-15 kg/ha**

Quest.Zn deficiency in Pigeonpea is rectified by spraying of
***Ans*.5 kg $ZnSO_4$ + 2.5 kg Lime ha^{-1}**

Quest.Extra-short-duration variety of pigeonpea
***Ans*.UPAS-120**

Quest.Short duration varieties of pigeonpea?
***Ans*.Pusa Ageti, T_{21}, HY_2, Pusa 84**

Quest.Sterility mosaic and wilt resistant variety of pigeonpea
***Ans*.Amar, Narendra Arhar 1, Azad**

Quest.World's first hybrid variety of Pigeonpea is
***Ans*.ICPH-8**

Quest.Harvest index (HI) of Pigeonpea is
***Ans*.0.19 (lowest among pulses).**

9. Fieldpea

Quest.Botanical name of Fieldpea
Ans*.*Pisum sativum var. arvense

Quest.Botanical name of Garden pea
Ans*.*Pisum sativum var. hartense

Quest.Fieldpea/Grainpea is used for
***Ans*.Dal/pulse purpose**

Quest.Gardenpea/Table pea is used for
***Ans*.Green pods used for vegetable**

Quest.Seed treatment in pea is done by
***Ans*.Captan/Thirum 2.5 gm + *Rhizobium leguminosarum* 10 gm/kg seed**

Quest.The spacing maintained in Fieldpea is
***Ans*.30 cm x 5-7 cm**

Quest.The common varieties of Fieldpea

***Ans*.Rachana, Arpana, Ambika, T-65,163, Hans, KP-885, Pant C-5**

Quest.Leafless variety of Fieldpea?
***Ans*.Arpana**

Quest.The recommended NPK dose for Fieldpeas
***Ans*.20:50:30 kg**

10. Mungbean/Greengram

Quest.Latest botanical name of mung is
***Ans*.*Phasiolus aureus*.**

Quest.The seed rate/ha of mungbean is
***Ans*.12-15 kg**

Quest.Early maturing varieties of mungbean is
***Ans*.Pusa baisakhi, PS_{16}, K_{851}**

Quest.Yellow Vein Mosaic resistant varieties of mungbean
***Ans*.Pant mung 3, Sumrat, Basanti**

Quest.The average yield of mung in India
***Ans*.12-15 qt/ha**

11. Urdbean/Blackgram

Quest.Latest botanical name of Urd is
***Ans*.*Phasiolus mungo*.**

Quest.The seed rate/ha of mungbean is
***Ans*.20-25 kg**

Quest.The normal recommended spacing of urdbean
***Ans*.40 cm=10 cm**

Quest.Common varieties of urdbean
***Ans*.Pant U-30, JU-2, Type-9, Barkha, Gwalior-2**

Quest.The average yield of Urd in India
***Ans*.10-12 qt/ha**

12. Groundnut

Quest.Bunch/Spanish/Erect type groundnut is
Ans*.*Arachis hypogea fastigate

Quest.Spreading/Verginia runner type groundnut is
Ans*.*Arachis hypogea procumbens

Quest.Groundnut is a
***Ans*.Modified fruit**

Quest.Fruit of groundnut is called
***Ans*.Nut**

Quest.The oil and protein content of groundnut
***Ans*.45 and 26 %**

Quest.Technology Mission on Pulses and Oilseeds (TEMPO) was started in
***Ans*.1986**

Quest.Most suitable soil for groundnut cultivation
***Ans*.Sandy loam soil**

Quest.The seed rate of bunch type groundnut varieties
***Ans*.100-120 kg/ha**

Quest.The seed rate of Spreading type groundnut varieties
***Ans*.100-120 kg/ha**

Quest.The main critical stage of groundnut for irrigation
***Ans*.Flowering stage, Pegging stage and Pod formation stage**

Quest.The most suitable irrigation method for groundnut
***Ans*.Check basin method**

Quest.The common varieties of bunch type groundnut
***Ans*.Jyoti, Kishan, TMV-11, 12, AK-12, 24, Junagarh-11, ICGS-1, 10, 11, 44.**

Quest.The common varieties of Spreading type groundnut
***Ans*.Chandra, Type-28, 64, TMV-1, 3, M- 13, 37, Vikram, Verginia, Gangapuri, Godheri-2, 3**

Quest.Earthing-up is done in groundnut crop at
***Ans*.35 to 45 DAS**

Quest.Interculture operation in groundnut crop should be avoided at

***Ans*.Pegging stage**

Quest.Strain used for biological N_2 fixation in groundnut is

Ans.Rhizobium japonicum

Quest.Vector of virus in groundnut is

***Ans*.Aphid**

Quest.Early leaf spot disease of groundnut is caused by

Ans.Cercospora arachidicola

Quest.Late leaf spot disease of groundnut is caused by

Ans.Cercospora personata

13. Sunflower

Quest.The botanical name of sunflower

Ans.Helianthus annus

Quest.Sunflower is also known as

***Ans*.Non-conventional oilseed crop**

Quest.Sunflower has high quality edible oil content of

***Ans*.45-50%**

Quest.The head of sunflower is called as

Ans.Capitulai

Quest.Best sowing time of rabi sunflower is

***Ans*.November 1st to 2nd week**

Quest.The recommended seed rate of sunflower per hectare is

***Ans*.5-7.5 kg/ha**

Quest.The recommended spacing between row to row and plant to plant of sunflower?

***Ans*.50 cm x 20 cm**

Quest.The most common varieties of sunflower are

***Ans*.Modern, MSFH-8, 17, Jwalamukhi, KBSH-1, JS-1, Sunrise selection.**

Quest.The average yield of sunflower in India

***Ans*.20-30 qt/ha**

14. Soybean

Quest.The botanical name of soybean is
Ans*.*Glycine max

Quest.Soybean crop designated as
***Ans*.“*Boneless meat*”**

Quest.The protein and oil content in soybean seeds
***Ans*.40-42%, and 20-22%**

Quest.Soybean is popularly known as
***Ans*.Wonder crop**

Quest.Nodule formation in soybean is done by
Ans*.*Rhizobium japonicum

Quest.The nitrogen fixation per hectare by soybean
***Ans*.40 kg**

Quest.The recommended seed rate of soybean
***Ans*.75-80 kg/ha**

Quest.The most common varieties of soybean are
***Ans*.JS-2, 335, Indira Soya-9, PK-472, 1024, Gaurav, Ankur, Brag, Clark**

Quest.Manturian classified the soybean varieties based on
***Ans*.Seed colour**

Quest.Most commonly cultivated soybean in India
***Ans*.Yellow coloured soybean**

Quest.The average yield of soybean in India
***Ans*.20-25 qt/ha**

15. Rapeseed and Mustard

Quest.The botanical name of Brown/Indian mustard
Ans*.*Brassica juncea

Quest.The botanical name of sarson is
Ans*.*Brassica compestris

Quest.The fruit of mustard is known as
***Ans*.Siliqua**

Quest.The recommended seed rate of mustard as main crop is
***Ans*.4-6 kg/ha**

Quest.The common varieties of brown sarson
***Ans*.Pusa kalyani, Sufla, BSH-1**

Quest.Varieties of mustard are
***Ans*.Kranti, Varuna, Krishna, Pusa bold, Vardan, Rohni**

Quest.Hybrid variety Pusa Jai Kisan is also called
***Ans*.Bio 902**

Quest.Mustard crop planted at a spacing of 50 x 20 cm will have _____ plants/ha.
***Ans*.1,00,000**

Quest.Optimum moisture content for safe storage of mustard is
***Ans*.7-8%**

Quest.The critical stages for irrigation in Rapseed and mustard are
***Ans*.Rosette stage and Siliqua formation stage**

16. Safflower

Quest.The botanical name of safflower
Ans*.*Carthamus tinctorius

Quest.Safflower crop is known as
***Ans*.Fencing crop/Border crop**

Quest.The oil content in safflower
***Ans*.32-36%**

Quest.Fruit of safflower is called
***Ans*.Achene**

Quest.The recommended seed rate of safflower
***Ans*.15-20 kg/ha**

Quest.The common varieties of brown sarson are
***Ans*.JSF-1,2,5, JSI-7, EB-7, JSH-129**

Quest.The average yield of safflower in India
***Ans*.18-20 qt/ha**

17. Linseed

Quest.Linseed crop is also known as
***Ans*.Flex**

Quest.The botanical name and family of linseed is
***Ans*.*Linum usitatisium*, Linaceae**

Quest.The oil percentage in linseed is
***Ans*.40-42% oil**

Quest.The linolinic acid present in linseed oil
***Ans*.50-60%**

Quest.The recommended seed rate of linseed is
***Ans*.25-30 kg/ha**

Quest.The most common varieties of linseed
***Ans*.Jawahar-7,17,18, 552, Kiran, Mukta, Sweta, Gourav, Shital**

Quest.Linseed crop require NPK dose of
***Ans*.60:40:20 kg ha**

Quest.A process of treatment of stalks for final fibre extraction is termed as
***Ans*.Retting**

18. Cotton

Quest.Cotton is popular in America as
***Ans*.White gold**

Quest.Indian/old world cottons are
Ans*.*Gossipium arborium, G. herbacium

Quest.American/new world cotton is
Ans*.*G. hirsutum

Quest.Egyptian cotton/sea island cotton is
Ans*.*G. barbadence

Quest.The best soil for cultivation of cotton
***Ans*.Black cotton soil**

Quest.The fibre colour of American cotton

***Ans*.Creamy White**

Quest.The formulae to calculate ginning percentage

***Ans*.Ginning % =** $\frac{\text{Wt. of lint}}{\text{Wt. of seed cotton}} \times 100$

Quest.The percent of lint in seed cotton is

***Ans*.33%**

Quest.Interspecific varieties of cotton

***Ans*.Varalaxmi, DCH-32 (hybrid), HB-224, DHB-105**

Quest.Intraspecific varieties of cotton

***Ans*.H-4, 6, Savita, Surya (hybrid), JKHY-1**

Quest.Minimum Support Price is fixed by govt. for cotton varieties of

***Ans*.H-4, H 777, F 414**

Quest.G-777 is a

***Ans*.Indian cotton variety**

Quest.Nitrogenous fertilizer can be top dressed in the cotton up to

***Ans*.First flowering**

Quest.The chemical used for delinting of cotton

***Ans*.H_2SO_4**

Quest.Which part of the cotton plant contains lint and fuzz?

***Ans*.Hemp**

Quest.1 bale of cotton is equal to

***Ans*.170 kg**

Quest.The average wt. of *Very fine fibre*

***Ans*.< 3.0 mg**

Quest.If the fiber length of a cotton hybrid variety is 25 mm, it classified under

***Ans*.Long staple cotton**

Quest.Less number of knots in cotton is termed as

***Ans*.Superior quality cotton**

Quest.Fibre of cotton contains

***Ans*.Cellulose**

Quest.Bt cotton is resistant against the pest

***Ans*.*Helicoverpa* (Spotted bollworm)**

19. Jute

Quest.The botanical name of white jute

Ans*.*Corchorus capsularis

Quest.Jute crop is planted in the month of

***Ans*.Feb-March**

Quest.The seed rate of jute per ha

***Ans*.8-10 kg/ha**

Quest.Bitterness in jute is due to

Ans*.*Corchorin

Quest.Low quality of jute fibre attributed to

***Ans*.Discolouration of fibre**

Quest.The most common varieties of jute are

***Ans*.JRC-321 (Sonali), JRC-212 (Sabuj sona), JRC 7447 (Shyamli), Hybrid C (Padma), KC_1 (Joydev) etc.**

Quest.Ideal stage of jute harvesting for fibre purpose

***Ans*.Small pod stage/initiation of pod formation (135-140 DAS)**

Quest.Retting of jute fibre is a

***Ans*.Biochemical process**

20. Sugarcane

Quest.The botanical name of tropical cane

Ans*.*Saccharum officinarum

Quest.*Saccharum barberi* and *Saccharum sinensis* are termed as

***Ans*.Indian cane**

Quest.Leading state of India in sugarcane production is

***Ans*.U.P. (45% of total Prodtn.)**

Quest.Indian Institute of Sugarcane Research (IISR) is situated at

***Ans*.Lucknow, Uttar Pradesh**

Quest.Sugarcane Breeding Institute (SBI) is situated at
***Ans*.Coimbatore, Tamil Nadu**

Quest.Optimum temperature for sugarcane growth
***Ans*.21-27°C**

Quest.Inflorescence of sugarcane is called as
***Ans*.Arrow**

Quest.The permanent type root of sugarcane is
***Ans*.Shoot roots**

Quest.Adsali sugarcane crop planted during the months
***Ans*.July–August**

Quest.The requirement of 3 budded sett rate for planting in one hectare land is
***Ans*.35,000-40,000 setts**

Quest.Planting material used for sugarcane planting is
***Ans*.Upper 1/3 to half part of cane**

Quest.Flat bed method of sugarcane planting is most common in
***Ans*.North India**

Quest.Ridge and furrow method is mostly used in
***Ans*.South India**

Quest.The chemicals used for sett treatment of sugarcane
***Ans*.Agallal and Areton**

Quest.The most critical stage of sugarcane for irrigation is
***Ans*.Formative stage (60-130 days after planting)**

Quest.Which bacterium is used for nitrogen fixation in sugarcane field?
Ans.Acetobactor diazotrophicus

Quest.Varieties of sugarcane termed as “Wonder cane”
***Ans*.COC-671 and CO-419**

Quest.Earthing up in sugarcane is done at
***Ans*.4 month after planting**

Quest.Most commonly used herbicides in sugarcane are
***Ans*.Simazine, Atrazine and Alachlor**

Quest.A method of plant analysis for assessing nutrient requirement in sugarcane is
***Ans*.Crop Logging**

Quest.Nutrient, responsible for translocation of sugar in sugarcane
***Ans*.Potassium (K)**

Quest.The most common symptoms to judge the maturity of sugarcane are
***Ans*.Cane become brittle, produces metallic sound and breaks easily at nodes.**

Quest.Sugarcane is considered as mature, when Brix reading is between
***Ans*.18-20%**

Quest.Brix reading of juice indicates
***Ans*.Total soluble solids**

Quest.Sugar yield from sugarcane is
***Ans*.6-10% from juice**

Quest.The sugar content/recovery is more in the cane produced at
***Ans*.Southern India**

Quest.By-product of S'cane
***Ans*.Molllasses and Baggasses**

Quest.The most dangers disease of sugarcane is
***Ans*.Red rot disease**

21. Berseem

Quest.Berseem is also known as
***Ans*.Egyptian clover**

Quest.The botanical name of berseem is
Ans*.*Trifolium alexandrinum

Quest.Sowing of berseem crop is done by
***Ans*.Broadcasting**

Quest.The seed rate of berseem is
***Ans*.25-30 kg/ha**

Quest.Seed treatment of berseem seed is done by
***Ans*.*Rhizobium trifolium* culture**

Quest.First cutting in berseem is done at
***Ans*.50-55 days after sowing**

Quest.The popular varieties of berseem
***Ans*.Vardan, chindwara, BL-1, 11, 22, 52, C-10 (Maskavi), IGFRI 99-1**

Quest.The objectionable weed of berseem is
***Ans*.Kasini (*Chicorium intybus*)**

Quest.Forage yield of berseem crop is
***Ans*.800 - 1000 qt/ha**

22. Lucerne/Alfalfa

Quest.The botanical name of lucerne is
Ans.Medicago sativa

Quest.The seed rate of lucerne is
***Ans*.20-25 kg/ha**

Quest.Seed treatment of lucerne seeds is done by
***Ans.Rhizobium meliloti* culture**

Quest.Stem parasitic weed of lucerne is
***Ans.Cuscuta reflexa* (Doddar)**

Quest.The popular varieties of lucerne
***Ans*.Moopa, Rambler, Anand-2, 3, Sirsa 1, 8, 9, Type - 8,9, IGFRI-5,54,244**

Quest.Forage yield of berseem crop is
***Ans*.800 - 1100 qt/ha**

Quest.The physiological disorder “Lucerne yellowing” is cause due to the deficiency of
***Ans*.Boron (B)**

23. Oat

Quest.The botanical name of oat crop is
Ans.Avena sativa

Quest.The seed rate of oat crop is
***Ans*.80 -90 kg/ha**

Quest.Recommended NPK dose for oat

***Ans*.80:30:20 kg/ha**

Quest.Best stage for harvesting of oat is
***Ans*.Dough stage**

Quest.The popular varieties of oat are
***Ans*.Kent, Algerian, UPO 50, Craig, Afterlee, Fulgham, Fleming gold, HFO-114.**

Quest.Total number of cutting taken in oat crop are
***Ans*.2-3 cuttings**

Quest.Forage yield of oat crop is
***Ans*.400 - 450 qt/ha**

24. Potato

Quest.The botanical name of potato is
Ans*.*Solanum tuberosum

Quest.The origin place of potato is
***Ans*.South America (Peru)**

Quest.The solanin content present in potato is
***Ans*.5 mg/100 gm of potato**

Quest.Protein content in potato is
***Ans*.1.6%**

Quest.Potato is an
***Ans*.Underground stem**

Quest.Potato crop requires an average temperature for tuberization is of
***Ans*.17-200C**

Quest.Potato crop favours the soil for best growth
***Ans*.Sandy loam soil**

Quest.Tuber for selected for potato sowing should have
***Ans*.At least 3 buds, 2.5-3 cm diameter with 25-30 gm weight.**

Quest.To break the tuber dormancy, the tuber should be treated with
***Ans*.1% thiourea + 1 ppm GA_3 for 1 hour**

Quest.The normal seed rate of potato for one hectare land is

***Ans*.20-25 qt/ha**

Quest.True potato seed (TPS) enough for planting one ha. crop.
***Ans*.40-45 gm**

Quest.The most popular method for potato planting is
***Ans*.Ridge and Furrow**

Quest.Earthing-up in potato is done at
***Ans*.30 – 45 DAS**

Quest.The short duration varieties of potato is
***Ans*.Kufri alankar, Kufri chandramukhi, Kufri bahar, Kufri Jyoti etc.**

Quest.The varieties suitable for late planting of potato is
***Ans*.Kufri sinduri, Kufri dewa, Kufri jeevan etc.**

Quest.Most critical stage for irrigation in potato is
***Ans*.25% tuber formation stage**

Quest.Dehulming of potato is used to
***Ans*.Obtain quality seed tuber by using the chemical $CuSO_4$**

Quest.Seed plot technique (SPT) in potato is used for
***Ans*.Producing virus free seed tubers**

Quest.Special size (superior grade tubers) of potato should have
***Ans*.8 cm diameter**

Quest.Potato tubers should be stored in ventilated closed room with maintenance of
***Ans*.4-50C temperature and 90-95% RH**

25. Tobacco

Quest.The botanical name of tobacco is
***Ans*.Nicotiana tabacum**

Quest.*Nicotiana tabacum* is growing for the purpose of
***Ans*.Smoking and chewing**

Quest.*Nicotiana rustica* is growing for the purpose of
***Ans*.Hookah, chewing and snuff**

Quest.Transplanting age of tobacco is

***Ans*.7 to 9 weeks (4-5 leaf stage)**

Quest.Nicotine content (%) of tobacco is

***Ans*.0.5 to 5.5 (*N. tabacum*) and 3.5 to 8.0 (*N. rustica*)**

Quest.Cigarette tobacco is prominent growing in states of

***Ans*.Andhra Pradesh and Karnataka**

Quest.The seed rate of tobacco is

***Ans*.2.5 to 3.0 kg/ha**

Quest.Mutant varieties of tobacco are

***Ans*.Jayashri, Bhavya**

Quest.Most critical stages for irrigation of tobacco is

***Ans*.Topping**

Quest.As a source of N, potato crop require fertilizer of

***Ans*.Potassium nitrate**

Quest.Desuckering of tobacco is done by

***Ans*.Melaic Hydracids (2%)**

Quest.Priming method of harvesting is popular in

***Ans*.Cigarette, Wrapper and Chewing type**

Quest.Flue curing is done for

***Ans*.Cigarette tobacco**

Quest.Fire curing is done for

***Ans*.Bidi, Snuff, Chewing, Hookah tobacco**

Quest.Nicotine content accumulates in which part of tobacco?

***Ans*.Leaves**

(IV) Cropping and Farming system

Quest.The repetitive cultivation of an ordered succession of crops or crops and fallow on the same land is called as

***Ans*.Crop rotation**

Quest.Which of the following rotations is likely to leave soil richer in organic matter?

***Ans*.Maize – Oats - Clovers**

Quest.Crop rotation practiced by the majority of the farmers in a given area or locality is called as

***Ans*.Cropping Pattern**

Quest.The most prominent and adopted cropping pattern in India

***Ans*.Rice - Wheat.**

Quest.The cropping pattern used on a farm and its interactions with farm resources, other farm enterprises and available technology which determine their makeup is called as

***Ans*.Cropping system**

Quest.An appropriate combination of farm enterprises *viz*., cropping system, livestock, poultry, fisheries and the means available to the farmer to raise them for increasing profitability is called as

***Ans*.Farming system**

Quest.The raising of animals along with crop production is

***Ans*.Mixed farming**

Quest.*Growing of two or more crops simultaneously and intermingled without row arrangements, where*there is significant amount of intercrop competition is called as

***Ans*.Mixed cropping**

Quest.Growing of two or more crops simultaneously in alternate rows or otherwise in the same area, where there is significant amount of inter crop competition is called as

***Ans*.Intercropping**

Quest.One crop variety grown alone in pure stands at normal density in a field

***Ans*.Sole cropping**

Quest.The repetitive growing of the same sole crop on the same land is termed as

***Ans*.Monoculture**

Quest.The growing of more than one crop on the same land in one year is termed as

***Ans*.Multiple cropping**

Quest.Growing of two or more crops in quick succession on the same piece of land in a farming year is termed as

***Ans*.Sequential/non-overlapping cropping**

Quest.A cropping system where the land is hands over the succeeding crop before the harvest of standing crop.

***Ans*.Relay or overlapping cropping**

Quest.Two or more than two crops of different heights cultivated simultaneously on the same field is called as

***Ans*.Multistoreyed/Multitired/Multi-level cropping**

Quest.Such crops have different growth habits and zero competition to each other.

***Ans*.Parallel cropping**

Quest.The cropping system beneficial to prevent soil erosion due to winds is

***Ans*.Strip cropping**

Quest.Cropping intensity of maize-potato-wheat

***Ans*.300%**

Quest.The example of parallel cropping is

***Ans*.Urd/Moong + Maize**

Quest.Paira and Utera cropping are most probable in

***Ans*.Bihar, MP and Chhattisgarh states**

Quest.When the productions of both inter crops is equal to that of its solid planting.

***Ans*.Companion cropping**

Quest.Synergetic cropping means

***Ans*.When yield of both the crops are higher than their pure crops on unit area *e.g.* Sugarcane + Potato**

Quest.What does 'jhuming' refers to

***Ans*.Traditional method of cultivation in hilly area**

Quest.The formulae of cropping intensity is

***Ans*.C.I. (%) =** $\frac{\text{Total cropped area}}{\text{Net sown area}} \times 100$

Quest.The average cropping intensity of India

***Ans*.135%**

Quest.The formulae of rotational intensity

***Ans*.R.I. (%) =** $\frac{\text{No. of crops grown in rotation}}{\text{Duration of the rotation}} \times 100$

Quest."Relative land area under sole crop required to produce the same yield as obtained under a mixed or intercropping system at the same level of management is termed as

***Ans*.Land equivalent ratio (LER)**

Quest.Sustainability Yield index value lies between

***Ans*.0 to +1**

Quest.The formulae of cropping index is

***Ans*.C.I. (%) = $\frac{\text{Total cropped area}}{\text{Net sown area}} \times 100$**

Quest.Organic farming excludes the application of

***Ans*.Fertilizers**

(V) Irrigation Water Management

Quest.The artificial application of water to supply moisture essential to plant growth is termed as

***Ans*.Irrigation**

Quest.First entry of water from the upper layer of soil is known as

***Ans*.Infiltration**

Quest.Vertical movement of water or downward movement of water from different soil layer is called as

***Ans*.Percolation**

Quest.Horizontal flow of water in irrigation channels or through canals is known as

***Ans*.Seepage**

Quest.The flow of excess water from the field after saturation of soil.

***Ans*.Runoff**

Quest.Downward movement of nutrients and salts from the root zone with the water

***Ans*.Leaching**

Quest.Life saving irrigation is also known as

***Ans*.Contingency irrigation**

Quest.Volume or quantity of water required for irrigation to bring a crop to maturity

***Ans*.Duty of water**

Quest.The total depth of water (cm) required y a crop during its duration in the field

***Ans*.Delta**

Quest.The percentage of applied irrigation water stored in the soil and made available for consumptive use by the crop

***Ans*.Irrigation Efficiency**

Quest.Soil crusting reduces

***Ans*.Infiltration**

Quest.Average annual rainfall of India is about

***Ans*.400 Mha.m**

Quest.75% of rainfall is received by

***Ans*.S-W monsoon period (June-Sept)**

Quest.Biggest river basin of India

***Ans*.Ganga**

Quest.The quantity of water (gm) necessary for a plant to produce 1 kg of dry matter is known as

***Ans*.Transpiration coefficient**

Quest.The process of determining when to irrigate and how much water to apply is termed as

***Ans*.Irrigation scheduling**

Quest.Irrigation is applied to the crop at

***Ans*.50% soil moisture depletion stage**

Quest.Soil moisture content is determined by

***Ans*.Tensiometer (at 0.85 bar)**

Quest.P^F refers to

***Ans*.Logarithm of soil moisture tension**

Quest.Which of the following is a method of indirect measurement of soil moisture?

***Ans*.Neutron moisture meter**

Quest.Volumetric method of water measurement are

***Ans*.Furrows, Sprinklers and Drippers**

Quest.For measuring uniform flow of water, weirs used are

***Ans*.Rectangular and Trapezoidal weir**

Quest.Venturi meter is used to measure water, if

***Ans*.Water flow from the pipe**

Quest.The most common water flow measuring device which measures water flow in open conduit is

***Ans*.Parshall/Venturi flume**

Quest.Irrigation method suitable for lowland rice and jute

***Ans*.Flooding**

Quest.Most common method of surface irrigation to irrigate groundnut and pulses

***Ans*.Check basin**

Quest.Ring basin method is suitable for

***Ans*.Fruit trees**

Quest.The method in which field divided into number of strips by bunds of around 15 cm height is

***Ans*.Border strip method**

Quest.The method, suitable for crops *i.e*. Sorghum, cotton, maize, tobacco, potato, sugarcane etc is

***Ans*.Furrow method**

Quest.Micro irrigation method, in which water is applied as spray

***Ans*.Sprinkler method**

Quest.Irrigation method, suitable for undulating land, sandy soils and Vegetable and fruit crops

***Ans*.Sprinkler method**

Quest.Pressure, applied in sprinkler irrigation system

***Ans*.>2.5 bar**

Quest.The rate of water delivery in sprinkler system is

***Ans*.>1000 litre/hrs.**

Quest.Drip Irrigation is discovered at

***Ans*.Israel**

Quest.Drip Irrigation method is also known as

***Ans*.Trickle irrigation**

Quest.Micro irrigation method, in which water is applied as drop form through emitters

***Ans*.Drip method**

Quest.Drip method is suitable for

***Ans*.Wider spaced orchard crops, sugarcane and for saline soils**

Quest.Discharge rate of water per dripper is

***Ans*.1-4 litre/hrs**

Quest.The saving of water in sprinkler and drip irrigation methods as compared to surface irrigation methods

***Ans*.25-50% and 50-70% water, respectively.**

Quest.Which irrigation method has highest irrigation efficiency?

***Ans*.Drip method**

Quest.The water content between Field capacity (-1/3 bar) to PWP (-15 bar) is called

***Ans*.Available water**

Quest.The amount of soil moisture or water content held in soil after excess water has drained away is called

***Ans*.Field capacity (FC)**

Quest.The moisture content of a soil at which plants permanently wilt and will not recover.

***Ans*.Permanent wilting point (PWP)**

Quest.The water, that moves downward freely under the influence of gravity (< 1/3 bar) beyond the root zone

***Ans*.Gravitational water**

Quest.The water, retained by the soil in capillary pores (micropores), against gravity (-1/3 to -31 bar) by the force of surface tension

***Ans*.Capillary water**

Quest.When water is held tightly as thin film around soil particles by adsorption forces and flows at gravity of > -31 bar, is called

***Ans*.Hygroscopic water**

Quest.Capillary movement of water is complemented by

***Ans*.Root extension**

Quest.A diffusive process by which liquid water in the form of vapour is lost in the atmosphere

***Ans*.Evaporation**

Quest.The process in which soil water lost from leaves of plants in the form of vapour and enters the surrounding atmosphere.

***Ans*.Transpiration**

Quest.The quantity of water needed for normal crop growth and yield in a period of time to a place and may be supplied by precipitation or by irrigation or by both.

***Ans*.Water requirement of a crop**

Quest.The consumptive use of water is equal to

***Ans*.ET + Mw**

Quest.Water requirement of rice is

***Ans*.90-250 cm**

Quest.Water requirement of wheat, sorghum, soybean and tobbaco are

***Ans*.45-65 cm**

Quest.Water requirement of sugarcane

***Ans*.150-250 cm**

Quest.Water requirement of cotton crop

***Ans*.70-130 cm**

Quest.Water requirement of maize and groundnut are

***Ans*.50-80 cm**

Quest.The period when water requirement is maximum is called as

***Ans*.Critical stages of water requirement**

Quest.What will be CPE value when irrigation is scheduled at 0.8 IW/CPE with 6.0 cm depth of irrigation water?

***Ans*.7.5 cm or 75 mm**

Quest.The ratio of the crop yield to the total amount of water used for irrigation is called, measured in kg/ha-cm is

***Ans*.Water use efficiency**

Quest.Salt content in irrigation water evaluated as best quality

***Ans*.0.2 to 0.5 g/lt**

Quest.The permissible and normal limit of EC, RSC, SAR (meq 1^{-1}) and Boron content (ppm)

***Ans*.2–4, < 2.5, < 10 and <3, respectively.**

Quest.Nitrate levels in drinking water above _____ mg per litre are considered as a human health hazard.

***Ans*.10**

Quest.The process of removal of excess water from the field to ensure a favourable salt balance in the soil

***Ans*.Agricultural drainage**

Quest.In a waterlogged soil, the concentration of _____ is high

***Ans*.Methane**

Quest.The root developed due to water logging in most of the crops

***Ans*.Adventitious root**

Quest.Under water logged conditions, which nutrients are found deficient for the crops

***Ans*.Both Zn and Cu**

Quest.The depth of water (cm) to be drained in 24 hours period from the entire drainage area.
***Ans*.Drainage coefficient**

Quest.Drainage of one ha cm (105 lt) in 24 hrs is equal to
***Ans*.1.157 litre/sec**

(VI) Watershed Management

Quest.A natural hydrological unit having common runoff outlet point
***Ans*.Watershed**

Quest.The ratio of runoff to the volume of precipitation receive in a catchment area is known as
***Ans*.Runoff coefficient**

Quest.Micro watershed covers an area of about
***Ans*.100 - 1000 ha**

Quest.Major irrigation project covers an area of
***Ans*.>10,000 ha**

Quest.Irrigation project covered >10,000 ha of catchments command area (CCA)
***Ans*.Major irrigation project**

Quest.Irrigation project covered 2,000 to 10,000 ha of CCA
***Ans*.Medium irrigation project**

Quest.Irrigation project covered < 2,000 ha of CCA
***Ans*.Minor irrigation project**

Quest.Water harvesting *in situ* is known as
***Ans*.Runoff farming**

(VII) Dryland Agriculture

Quest.Cultivation of crops in areas where average annual rainfall is <750 mm per annum
***Ans*.Dry Farming**

Quest.Cultivation of crops in areas receiving rainfall from 750 to 1150 mm per annum.
***Ans*.Dryland Farming**

Quest.The areas receiving average annual rain fall > 1150 mm are categories as
***Ans*.Rainfed Farming**

Quest.Crop growing season of dryland farming is

***Ans*.75 – 120 days**

Quest.Change in normal crop planning to meet weather abnormalities is termed as

***Ans*.Contingent planning**

Quest.The main important feature of Indian monsoon

***Ans*.Long breaks in the rainy season or Prolonged Dry spells**

Quest.The most dangerous situation in dryland condition is

***Ans*.Early withdrawal of water**

Quest.The contingent crop plan suggested when long gap in rainfall

***Ans*.Providing life saving irrigation only at critical growth stages**

Quest.The alternate crops recommended to sow under late onset of monsoon

***Ans*.Castor, Greengram, Cowpea, Sunflower etc.**

Quest.The crop sown under condition of early onset of monsoon

***Ans*.Pearlmillet and Sesamum**

Quest.A period in which the available soil moisture is enough to meet the evapotranspiration requirement of dry land crops

***Ans*.Length of growing period**

Quest.The length of growing period, suitable for growing only a single dry land crop

***Ans*.14 weeks**

Quest.The length of growing period, suitable for inter cropping system

***Ans*.14 to 20 weeks**

Quest.The moisture deficit condition, results when the amount of water vapour available in the soil is not sufficient to meet the demand of potential evapo-transpiration

***Ans*.Drought**

Quest.The simplest way of adaptation of plant to drought is

***Ans*.Evasion**

Quest.The chemical accumulated during drought condition

***Ans*.Proline**

Quest.Which is accumulated in the leaves of water stressed plants

***Ans*.ABA**

Quest.Most appropriate crops in dryland farming are

***Ans*.Pearlmillet, sorghum, gram, toria**

Quest.Which crop rotation under dryland situation will be more remunerative?

***Ans*.Sesamum-gram**

Quest.The chemicals used to check transpiration losses of water

***Ans*.Antitranspirents**

Quest.2,4-D, Atrazine and PMA at low concentration act as which type of antitranspirents

***Ans*.Stomatal closing**

Quest.Film farming type antitranspirents are

***Ans*.Hexadeconal, Mobileaf, Wax and Silicon**

Quest.Reflectant type antitranspirents is

***Ans*.Kaoline (5%)**

Quest.Growth retardant type antitranspirents is

***Ans*.Cycocel (CCC)**

(VIII) Weed Management

Quest.An unwanted plant, growing where it is not desired?

***Ans*.Weed**

Quest.Such weeds, that are grown in cultivated field?

***Ans*.Obligate weeds**

Quest.Cropped along with wild land weed are known as?

***Ans*.Facultative weeds**

Quest.Problematic weed, whose seed once mixed with crop seed is extremely difficult to separate?

***Ans*.Objectionable weed**

Quest.Undesirable, troublesome weed difficult to control

***Ans*.Noxious weed**

Quest.Mimicry weeds of rice and wheat is

***Ans*.*Phalaris* and wild rice**

Quest.Weed that depends for its growth on its host plant?

***Ans*.Parasitic weed**

Quest.Semi root parasitic weed of Sorghum and Sugarcane?
Ans.Striga spp.

Quest.Semi stem parasitic weed of Mango?
Ans.Loranthus spp.

Quest.The total root parasitic weed of Tobacco?
Ans.Orabanchi spp.

Quest.The total stem parasitic weed of Lucerne?
Ans.Cuscuta spp

Quest.The off type crop varieties are
***Ans*.Rogue**

Quest.Which of the following stages of a crop are more prone to weed competition?
***Ans*.Germination to seedling**

Quest.What is the Critical Period of Crop-Weed Competition for transplanted rice?
***Ans*.30-45 DAS**

Quest.What is the Critical Period of Crop-Weed Competition for Upland rice condition?
***Ans*.Entire period of crop growth**

Quest.What is the Critical Period of Crop-Weed Competition for sugarcane?
***Ans*.30-120 DAS**

Quest.The detrimental effect of one of higher plants on other higher plants is known as
***Ans*.Allelopathy**

Quest.The practice of flushing out germinable weed seeds before crop sowing is called
***Ans*.Stale seed bed**

Quest.Stale seed bed technique of weed control is a
***Ans*.Cultural method**

Quest.2, 4-D, Simazine, Atrazine and Fluchloralin belongs to the selectivity group
***Ans*.Selective herbicides**

Quest.Diquat, Paraquat, Oxadiargyl and Glyphosate etc. belongs to the selectivity group
***Ans*.Non-selective herbicides**

Quest.The herbicides applied 1 day before sowing/planting or just are comes under
***Ans*.Pre-plant incorporated (PPI) herbicides.**

Quest.The example of PPI herbicides are

***Ans*.Fluchloralin, Alachlor, Trifluralin etc.**

Quest.The herbicides applied 1-4 days after sowing are comes under

***Ans*.Pre-emergence herbicides.**

Quest.The example of PRE herbicides are

***Ans*.Simazine, Atrazin, Alachlor, Butachlor, Nitrofen, Pendimethalin etc.**

Quest.The herbicides applied 30-40 DAS are comes under

***Ans*.Post-emergence herbicides.**

Quest.The example of POST herbicides are

***Ans*.2, 4-D, Diquat, Paraquat, Isoproturon, Fenoxaprop-ethyl, Sulfosulfuron, Chlorimuron-ethyl etc.**

Quest.2, 4-D belongs to the chemical group

***Ans*.Chloro phenoxy compound**

Quest.Fluchloralin and Pendimethalin belong to the chemical group

***Ans*.Dinitroanilines**

Quest.Atazine and Simazine belong to the chemical group

***Ans*.Triazines**

Quest.Alachlor, Butachlor and Propanil belong to the chemical group

***Ans*.Amide**

Quest.Glyphosate and Anilophos belong to the chemical group

***Ans*.Organophosphorus**

Quest.What is the trade name of Alachlor?

***Ans*.Lasso**

Quest.What is the trade name of Chlorimuron-ethyl?

***Ans*.Classic, Kloben**

Quest.What is the trade name of Chlorimuron 10% + Metasulfuron-methyl 10%?

***Ans*.Almix**

Quest.What is the trade name of Ethoxy sulfuron?

***Ans*.Sunrise**

Quest.What is the trade name of Glyphosate?

***Ans*.Roundup**

Quest.What is the trade name of Nitrofen?

***Ans*.Toke E-25**

Quest.What is the trade name of Pendimethalin?

***Ans*.Stomp**

Quest.What is the trade name of Fenoxa prop-ethyl?

***Ans*.Whip super**

Quest.Paraquate is a

***Ans*.Contact herbicide**

Quest.Which herbicide shows Knock down effect?

***Ans*.Paraquate, Diquate and Glyphosate**

Quest.Which is a contact selective herbicide?

***Ans*.Propanil**

Quest.Herbicides are not used in dust formulation because of

***Ans*.Drifting hazards**

Quest.What is the concentration of solution in ppm if 2 kg of 2,4-D is mixed with 1000 lit of water?

***Ans*.2000**

Quest.Which of the following weed having herbicide resistance?

Ans.Avena fatua

Quest.Which of the following is a indicator plant for the bioassay of Atrazine?

***Ans*.Soybean**

Quest.First biologically controlled weed is

Ans.Lantana camara

Quest.*Parthenium hysteroforus* is biologically controlled by

Ans.Zygrogramma bicolarata

Quest.The most dominant aquatic weed *Eichhornia crassipes* is controlled by

***Ans*.Neochetina bruchi**

Quest.First commercial Bio-herbicide is

***Ans*.DEVINE**

Quest.BIPOLARIS is used to control weed
***Ans*.Johnson grass**

Quest.Which of the following causes more wastage of herbicide by drift?
***Ans*.Ultra-low volume sprayer**

Quest.The Bright Red coloured triangle in herbicide shows
***Ans*.Extremely toxic group**

(IX) Soil and Water Conservation

Quest.Detachment and transportation of top soil particles by wind and or by water is known as.
***Ans*.Soil erosion**

Quest.What are the types of soil movement in the process of wind erosion?
***Ans*.Saltation, Suspension and Surface creep**

Quest.About 50-75% of soil erosion by wind is carried out by
***Ans*.Saltation**

Quest.Very fine soil particles (<0.1 mm dia) eroded by mechanism
***Ans*.Suspension**

Quest.Removal of soil particles due to rain drops (through bouncing) is called
***Ans*.Splash erosion**

Quest.Which mechanism of water erosion is known as “Death of Farmers”?
***Ans*.Sheet erosion**

Quest.Chanalization begins from which mechanism of water erosion?
***Ans*.Rill erosion.**

Quest.The advanced stage of gully erosion is
***Ans*.Ravines**

Quest.Average soil loss million tonnes/year in India is
***Ans*.5,333**

Quest.The land capability classes suitable for crop cultivation are
***Ans*.Class I to III**

Quest.According to USDA classification, the land belongs to class VI and VII are suitable for
***Ans*.Timber cum fiber farming**

Quest.Agronomical measures are adopted only where land slope is
***Ans*.<2%**

Quest.Mechanical measures are adopted only where land slope is
***Ans*.>2%**

Quest.Vertical mulches are used only in
***Ans*.Black cotton soil**

Quest.The most popular mechanical measure to control soil erosion and conserve is
***Ans*.Contour Bunding**

Quest.Contour Bunding is adopted where
***Ans*.Land slope (6 %) and in areas where average annual rainfall is < 600 mm.**

Quest.Bench Terracing is practiced on
***Ans*.Steep slopping (16-33%) and undulated land**

Quest.The crop grown on degraded land for improvement is called
***Ans*.Conservation crop**

Quest.The full form of LEISA is
***Ans*.Low External Input Sustainable Agriculture**

Chapter 3

Agrometeorology

Quest."The study of envelope of air surrounding the planet and of the phenomenon associated with atmosphere."

Ans.Meteorology

Quest.A weather condition over a given region during a longest period.

***Ans*.Climate**

Quest.A condition of atmosphere at a given place at a given time.

***Ans*.Weather**

Quest.*Monsoon* is a

***Ans*.Arabic word**

Quest.Gaseous envelop surrounding the earth known as

***Ans*.Atmosphere**

Quest.The ultimate source of energy on the earth is

***Ans*.The sun**

Quest.The mean distance between Earth and Sun

***Ans*.1.5×10^8 km**

Quest.Temperature on the sun is around

***Ans*.6000°C**

Quest.Who discovered solar energy?

***Ans*.Auguste Mouchout**

Quest.The radiation in the sunlight that gives us the feeling of hotness is

***Ans*.Infra-red**

Quest.The radiations emitted by the sun and responsible for the cause of skin cancer

***Ans*.Ultra-violet**

Quest.In the atmosphere, which of the following gases account for about 99.0 % per cent by

volume?

***Ans*.Nitrogen, Oxygen, Carbon dioxide**

Quest.Percentage concentration of CO_2 in air and soil is

***Ans*.0.030% and 0.25%**

Quest.An average % of solar radiation reaching to the earth

***Ans*.50**

Quest.Who is the first scientist attempted to classify the climate?

***Ans*.De Condole (1900)**

Quest.Koppen and Thornthwaite classified the climate on the basis of

***Ans*.Annual Rainfall and annual Evaporation**

Quest.Troll classified the climate on the basis of

***Ans*.Humid month and temperature**

Quest.The instrument able to record almost all meteorological data by desired interval at any time and any place

***Ans*.Automatic weather station**

Quest.The value of solar constant is

***Ans*.1.94 cal/cm^2/min**

Quest.A certain part of energy received from the sun, is reflected back to space by the earth known as?

***Ans*.Albedo**

Quest.The structure of atmosphere is divided on the basis of

***Ans*.Vertical temperature difference**

Quest.All weather phenomena (*i.e*. Rain, fog, frost, clouds) occur in the zone of

***Ans*.Troposphere**

Quest.Closest and Densest layer of atmosphere

***Ans*.Troposphere (8-18 km height)**

Quest.Ozone layer is present in

***Ans*.Stratosphere zone (20-48 km)**

Quest.The coldest region of the atmosphere

***Ans*.Mesosphere**

Quest.Radio transmission found in
***Ans*.Ionosphere zone**

Quest.Gas less zone is
***Ans*.Thermosphere (>80 km height)**

Quest.Blue colour of the sky and red colour of sunset is due to
***Ans*.Dispersion**

Quest.What is the wavelength of visible solar radiation?
***Ans*.0.39-0.7 nm**

Quest.Wavelength longer than _____ m/μ is not visible to the eye, and are called infrared
***Ans*.750**

Quest.The weight of the carbon of air at any given place and time.
***Ans*.Atmospheric pressure**

Quest.The mean sea level pressure is
***Ans*.1013.25 milibars**

Quest.What is wind?
***Ans*.Air blowing at a point.**

Quest.North of the equator, surface winds are known as
***Ans*.Northeast trade winds**

Quest.Wind direction is determined with the help of instrument
***Ans*.Wind vane**

Quest.Wind turbines uses
***Ans*.Kinetic energy**

Quest.Heat flow in solid/soil takes place mainly through the process of
***Ans*.Conduction**

Quest.Heat flow in liquid/water by process of
***Ans*.Convection**

Quest.Heat flow in air by process of
***Ans*.Radiation**

Quest.Evaporation is measured by
***Ans*.Evaporimeter**

Quest.Wind pressure is measured by
***Ans*.Beaufort scale**

Quest.Atmospheric pressure is measured by
***Ans*.Barometer**

Quest.Relative humidity (RH) is measured by
***Ans*.Hygrometer/Psychrometer**

Quest.Total incoming solar radiation is measured by
***Ans*.Pyranometer**

Quest.Evapotranspiration is measured by
***Ans*.Lysimeter**

Quest.Combination of Dry bulb and Wet bulb thermometer used for
***Ans*.Relative Humidity**

Quest.Rainfall is measured by
***Ans*.Raingauge**

Quest.Instrument used for estimating ET under field condition
***Ans*.Can Evaporimeter**

Quest.Continuous temperature record by which instrument
***Ans*.Thermograph**

Quest.Which Instrument record temperature without contact the object
***Ans*.Infrared thermometer**

Quest.Instrument used for measuring concentration of ozone in air
***Ans*.Ozonometer**

Quest.Imaginary line that represents the equal temperature
***Ans*.Isotherm**

Quest.Lines of equal pressure
***Ans*.Isobar**

Quest.Lines of equal rainfall
***Ans*.Isohyets**

Quest.Lines of equal cloud cover
***Ans*.Isonephs**

Quest.The optimum temperature for better crop production is between

***Ans*.18 – 24°C**

Quest.Lowest temperature in a day is observed at

***Ans*.Just before sunshine**

Quest.What is the dry adiabatic lapse rate in troposphere

***Ans*.6.5°C/km**

Quest.The formulae of Relative humidity is

***Ans*.RH (%) =** $\frac{\text{Water vapour present in the air}}{\text{Water vapour required for saturation}} \times 100$

Quest.The monsoon covers 75% rainfall in India

***Ans*.Southwest monsoon**

Quest.Date of onset of Monsoon in India

***Ans*.1st June**

Quest.Date of Monsoon withdrawal in India

***Ans*.31st Sept.**

Quest.Average annual rainfall of India

***Ans*.400 Mha-m.**

Quest.One particular day, if the rain received 2.5 mm or more

***Ans*.Rainy day**

Quest.An average size of rain drop

***Ans*.2 mm dia**

Quest.Atmospheric water is known as

***Ans*.Green water**

Quest.Soil water is known as

***Ans*.Blue water**

Quest.Which clouds are known as rainy clouds?

***Ans*.Nimbo-stratus and Cumulonimbus**

Quest.Clouds types which give the heavy and continuous precipitation

***Ans*.Cumulonimbus**

Quest.An aggregation of minute drops of water suspended in the air at higher altitude termed as

***Ans*.Clouds**

Quest.The unit used to record clouds

***Ans*.Okta**

Quest.Cold cloud seeding is done by use of chemical

***Ans*.Silver iodide (AgI_2)**

Quest.Warm cloud seeding is done by

***Ans*.Sodium chloride (NaCl)**

Quest.Indian Meteorological Organization (IMD) situated in

***Ans*.Pune (1932)**

Quest.Phenomenon of warming of eastern pacific

***Ans*.EI nino**

Quest.Phenomenon of cooling of eastern pacific

***Ans*.LI nino**

Quest.Which surface has least Albedo?

***Ans*.Moist black soil**

Quest.An engine of desertification

***Ans*.Drought**

Quest.A period of 4 consecutive weeks from May to mid October or 6 consecutive weeks during rest of the year

***Ans*.Agriculture drought**

Quest.Widely used index for classification of droughts

***Ans*.Palmer drought index**

Quest.The branch of science in which, the collection and interpretation of information about a target without being in physical contact with it?

***Ans*.Remote Sensing**

Quest.National Remote Sensing Agency (NRSA) is situated at

***Ans*.Hyderabad**

Quest.Medium range weather forecasting is done for

***Ans*.3-10 days**

Quest.Forecast will help in planning cropping pattern

***Ans*.Long range weather**

Quest.According to Planning Commission, Agro Climatic Zones in India are

***Ans*.15**

Quest.According to NBSSLUP, Agro Ecological Regions in India are

***Ans*.21**

Quest.The relationship between Celsius and Fahrenheit unit of temperature

***Ans*.** $\frac{C}{5} = \frac{F-32}{9}$

Quest.A natural warming process involving the interaction of sunlight and carbon dioxide and other gases from the atmosphere

***Ans*.Green house effect**

Quest.Three common greenhouse gases include

***Ans*.Carbon dioxide, methane, nitrous oxide**

Quest.Chief green house gas responsible for global warming

***Ans*.** $\mathbf{CO_2}$ **(50%)**

Quest.Which green house gas linked with rice crop?

***Ans*.Methane (**$\mathbf{CH_4}$**)**

Quest.The gas, responsible for ozone depletion

***Ans*.** $\mathbf{CF_2Cl_2}$

Quest.Which one is a substitute for CFCs

***Ans*.Hydrofluorocarbons**

Quest.The chemicals most commonly found in acid precipitation are

***Ans*.Sulphuric acid and nitric acid**

Quest.Normal rain water is slightly acidic with a pH of about

***Ans*.5.6**

Chapter 4

Soil Science and Biochemistry

(I) Soil Science

Quest.The fine earth covering land surface acts as a reservoir of nutrients and water
***Ans*.Soil**

Quest.The word 'Soil' is derived from
***Ans*.Latin**

Quest.Study of origin, classification, morphology of soil is known as
***Ans*.Pedology**

Quest.The study of soils in relation to crop growth.
***Ans*.Edaphology**

Quest.The father of Soil Science
***Ans*.Dokuchalev**

Quest.The concentration of soil water in soil
***Ans*.50%**

Quest.Organic matter content in Indian soil is
***Ans*.5 %**

Quest.Natural soil aggregates/mass are known as
***Ans*.Peds**

Quest.The science describes rocks
***Ans*.Petrology**

Quest.Granite and Basalt are
***Ans*.Igneous rocks**

Quest.Lime stone, Sand stone and Dolomite are
***Ans*.Sedimentary rocks**

Quest.Gneiss, Marble, Quartzite and Slate are
***Ans*.Metamorphic rocks**

Quest.The rocks gets broken in pieces due to temperature is called
***Ans*.Exfoliation**

Quest.Feldspar, Quartz and Mica are
***Ans*.Primary minerals**

Quest.Kaolinite, Halloysite and Dickite are
***Ans*.1:1 type silicate clay minerals**

Quest.The example of 2 : 1 type silicate clay minerals are
***Ans*.Montmorillonite, Vermiculite and Illite**

Quest.Chlorite is
***Ans*.2:1:1 or 2:2 type clay mineral**

Quest.The most dominant mineral on earth crust
***Ans*.Feldspar (48%)**

Quest.The weathering mineral, having most stable soil structure
***Ans*.Kaolinite**

Quest.Which mineral is a source of phosphorus and boron in soils?
***Ans*.Apetite**

Quest.The hydroxide act as cementing agent in binding the soil particles together
***Ans*.Fe and Al**

Quest.A vertical section of soil through all its horizons
***Ans*.Soil Profile**

Quest.Which horizon is called Fertile zone?
***Ans*.'A' horizon**

Quest.The horizon absent in arable land
***Ans*.'O' horizon**

Quest.The eluviation horizon is
***Ans*.'E or A_2' horizon**

Quest.The illuviation horizon is
***Ans*.'B' horizon**

Quest.A+B horizons are collectively called as

***Ans*.Solum**

Quest.A+B+C horizons together called as

***Ans*.Regolith**

Quest.The formulae of bulk density of soil

***Ans*.BD (g/cc) =** $\frac{\text{Wt. of oven dry soil}}{\text{Volume of soil (Solid + Pores)}}$

Quest.Bulk density of normal soil is

***Ans*.1-1.6 g/cc**

Quest.The formulae of particle density of soil

***Ans*.PD (g/cc) =** $\frac{\text{Wt. of oven dry soil}}{\text{Volume of soil solid}}$

Quest.Widely accepted fixed value of particle density is

***Ans*.2.65 g/cc**

Quest.The soil having PD 2.50 g/cc and BD 1.25 g/cc will have _____ % porosity.

***Ans*.50**

Quest.A field soil sample weighing 60 g, lost12 g on over dying. What is the moisture percent on dry weight basis?

***Ans*.25%**

Quest.The weight of one hectare of surface soil (O-15 cm) in kilograms

***Ans*.2.24×10^6 kg/ha**

Quest.The arrangement of primary particles of soil

***Ans*.Soil structure**

Quest.The relative proportion of sand, silt and clay is termed as

***Ans*.Soil texture**

Quest.The best agricultural soil structure is

***Ans*.Crumby/Spheroidal**

Quest.Soil structure proving less porosity in soil

***Ans*.Platy**

Quest.The best agricultural texture is

***Ans*.Loam**

Quest.NBSS and LUP centre is located at

***Ans*.Nagpur**

Quest.Commonly followed soil particle classified in India is

***Ans*.International Society of Soil Science (ISSS)**

Quest.According to IISS, the particle size of course sand

***Ans*.2 - 0.2 mm**

Quest.The particle size of fine sand

***Ans*.0.2 -0.02 mm**

Quest.The particle size of silt

***Ans*.0.02 – 0.002**

Quest.The particle size of clay

***Ans*.< 0.002**

Quest.The maximum pore space are found in

***Ans*.Clay soil**

Quest.Soil colour is determined by

***Ans*.Munsell Colour chart**

Quest.It is the relative purity or strength of the spectral colour.

***Ans*.Chroma**

Quest.The capacity of the soil to change its shape under moist conditions

***Ans*.Soil Plasticity**

Quest.The attraction of solid surface for water molecules is called as

***Ans*.Adhesion**

Quest.The density of soil water is maximum at

***Ans*.4°C**

Quest.The surface tension of water is at 25°C

***Ans*.72.7 dyne/cm^2**

Quest.Solution whose strength or concentration is accurately known is termed as

***Ans*.Standard solution**

Quest.Water held between 1/3rd and 15 atm

***Ans*.Available water**

Quest.The process by which ions are taken into plant roots

***Ans*.Absorption**

Quest.The range of usefulness of tensiometer is between

***Ans*.0.0-0.8 bar**

Quest.Mechanical analysis of soil is estimated by

***Ans*.Stock's law**

Quest.The negative logarithm of H^+ ion concentration

***Ans*.Soil pH**

Quest.The pH value varies from

***Ans*.0 to 14.00**

Quest.The C : N ratio of the soil are fairly constant between

***Ans*.10 : 1 to 12 : 1**

Quest.The C/N ratio in the organic matter of furrow slice (upper 15 cm) of arable soils commonly ranges from

***Ans*.8:1 to 15:1**

Quest.The smell of soil after fresh shower is due to

***Ans*.Actinomycetes.**

Quest.The most dominant soil order of India

***Ans*.Entisol**

Quest.Black soil belongs the soil order

***Ans*.Vertisol**

Quest.The soil having more than 30% organic matter is placed in

***Ans*.Histosol**

Quest.The most important soil group of India

***Ans*.Alluvial Soils**

Quest.Newly formed alluvial soil is called

***Ans*.Khadar**

Quest.Which micro-nutrient is most deficient in Indo-Gangatic alluvium soils?

***Ans*.Zinc**

Quest.Black soil contains the clay mineral

***Ans*.Montmorillonite clay (2:1)**

Quest.The soil deficient in nitrogen content

***Ans*.Black soil**

Quest.Black soil shows black colour due to compound

***Ans*.Mn**

Quest.The vertical cracks are major problem in

***Ans*.Deep black soils**

Quest.Red soil is red coloured due to

***Ans*.Ferric oxides**

Quest.Phosphorus fixation is most probable in

***Ans*.Laterite Soil**

Quest.Infiltration rate is relatively higher in

***Ans*.Sandy soil**

Quest.Peaty soils are generally deficient of

***Ans*.Cu**

Quest.Marshy soils are generally deficient of

***Ans*.Zn**

Quest.The most deficient micronutrient in the Indian soil is

***Ans*.Zn**

Quest.The inherent capacity of the soil to supply nutrients to plants in adequate amount and in suitable proportions

***Ans*.Soil Fertility**

Quest.The capacity of the soil to produce plants under a specified programme of management and it is expressed in terms of yields

***Ans*.Soil Productivity**

Quest.The process of decomposition of organic matter is termed as

***Ans*.Humification**

Quest.Well decomposed FYM contains N, P and K content

***Ans*.0.5:0.2:0.5%**

Quest.A mass of rotted organic matter made from waste

***Ans*.Compost**

Quest.NPK content of farm compost

***Ans*.0.5:0.15:0.5%**

Quest.NPK content of town compost

***Ans*.1.4:1:1.4%**

Quest.The organic matter rich compost made by use of earthworms

***Ans*.Vermicompost**

Quest.A practice of turning un-decomposed fresh green plant tissue into the soil to improve fertility status and physical structure of the soil.

***Ans*.Green Manuring**

Quest.Green manure crops are turned in the field at the stage of

***Ans*.Flowering**

Quest.Green manure crops contributes nitrogen ranging from

***Ans*.50-175 kg/ha**

Quest.The most widely used green manure crop

***Ans*.Sunhemp (*Crotalaria juncea*)**

Quest.The green manure crop having both stem and root nodulation

Ans*.*Sesbania rostrata

Quest.Green leaf manuring crops

Ans*.Karanj and *Ipomea

Quest.NPK content of poultry manure

***Ans*.3.023:2.63:1.4%**

Quest.The crop oilcake, which has highest nitrification rate

***Ans*.Groundnut**

Quest.Groundnut cake contains NPK

***Ans*.7:1.5:1.3%**

Quest.Fertilizer which contains only one primary or major nutrient, *e.g*. Urea.

***Ans*.Straight fertilizers**

Quest.Those fertilizers having all the three major nutrients *viz*., N, P and K.

***Ans*.Complete fertilizers**

Quest.Fertilizers contain more than 25% of primary nutrients, *e.g*. Urea (46%), DAP (18% N and 46% P_2O_5).

***Ans*.High analysis fertilizers**

Quest.The relative percentage of N_2, P_2O_5 and K_2O" in a fertilizer

***Ans*.Fertilizer ratio**

Quest.The fertilizer which destroys soil aggregates

***Ans*.Sodium nitrate**

Quest.Oldest N fertilizer, best for top dressing in rice

***Ans*.Ammonium sulphate (20.6% N and 24% S)**

Quest.Most concentrated nitrogenous fertilizer

***Ans*.Anhydrous ammonia (81% N)**

Quest.Explosive fertilizer is

***Ans*.Ammoniun nitrate (33% N)**

Quest.Neutral fertilizer, also called Kishan khad

***Ans*.Calcium Ammonium Nitrate (26% N)**

Quest.Cheapest N fertilizer, suitable for foliar spray

***Ans*.Urea (46% N)**

Quest.Amid form of N fertilizer

***Ans*.Urea**

Quest.Which one is considered as organic fertilizer?

***Ans*.Urea**

Quest.Water soluble phosphatic fertilizers

***Ans*.SSP, DSP, TSP and DAP**

Quest.Citric acid soluble phosphatic fertilizers

***Ans*.DCP, Basic slag and Bone meal**

Quest.Oldest commercially available fertilizer

***Ans*.SSP (16-18% P_2O_5)**

Quest.The fertilizer which supplies 3 essential plant nutrients

***Ans*.SSP**

Quest.Least hygroscopic fertilizer

***Ans*.DAP (18% N and 46% P_2O_5)**

Quest.The phosphatic fertilizer suitable for acid soil

***Ans*.Bone meal (23-30% P_2O_5)**

Quest.Potassic fertilizer containing highest amount of K_2O

***Ans*.Muriate of potash/KCl (60% K_2O)**

Quest.Potassic fertilizer suitable for fertigation

***Ans*.Potassium Nitrate (44% K_2O)**

Quest.The medium range of available N in soil

***Ans*.280-560 kg/ha**

Quest.Maximum amount of fertilizer is applied in

***Ans*.Potato**

Quest.Fertilizer application in lowland paddy is done at

***Ans*.Reduced zone**

Quest.Kjeldahl method is used to determine

***Ans*.Total N of soil**

Quest.The maximum phosphorus availability in most of the soils is in the pH range

***Ans*.6.0 to 6.5**

Quest.The method used to determine available phosphorus from soil is

***Ans*.Olsen's method**

Quest.Maximum concentration of urea for foliar spray

***Ans*.6%**

Quest.Solution of fertilizer specially applied at initial growth of plants in pulses and vegetable crops

***Ans*.Starter solution**

Quest.The application of fertilizer along with irrigation water

***Ans*.Fertigation**

Quest.Which nutrients can be applied by fertigation

***Ans*.Nitrogen and sulphur**

Quest.The law of diminishing return was proposed by

***Ans*.Mitscherlich**

Quest.Lowland applied nitrification inhibitors
***Ans*.Oxamide (31% N) and Thiourea (36.8% N)**

Quest.Slowly released N fertilizers
***Ans*.Scoated urea, Neem coated urea, Urea super granule**

Quest.Symbiotic N_2 fixing bacteria in leguminous crop.
Ans*.*Rhizobium

Quest.Asymbiotic N_2 fixing bacteria
***Ans*.Azotobactor and Azospirillum**

Quest.Rhizobium fixes atmospheric nitrogen/ha to the soil
***Ans*.50-100 kg**

Quest.*Azatobactor* can fixes atmospheric nitrogen/ha to the soil.
***Ans*.20-30 kg**

Quest.The essential element required by the N fixing bacterium *Rhizobium*
***Ans*.Mo**

Quest.Conversion of NH_4 to NO_2 in soil is brought out by
***Ans*.Nitrosomonas**

Quest.Conversion of soil nitrate into gaseous nitrogen is
***Ans*.Denitrification**

Quest.VAM belongs to the group of
***Ans*.Fungi**

Quest.*Rhizobium japonicum* culture is applied for crops
***Ans*.Soybean and Groundnut**

Quest.*Rhizobium leguminosarum* is applied for
***Ans*.Pea, Lathyrus and Lentil**

Quest.*Rhizobium trifoli* is applied for
***Ans*.Berseem**

Quest.In waterlogged rice field, atmospheric nitrogen can be fixed to the soil by
***Ans*.BGA**

Quest.The phosphate solubilizer species of micro organisms is
Ans*.*Pseudomonas

Quest.Mychoryza increase availability of
***Ans*.Phosphorus**

Quest.Bio-super is made up of
***Ans*.Rock phosphate + Sulpher + Sulphur oxidizing bacteria**

Quest.Zinc solubilizing bacterial biofertilizer is
***Ans*.Azozink**

Quest.Total no. of essential nutrients for plants
***Ans*.17**

Quest.Total no. of functional nutrients
***Ans*.21 (Essential elements + Co, V, Si, Na)**

Quest.Beneficial elements are
***Ans*.Ru, Sr, Ni, Cr and As**

Quest.N, P, K, Ca, Mg and S are
***Ans*.Macro nutrients**

Quest.N, P and K are
***Ans*.Primary nutrients**

Quest.Ca, Mg and S are
***Ans*.Secondary nutrients**

Quest.Essentiality of N was established by
***Ans*.De Saussure**

Quest.Concept *"*Essentiality of elements*"* was proposed in 1939 by
***Ans*.Arnon and Stout**

Quest.Arnon and Stout discovered the essentiality of
***Ans*.Mo**

Quest.Nutrient uptake both charges form
***Ans*.N (NH_4^+ and NO_3^-)**

Quest.Principle uptake form of phosphorus by plants

***Ans*.$\mathbf{H_2PO_4^-}$**

Quest.Immobile element in soil is
***Ans*.Phosphorus**

Quest.Immobile element in plant is
***Ans*.Calcium**

Quest.Plant takes the nutrient in the form of
***Ans*.Ions**

Quest.The nutrient required for quality maintenance in potato
***Ans*.Potassium**

Quest.Nutrient, which maximum uptake by the plants
***Ans*.K+**

Quest.Nutrient essential for oilseed crops
***Ans*.S**

Quest.Structural component of Vit B_{12}
***Ans*.Cu**

Quest.Deficiency symptoms of N, P, K, Mg and Mo appear in
***Ans*.Older leaves**

Quest.New leaves show deficiency symptoms of
***Ans*.Fe, Mn, Cu, S**

Quest.Old and new leaves show deficiency symptoms of
***Ans*.Zn**

Quest.Deficiency symptoms of Ca and B appear in
***Ans*.Terminal buds**

Quest.Cereal crops show 'V' shaped pale yellowing at lower leaf tips due to deficiency of
***Ans*.N**

Quest.Deficiency appears as short internodes in plant.
***Ans*.N**

Quest.Purple coloration appeared in leaves due to
***Ans*.P deficiency**

Quest.Scorching and burning on margins of bottom leaves and irregular fruit development of plant are most common symptoms of

***Ans*.K deficiency**

Quest.Failure of terminal bud and root tips is the principle symptom of

***Ans*.Ca deficiency**

Quest.Interveinal chlorosis occurs due to

***Ans*.Mg and Fe deficiency**

Quest.Downward cupping of leaves in Tobacco and Tea shows

***Ans*.S deficiency**

Quest.Whip like structure appeared in terminal bud

***Ans*.B deficiency**

Quest.Burning quality of Tobacco decreased due to

***Ans*.Chloride**

Quest.Dia back and Little leaf disease in Citrus shows

***Ans*.Cu deficiency**

Quest.Mn deficiency shows

***Ans*.Interveinal yellowing of younger leaves**

Quest.Translucent spots of irregular shape between veins shows

***Ans*.Mo deficiency**

Quest.Upper leaves will show chlorosis on midrib, veins green and dead spots occur in all parts of leaf (veins, tips and margins) show

***Ans*.Zn deficiency**

Quest.Zn toxicity is reduced by addition of

***Ans*.Superphosphate**

Quest.A situation in which a crop needs more of a given nutrient yet has shown no deficiency symptoms

***Ans*.Hidden Hunger**

Quest.Luxury consumed nutrient by plants *i.e*. maize

***Ans*.K**

Quest.Excess of N, P and K causes deficiency of

***Ans*.Cu**

Quest.Excess of Ca causes deficiency of

***Ans*.P**

Quest.Deficiency of N indicated by plant

***Ans*.Cauliflower**

Quest.Deficiency of Bo indicated by plant

***Ans*.Sugarbeet**

Quest.The soil, which have <4.0 pH is

***Ans*.Cat soil**

Quest.The residual effect of urea on soil reaction is

***Ans*.Acidic**

Quest.Soil pH > 8.5 indicates soil is

***Ans*.Alkaline**

Quest.Saline soil is also called as

***Ans*.Solan chalk and White alkali**

Quest.Alkaline soil is also called as

***Ans*.Solanetz and Black alkali**

Quest.The saline – alkali soil is also known as

***Ans*.Usar**

Quest.Lime ($CaCO_3$) is added to neutralize

***Ans*.Acid soils**

Quest.Gypsum ($CaSO_4.2H_2O$) is used for the reclamation of

***Ans*.Sodic/Alkaline soils**

Quest.Pyrite (FeS_2) is used to reclaim

***Ans*.Saline soils**

Quest.Rock phosphate is applied in

***Ans*.Acid soil**

Quest.Gypsum contains

***Ans*.29.2% Ca and 18.6% S**

Quest.Method used for the determination of lime requirement of an acid soil is

***Ans*.Shoemaker's method**

Quest.The crops prefer acidic soil
***Ans*.Rice, tea and potato**

Quest.Highly salt tolerant crops
***Ans*.Barley and Sugarbeet**

Quest.Which fertilizer is most beneficial for alkali soils?
***Ans*.Ammonium sulphate**

Quest.Which of the plant species can be suggested on saline soil?
Ans*.*Haloxylon salicornium

(II) Biochemistry

Quest.The word '*Biochemistry*' is a
***Ans*.Greek word**

Quest.Father of Agricultural biochemistry
***Ans*.Justus von Liebig**

Quest.First used the term 'biochemistry'
***Ans*.Neuberg (1903)**

Quest.The most abundant biomolecules on earth
***Ans*.Carbohydrates**

Quest.The formulae of monosaccharide
***Ans*.$C_6H_{12}O_6$**

Quest.Monosaccharide contains
***Ans*.Glucose, Fructose, Galactose and Mannose**

Quest.Oligosaccharides contains
***Ans*.Sucrose, Maltose, Cellobiose, Lactose and Stachyose**

Quest.Monosaccharides possess reducing property due to the presence of
***Ans*.Free aldehyde or keto group**

Quest.Glucose is also known as
***Ans*.Dextrose**

Quest.Glucose is

***Ans*.Corn sugar**

Quest.Biologically active form of glucose
***Ans*.D-form**

Quest.Fructose is
***Ans*.Fruit sugar**

Quest.Sweetest sugar among all
***Ans*.Fructose**

Quest.Monosaccharides that are used as energy source
***Ans*.Glucose and fructose**

Quest.Disaccharides contain
***Ans*.Sucrose, Maltose, Lactose and Cellobiose**

Quest.Oligosaccharides that is used in preservation of foods
***Ans*.Sucrose**

Quest.Trisaccharides contain
***Ans*.Raffinose**

Quest.Tetrasacharides contain
***Ans*.Stachyose**

Quest.Non reducing type sugar is
***Ans*.Sucrose**

Quest.Reducing type sugars are
***Ans*.Maltose and Cellobiose**

Quest.Glucose + Galactose consisting of
***Ans*.Lactose**

Quest.Sugar presents in milk
***Ans*.Lactose**

Quest.Glycogen present in
***Ans*.Animal cell**

Quest.Polymer of glucose
***Ans*.Cellulose**

Quest.Man can not digest cellulose due to the absence of
***Ans*.Cellulose**

Quest.Total no. of essential amino acids are
***Ans*.10**

Quest.The term 'Protein' was coined by
***Ans*.Moulder (1840)**

Quest.The polymers of amino acid
***Ans*.Proteins and enzymes**

Quest.Protein is discovered by
***Ans*.Berzeus**

Quest.Protein that contains only amino acid
***Ans*.Simple protein**

Quest.Regulatory proteins are
***Ans*.Insulin**

Quest.Transport proteins are
***Ans*.Haemoglobin and Myoglobin**

Quest.Structural proteins are
***Ans*.Collagen and Elastin**

Quest.The most abundant protein present in the world
***Ans*.Rubisco**

Quest.Muscle protein is known as
***Ans*.Collagen**

Quest.Silk protein is known as
***Ans*.Fibrolin**

Quest.Soybean protein is known as
***Ans*.Glycinin**

Quest.Wheat protein is known as
***Ans*.Gluten**

Quest.Rice protein is known as
***Ans*.Oryzein**

Quest.Maize protein is known as
***Ans*.Zein**

Quest.Nucleic acids were first discovered by
***Ans*.Friedrich Meischer (1868)**

Quest.DNA denotes
***Ans*.Deoxyribose nucleic acid**

Quest.Who discovered the base composition of DNA?
***Ans*.Chargaff (1953)**

Quest.Deoxyribose sugar + Nitrogenous base is
***Ans*.Nucleoside**

Quest.Deoxyribose sugar + Nitrogenous base + phosphate group (PO_2)
***Ans*.Nucleotide**

Quest.Single stranded DNA
***Ans*.Bacteriophage**

Quest.The form of DNA present in living organisms
***Ans*.B-form**

Quest.RNA that transfer amino acids from cytoplasm to ribosome
***Ans*.m-RNA**

Quest.Most abundant form of RNA that constitutes 80% parts of cellular RNA
***Ans*.t-RNA**

Quest.Which nucleic acid controls all cellular activities?
***Ans*.DNA**

Quest.Which nucleic acid is necessary for protein biosynthesis?
***Ans*.RNA**

Quest.Double helix model of DNA was proposed by
***Ans*.Watson and Crick (1953)**

Quest.The term 'Enzyme' was given by
***Ans*.W. Kuhne (1867)**

Quest.Enzyme is discovered by
***Ans*.Buckner (1897)**

Quest.1st enzyme which was discovered by yeast
***Ans*.Zymase**

Quest.The enzyme involved in biological nitrogen fixation
***Ans*.Nitrogenase**

Quest.Apoenzyme + Prosthetic group
***Ans*.Holoenzyme**

Quest.Enzyme without Prosthetic group
***Ans*.Apo enzyme**

Quest.Enzymes which exist in multiple forms within single specing of an organism
***Ans*.Isoenzyme**

Quest.The non protein component of the enzyme
***Ans*.Coenzymes**

Quest.Vitamin was discovered by
***Ans*.Funk (1911)**

Quest.Total well defined vitamins are
***Ans*.13**

Quest.Vit. B complex (B_1, B_2, B_{12}), B_3, B_6 and Vit. C are
***Ans*.Water soluble vitamins**

Quest.Vit. A, D, E and K are
***Ans*.Fat soluble vitamins**

Quest.Vitamin A is also known as
***Ans*.Retinal**

Quest.Vitamin A deficiency causes
***Ans*.Night blindness**

Quest.Vitamin B_1 is also known as
***Ans*.Thiamin**

Quest.Deficiency of vitamin B_1 causes
***Ans*.Beriberi**

Quest.Vitamin B_2 is also known as

***Ans*.Riboflavin**

Quest.Deficiency of vitamin B_2 causes

***Ans*.Skin cracking**

Quest.Vitamin B_3 is also known as

***Ans*.Pantathenic acid**

Quest.Vitamin B_3 deficiency causes

***Ans*.Whiteness of hairs**

Quest.Vitamin B_5 is also known as

***Ans*.Niacin**

Quest.Deficiency of vitamin B_5 causes

***Ans*.Pellagra**

Quest.Vitamin B_7 is also known as

***Ans*.Biotin**

Quest.Deficiency of vitamin B_7 causes

***Ans*.Paralysis**

Quest.Vitamin B_{12} is also known as

***Ans*.Cynocobalamin**

Quest.Disease caused due to deficiency of vitamin B_{12}

***Ans*.Pernicious anaemia**

Quest.Vitamin C is also also known as

***Ans*.Ascorbic acid l**

Quest.Vitamin C deficiency causes

***Ans*.Scurvy**

Quest.Vitamin D is also known as

***Ans*.Calciferol**

Quest.Vitamin D deficiency causes

***Ans*.Reckets**

Quest.The vitamin also called Sunshine vitamin

***Ans*.Vit. D**

Quest.Vitamin E is also known as
***Ans*.Tocopherol**

Quest.Vitamin K is also known as
***Ans*.Phyloquinon**

Quest.Disease caused due to deficiency of vitamin E
***Ans*.Sterility**

Quest.Disease caused due to deficiency of vitamin K
***Ans*.Non-coagulation of blood**

Quest.Cereals are deficient in amino acid
***Ans*.Lysine**

Quest.Pulses are deficient in amino acid
***Ans*.Methionine**

Quest.Which vitamin contains metal ion?
***Ans*.Vitamin B_{12}**

Quest.The reaction of oil/fat with NaOH/KOH as
***Ans*.Saponification**

Quest.The number of grams of iodine absorbed by 100 g fat or oil
***Ans*.Iodine value/number**

Quest.Value, used to assess the degree of spoilage (rancidity) of a fat or oil
***Ans*.Acid Number/Value**

Quest.A partial substitute for petroleum diesel
***Ans*.Biodiesel**

Quest.Golden rice is rich in
***Ans*.β-carotene**

Chapter 5

Genetics, Plant Breeding, Seed Science and Plant Biotechnology

(I) Genetics

Quest.The study of the way in which genes operate and the way in which they are transmitted (heredity) from parents to offsprings

***Ans*.Genetics**

Quest.Who coined the term genetics?

***Ans*.W. Bateson (1905)**

Quest.The 'father of modern genetics'

***Ans*.Gregor John Mendal**

Quest.Which is known as functional unit of life?

***Ans*.Cell**

Quest.Who discovered the cell?

***Ans*.R. Hooke (1665)**

Quest.Cell theory was given by

***Ans*.M.J. Schleiden and T.Schwann (1939)**

Quest.Which is known as physical basis of life?

***Ans*.Protoplasm**

Quest.How many kind of cells are found in living world?

***Ans*.2 (Eukaryote and Prokaryote)**

Quest.The plant cell is a type of cell

***Ans*.Eukaryote**

Quest.Which cell organelle is found in both prokaryotic and eukaryotic cells?

***Ans*.Ribosome**

Quest.The cells without cell wall
***Ans*.Protoplasts**

Quest.Controlling centre of cell
***Ans*.Nucleus**

Quest.Nucleus was discovered by
***Ans*.Robert Brown (1983)**

Quest.Which cell organelle is called as "Power house of the cell"?
***Ans*.Mitochondria**

Quest.Who discovered mitochondria?
***Ans*.Hollicker**

Quest.Who coined the term mitochondria?
***Ans*.Benda (1897)**

Quest.The term 'Endoplasmic reticulum' coined by
***Ans*.Porter (1948)**

Quest.Which organelle of cell is known as engine of cell?
***Ans*.Ribosome**

Quest.Rough ER is associated with
***Ans*.Ribosome**

Quest.The main site of protein synthesis
***Ans*.Ribosome**

Quest.70s type ribosome is found in
***Ans*.Mitochondria**

Quest.Name the prokaryotic organism which does not contain mitochondria?
***Ans*.Bacteria**

Quest.The term Lysosome was 1st used by
***Ans*.Dave (1955)**

Quest.Which organelle of cell is known as suicidal bag of cell?
***Ans*.Lysosome**

Quest.The main function of Golgi body is
***Ans*.Packing and transport of food materials**

Quest.Which organelle of cell is known as dustbin of cell?
***Ans*.Vacuoles**

Quest.Which organelle of cell is non living?
***Ans*.Cell wall**

Quest.The material contained in vacuoles
***Ans*.Cell sap**

Quest.A self replicating, extra-chromosomal genetic material found in plant cell
***Ans*.Plastids**

Quest.Plastids was introduced by
***Ans*.Lederberg**

Quest.Which organelles of cell are found only in plants?
***Ans*.Plastids, Spherosome**

Quest.Which plastid of cell is responsible for photosynthesis in plants?
***Ans*.Chloroplast**

Quest.Which plastid of cell is responsible for colour in plants?
***Ans*.Chromoplast**

Quest.Which plastid of cell is responsible for storage of starch and fat in plants?
***Ans*.Leucoplast**

Quest.Name the leucoplast which functions as the storage of oil?
***Ans*.Lipoplast**

Quest.Thread like bodies that carry gene
***Ans*.Chromosome**

Quest.Who firstly discovered chromosome?
***Ans*.Strasburger (1875)**

Quest.Who coined the term chromosome?
***Ans*.Waldeyer (1888)**

Quest.Who gave the chromosomal theory of Inheritance?
***Ans*.Sutton and Boveri**

Quest.What is the fundamental unit of chromosome?
***Ans*.Chromatin**

Quest.Which part of the chromosome is known as primary constriction?
***Ans*.Centromere**

Quest.The major genetic constituent of chromosome
***Ans*.DNA**

Quest.How many daughter cells are formed in one cycle of mitosis?
***Ans*.Two**

Quest.'Mitosis' term was coined by
***Ans*.Walter Flemming (1882)**

Quest.In which cells does mitosis occur?
***Ans*.Somatic cells**

Quest.Longest phase of mitosis
***Ans*.Prophase**

Quest.Shortest phase of mitosis
***Ans*.Anaphase**

Quest.The middle stage in which chromosomes are arranged in equatorial plate
***Ans*.Metaphase**

Quest.The stage of DNA synthesis in mitosis
***Ans*.Interphase**

Quest.How many daughter cells are formed in one cycle of meiosis?
***Ans*.Four**

Quest.'Meiosis' term was 1st given by
***Ans*.J.B. Farmer (1905)**

Quest.In which cells does the meiosis occur?
***Ans*.Reproductive cells**

Quest.Crossing over and recombination occur during
***Ans*.Meiosis division**

Quest.In which stage, crossing over takes place?
***Ans*.Pachytene stage**

Quest.*Chiasmata* occurs at
***Ans*.Diplotene stage**

Quest.Spindle formation takes place during

***Ans*.Metaphase 1**

Quest.The process of separation of chromatids called

***Ans*.Disjunction**

Quest.Mendal was born on

***Ans*.July 22, 1822**

Quest.Mendal works on the 7 contrasting characters of crop

***Ans*.Garden pea**

Quest.Rediscovery of Mendel's work was done by

***Ans*.Hugo de Vries, Erich Correns and Erich Tschermak (1900)**

Quest.The accepted theory of Mendal was

***Ans*.Law of Segregation**

Quest.Mendelian population is also known as

***Ans*.Random mating population**

Quest.A tall pea plant (DD) and a tall pea plant (Dd) have what in common?

***Ans*.Phenotype**

Quest.The double helix model of DNA proposed by

***Ans*.Watson and Crick (1953)**

Quest.The process of using information (genetic material) from DNA to construct m-RNA

***Ans*.Transcription**

Quest.Transfer of genetic material from m-RNA to Protein

***Ans*.Translation**

Quest.An expression of one gene depends on the presence or absence of another gene in an individual.

***Ans*.Epistasis/gene interaction**

Quest.Phenotypic ratio of Monocross hybrid

***Ans*.3:1**

Quest.Phenotypic ratio of Dicross hybrid

***Ans*.9:3:3:1**

Quest.Triplet sequence found in mRNA which codes for single amino acid

***Ans*.Codon**

Quest.Triplet sequence in t-RNA

***Ans*.Anticodon**

Quest.5 inbred lines will lead to ……. no. of single crosses.

***Ans*.10**

Quest.The term "Genomics" was coined by

***Ans*.Thomas Roderick (1986)**

Quest.Who developed the concept of pangenesis?

***Ans*.Darwin**

Quest.Theory of evolution through natural selection was given by

***Ans*.C.Darwin and A.R.Wallace (1858)**

Quest.Who developed the theory of acquired character?

***Ans*.Lamarck**

Quest.Chromosomal theory of heredity was proposed by

***Ans*.W. Sutton (1902)**

Quest.Genes for sex-linked traits are located on

***Ans*."Y" chromosome**

Quest.How many pairs of homologous chromosomes do humans have?

***Ans*.23**

(II) Plant Breeding

Quest.The science, which helps in changing the genetic make-up of plants in such a way that they give rise to the maximum economic product for human use.

***Ans*.Plant Breeding**

Quest.Basic chromosome/Genomic number is

***Ans*.X**

Quest.Genetic chromosome number is

***Ans*.n**

Quest.Haploid no. of *Triticum aestivum*

***Ans*.n = 21**

Quest.Heteroploid in which one or few chromosomes or missing from 2n
***Ans*.Aneuploid**

Quest.Monosomic hypoploid
***Ans*.2n -1**

Quest.Double monosomic
***Ans*.2n-1-1**

Quest.Nullisomic
***Ans*.2n-2**

Quest.Hyperploid have one extra chromosome
***Ans*.Trisonic (2n+1)**

Quest.Double trisomic
***Ans*.2n+1+1**

Quest.Tetrasomic
***Ans*.2n+2**

Quest.Double Tetrasomic
***Ans*.2n+2**

Quest.Polyploidy level in embryo and endosperm of seed
***Ans*.3n**

Quest.Polyploidy level of testa and pollen mother cell of seed
***Ans*.2n**

Quest.Polyploidy level in endosperm of *Triticum aestivum*
***Ans*.63**

Quest.Triploids are useful for
***Ans*.Seedless fruits**

Quest.Wheat, cotton, tobacco and oat are
***Ans*.Allopolyploids**

Quest.The term "primary centres of origin' was proposed by
***Ans*.Vevilov**

Quest.Vegetative embryos develops without fertilization
***Ans*.Apomixis**

Quest.Development of fruit without fertilization

***Ans*.Parthenocarpy**

Quest.Embryo originates from unfertilized egg

***Ans*.Parthenogenesis**

Quest.Progeny of a single cross fertilized heterozygous individual

***Ans*.Inbred**

Quest.Male sterile line

***Ans*.A-line**

Quest.Progeny of a single plant, obtained by asexual reproduction

***Ans*.Clone**

Quest.A single gene affecting more than one character/governing multiple traits

***Ans*.Pleiotropy**

Quest.Repeated crossing of hybrid progeny back to one of its parents

***Ans*.Back Cross**

Quest.F_1 x homozygous recessive parent

***Ans*.Test Cross**

Quest.Intra-specific hybridization is a crossed between

***Ans*.Two plant of different varieties**

Quest.When pollen grains from an another falls on receptive stigma of the same flowers

***Ans*.Self pollination**

Quest.Self pollinated species are also known as

***Ans*.Autogamous species**

Quest.When pollen grains from flower of one plant transferred to receptive stigmas of flowers of another plant

***Ans*.Cross pollination/Allogamy**

Quest.Rice, Wheat, Buckwheat and Oat are

***Ans*.Self pollinated crops**

Quest.Maize, Pearl millet, Black mustard and Sunflower are

***Ans*.Cross pollinated crops**

Quest.Often Cross pollination crops are

***Ans*.Safflower, Arhar, Cotton and Sorghum**

Quest.Continuous inbreeding (Selfing) leads

***Ans*.Homozygosity**

Quest.Single seed descent method is a method of

***Ans*.Method of Self pollination**

Quest.Mass selection is always based on

***Ans*.Phenotype**

Quest.The oldest selection method of crop improvement

***Ans*.Mass selection**

Quest.Concept of pure line was given by

***Ans*.Johnson**

Quest.A progeny of single homozygous, self pollinated crops

***Ans*.Pure line**

Quest.A method of breeding for wheat

***Ans*.Pure line selection method**

Quest.Breeding refers to selection procedure in which the segregating population of self pollinated species is grown without selections

***Ans*.Bulk**

Quest.Most commonly used method for selection from segregation generations of crosses in self pollinated crops

***Ans*.Pedigree method**

Quest.A method which is not for handling segregating populations

***Ans*.Bulk method**

Quest.A method for improving specific traits *i.e*. plant height, disease resistancy

***Ans*.Pedigree method**

Quest.Multiline breeding is exploited widely in the crop

***Ans*.Wheat**

Quest.A method does not provide opportunity to practice selection for superior plant till F_5 generations

***Ans*.Single seed descent method**

Quest.Commonly used method for transfer of disease resistancy from one variety to another variety.

***Ans*.Back cross method**

Quest.Clonal selection mostly used in the crop

***Ans*.Ginger**

Quest.The parent which is used only once in back cross breeding method

***Ans*.Donor**

Quest.Bulk method was 1st used by

***Ans*.Nilson Ehle (1908)**

Quest.Progeny selection is also known as

***Ans*.Ear to row method of selection**

Quest.Methods used for handling the segregating generation

***Ans*.Pedigree, Bulk and Single seed descent method**

Quest.A method of breeding is appropriate for improvement of good variety.

***Ans*.Back cross method**

Quest.A method in which desirable scattered favourable genes are selected in different plants in each generation

***Ans*.Recurrent selection**

Quest.A method of breeding is not appropriate for cross pollinated crops

***Ans*.Pure line selection**

Quest.Cross between two genetically different homozygote plants is

***Ans*.Hybrid or F_1**

Quest.A x B = F_1

***Ans*.Single cross hybrid**

Quest.(A x B) x (C x D)

***Ans*.Double cross hybrid**

Quest.Selected variety/line/clone x open pollinated variety

***Ans*.Top cross**

Quest.A single cross (A x B) x OP variety

***Ans*.Double top cross**

Quest.A variety produced by crossing in all combinations a number of lines that combine well each other

***Ans*.Synthetic variety**

Quest.Synthetic variety is maintained by

***Ans*.Self pollination**

Quest.A variety produced by mixing the seeds of several phenotypically outstanding lines (varieties)

***Ans*.Composite variety**

Quest.Composite variety is developed by

***Ans*.Cross pollination**

Quest.Hybrid variety was first exploited in

***Ans*.Maize**

Quest.A mechanism of self pollination in which flowers open but only after pollination has take place

***Ans*.Chasmogamy**

Quest.Chasmogamy was found in

***Ans*.Rice Moong and Oat**

Quest.Pollination and fertilization occurs before opening of flower is termed as

***Ans*.Cleistogamy**

Quest.Cleistogamy was found in

***Ans*.Wheat and Barley**

Quest.When male and female flowers of a hermaphrodite flower matures at different time

***Ans*.Dichogamy**

Quest.When female matures before male

***Ans*.Protogyny**

Quest.Pollen from a flower of one plant falls on the stigmas of other flowers of the same plant.

***Ans*.Geitonogamy**

Quest.When male and female flowers occur on the same plant

***Ans*.Monocius**

Quest.When male and female flowers occur on different plants

***Ans*.Diocious**

Quest.Maize is a

***Ans*.Monocius plant**

Quest.Papaya is a

***Ans*.Diocious plant**

Quest.1st Intergeneric hybrid was

***Ans*.*Raphino brassica* (Radish x Cabbage)**

Quest.Hybrid variety of rice is developed by using

***Ans*.GMS and CGMS line**

Quest.Double cross hybrids of maize are developed by

***Ans*.CGMS line**

Quest.Exploitation of hybrids in tobacco was carried out by

***Ans*.Koelreuter**

Quest.Superiority of F_1 hybrids over both of its parents is termed as

***Ans*.Heterosis**

Quest.Term 'Heterosis' was given by

***Ans*.Shull**

Quest.The average value for a character of the two parents of the concerned hybrid.

***Ans*.Mid parent/Average Heterosis**

Quest.When heterosis estimated over the superior or better parent

***Ans*.Heterobeltiosis**

Quest.When superiority of the hybrid to the standard commercial check variety

***Ans*.Economic heterosis**

Quest.Exchange of chromatin between non-sister chromatids of homologous chromosomes is known as

***Ans*.Crossing over**

Quest.Loss or decrease in vigour and fitness as a result of inbreeding.

***Ans*.Inbreeding Depression**

Quest.Highly ID is found in

***Ans*.Alfalfa and Carrot**

Quest.Sudden heritable change in any characteristics of an organism

***Ans*.Mutation**

Quest.X-rays as mutagen was 1st used by

***Ans*.Mullar**

Quest.The unit in which mutation occurs

***Ans*.Muton**

Quest.Chemical or physical agent which greatly enhances the frequency of mutation.

***Ans*.Mutagen**

Quest.A man made cereal

Ans*.*Triticale

Quest.The cultivated banana is a

***Ans*.Autotriploid**

Quest.Removal of the entire tassel (male inflorescence of maize) from the plant before pollen to initiate cross hybridization

***Ans*.Detasseling**

Quest.A condition in which either pollen is absent or non functional in flowering plants.

***Ans*.Male Sterility**

Quest.When pollen sterility is caused by cytoplasmic genes

***Ans*.Cytoplasmic Male Sterility (CMS)**

Quest.An important male sterility source of sorghum

***Ans*.Tift 60**

Quest.Ethrel is used as Gametocide for

***Ans*.Wheat, Rice and Sugarbeet**

Quest.Wheat is a

***Ans*.Allohexaploid**

Quest.Sugarcane, Cotton and Brassica are

***Ans*.Autopolyploids**

Quest.Potato is a

***Ans*.Autotetraploid**

Quest.*Brassica nigra* was evolved from

***Ans*.B. compestris x B. oleracia**

Quest.*Brassica juncia* was evolved from

***Ans*.B. compestris x B. nigra**

Quest.Characters which are governed/controlled by several genes each having small individual effect.

***Ans*.Polygenic Traits**

Quest.Natural genetic engineer

Ans*.*Agrobacterium

(III) Seed Science

Quest.A fertilized ovule consisting of intact embryo, stored food and seed-coat which is viable and has got the capacity to germinate

***Ans*.Seed**

Quest.The seed of a crop variety produced by the breeder which is small in quantity is said to be

***Ans*.Nucleus seed**

Quest.Source of breeder seed

***Ans*.Nucleus seed**

Quest.Progeny of breeder seed

***Ans*.Foundation seed**

Quest.Certified tag colour of breeder seed

***Ans*.Golden brown**

Quest.The seeds produced by NSC

***Ans*.Foundation seed**

Quest.Certified tag colour of foundation seed

***Ans*.White tag**

Quest.Progeny of foundation or registered seed

***Ans*.Certified seed**

Quest.Certified seed is generally produced by

***Ans*.SSC**

Quest.Certified seed tag having

***Ans*.Azure blue colour**

Quest.The emergence and development of seedlings from the seed-embryo under favourable condition

***Ans*.Germination**

Quest.Hypogeal germination is found in

***Ans*.Cereals, Gram, Arhar, Lentil**

Quest.Epigeal germination is found in

***Ans*.Mustard, Sunflower, Castor, Onion.**

Quest.Varietal purity is checked by

***Ans*.Grow out test (GOT)**

Quest.The impurity percentage of seed

***Ans*.Dockage**

Quest.Formulae of real value of seed

***Ans*.Real value of seed** = $\frac{\text{Purity \%} \times \text{Germinatio n \%}}{100}$

Quest.The capacity of the seed to germinate

***Ans*.Seed vigour/viability**

Quest.Seed viability is mostly tested by use of

***Ans*.2, 3, 5-triphenyl tetrazolium chloride**

Quest.Formulae of pure live seed

***Ans*.Pure Live Seed** = $\frac{\text{Purity \%} \times \text{Viability \%}}{100}$

Quest.The main aim to maintain isolation distance

***Ans*.To avoid contamination or cross pollination**

Quest.Isolation distance for self pollinated crops *i.e*. rice, wheat

***Ans*.3 m**

Quest.Isolation distance for certified maize seed

***Ans*.200 m**

Quest.Isolation distance for certified pigeonpea

***Ans*.50 m**

Quest.Isolation distance for certified sunflower

***Ans*.500 m**

Quest.Weight of 1000 seeds is known as

***Ans*.Test weight**

Quest.Weight of 100 seeds
***Ans*.Seed Index**

Quest.Seed testing refers to
***Ans*.Testing of Purity, Moisture and Germination of seeds**

Quest.The standard method of seed moisture estimation
***Ans*.Oven dry method**

Quest.The rice variety which has no seed dormancy
***Ans*.I.R.-50**

Quest.The dormancy due to hard seed coat or impermeable seed coats
***Ans*.Scarification**

Quest.The dormancy due to low temperature and moisture conditions
***Ans*.Stratification**

Quest.The PGR used to initiate seed germination
***Ans*.Gibberellic acid**

Quest.Seed dormancy of potato tubers is broken by treating tubers with
***Ans*.Thiourea 1%**

Quest.The main objective of field inspection is to examine
***Ans*.Disease incidence, Isolation distance and Off-types**

Quest.Seed processing is termed as
***Ans*.Grading**

Quest.National Seed Corporation (NSC) was registered in
***Ans*.1963**

Quest.Seed act was passed on
***Ans*.1966**

Quest.The Seed Rule was passed on
***Ans*.1968**

Quest.National Seed Project (NSP) was started on
***Ans*.1988**

(IV) Plant Biotechnology

Quest.Applied use of molecular biology and recombinant DNA Technology known as

***Ans*.Biotechnology**

Quest.The term 'Biotechnology' was coined by

***Ans*.Karl Ereky (1919)**

Quest.Multiplication of cell of large number of plants placed in appropriate environment conditions with required nutrients is known as

***Ans*.Plant tissue or *in vitro* culture**

Quest.The plant or plant part excised for the *in vitro* cultivation

***Ans*.Explant**

Quest.An exact genetic replica of a specific gene or an entire organism.

***Ans*.Clone**

Quest.General used nutrient medium in tissue culture

***Ans*.B-5 medium and MS medium**

Quest.A culture of isolated mature or immature embryos

***Ans*.Meristem culture**

Quest.Young embryo is removed from developing seeds and planted on a suitable nutrient medium *in vitro* is called as

***Ans*.Embryo culture**

Quest.Anther or pollen culture technique is used to obtained

***Ans*.Haploid plants**

Quest.Culture of an organ *in vitro*

***Ans*.Organ culture**

Quest.Capability of an isolated single cell to multiply and differentiate into multicellular organism

***Ans*.Totipotency**

Quest.A biochemical process or reaction taking place in a test tube (in lab)

Ans*.*In vitro

Quest.Alternate forms of a gene

***Ans*.Allele**

Quest.A method for transforming DNA especially useful of plant cells
***Ans*.Electroporation**

Quest.DNA was 1st synthesized by
***Ans*.A. Kornberg (1953)**

Quest.A DNA sequence that codes for a specific polypeptide
***Ans*.Cistron**

Quest.A library composed of complementary copies of cellular mRNA
***Ans*.cDNA**

Quest.The molecule which encodes genetic information
***Ans*.DNA**

Quest.The molecule which helps in decoding genetic information carried by DNA
***Ans*.RNA**

Quest.A process of formation of somatic embryos from callus
***Ans*.Embryogenesis**

Quest.Crossing of plants through fusion of somatic cell
***Ans*.Somatic hybridization**

Quest.A segment of DNA that codes for a specific characters
***Ans*.Gene**

Quest.A DNA element which has the ability to move from one chromosomal position to another
***Ans*.Jumping gene**

Quest.Father of genetic engineering
***Ans*.Paul Berg**

Quest.A bacterium used in genetic engineering
***Ans*.E-coli (*Agrobacterium rhizogenes*)**

Quest.Gene responsible for higher amount of lysine in maize
***Ans*.Opaque-2**

Quest.PCR denotes
***Ans*.Polymerase Chain Reactions**

Quest.RFLD denotes
***Ans*.Restriction fragement length polymorphism**

Quest.RAPD denotes

***Ans*.Random amplified polymorphic DNA**

Quest.A hybrid produced using nucleous of one parent cell and cytoplasm of both the cell

***Ans*.Cybrid**

Quest.Molecular scissors used in genetic engineering

***Ans*.Restriction endonuclease**

Quest.Map of genome showing relative positions of genes and or markers on chromosomes

***Ans*.Genetic map**

Quest.A single DNA molecule condensed into a compact structure *in vivo* by complexing with accessory histones or histone-like proteins.

***Ans*.Chromosome**

Quest.The process of synthesizing multiple copies of a particular DNA sequence

***Ans*.Gene cloning**

Quest.The process of producing a protein from its DNA- and mRNA-coding sequences.

***Ans*.Gene expression**

Quest.DNA amplification is done in the machine

***Ans*.Thermocycler**

Quest.Francis Crick's seminal concept that in nature genetic information generally flows from DNA to RNA to protein.

***Ans*.Central Dogma**

Quest.Transplanting a cell, tissue or organ from one nutrient medium to another.

***Ans*.Subculture**

Quest.The first biotech plant is

***Ans*.Tobacco**

Quest.*Bt* genes are introduced in cotton against the pest

***Ans*.Cotton Bollworm**

Quest.The vegetable crop under approval for Bt. technology

***Ans*.Brinjal**

Quest.Terminator technology is recently used in

***Ans*.Cotton**

Chapter 6

Plant Physiology

Quest.The science concerned with processes, functions, plant responses to external stimulus and growth and development of plant.

***Ans*.Plant Physiology**

Quest.Father of plant physiology

***Ans*.Stephan Hales**

Quest.The cause of most of the gaseous interchange in soil

***Ans*.Diffusion**

Quest.In diffusion, particle/molecules moves from region of

***Ans*.Higher to lower concentration**

Quest.The concept 'Osmosis' is given by

***Ans*.Abbe Nollel**

Quest.Plasma membrane is a type of

***Ans*.Semi-permeable membrane**

Quest.The diffusion of solvent particles into a living cell

***Ans*.Endosmosis**

Quest.Strong solution having higher concentration

***Ans*.Hypertonic solution**

Quest.Imbibition is coined by

***Ans*.Such**

Quest.The component of water potential which determine by the attraction between water and hydrating colloids.

***Ans*.Matric potential**

Quest.Shrinkage of protoplasm due to outward flow of water (exosmosis) in a concentrate solution.

***Ans*.Plasmolysis**

Quest.The Casparian strip is present in

***Ans*.Endosmosis**

Quest.The hydrostatic pressure generated within the cell against cell wall as a result of entry of water into it, due to osmosis.

***Ans*.Turgor pressure**

Quest.During Osmosis, movement of water takes place from

***Ans*.Lower to higher concentration of solution**

Quest.Water is absorption by plants mainly through

***Ans*.Root hairs**

Quest.First step in absorption of water is

***Ans*.Imbibition**

Quest.Absorbed of water against a concentration gradient by using energy released from respiration is called as

***Ans*.Active absorption**

Quest.Transpiration associated ion uptake is

***Ans*.Passive uptake process**

Quest.Nutrients absorbed by plants from soil solution are carried upward through the

***Ans*.Xylem**

Quest.Downward movement of food synthesized in leaves takes place through

***Ans*.Phloem**

Quest.The movement of nutrient ions and salts along with moving water

***Ans*.Mass flow**

Quest.Mass flow or pressure flow theory was given by

***Ans*.Godlewski (1884)**

Quest.Pulsation theory was given by

***Ans*.J.C. Bose (1923)**

Quest.The hydrostatic pressure developed due to the accumulation of water absorb by the root is called root pressure.

***Ans*.Root pressure**

Quest.Root pressure is measured by

***Ans*.Manometer**

Quest.Upward translocation of fluid in xylem takes place due to

***Ans*.Pull of transpiration stream**

Quest.The most accepted theory of water absorption

***Ans*.Transpiration pull theory**

Quest.Plant cell walls are

***Ans*.Permeable in nature**

Quest.Minerals are translocated in plants as

***Ans*.Both organic and inorganic compounds**

Quest.The plant meet their carbon requirement by absorbing

***Ans*.CO_2 for atmosphere**

Quest.The process by which plants convert light energy of photon (captured from sunrays) into chemical energy

***Ans*.Photosynthesis**

Quest.The oxidation reduction process is

***Ans*.Photosynthesis**

Quest.Photosynthesis active radiation (PAR) occurs at

***Ans*.400-700 nm**

Quest.Plant component responsible for photosynthesis is a pigment called

***Ans*.Chlorophyll**

Quest.Chlorophyll contains

***Ans*.Mg**

Quest.Pigment which are responsible for photosynthesis in higher plants

***Ans*.Chlorophyll a and b**

Quest.The colour of chlorophyll a

***Ans*.Blue green**

Quest.The colour of chlorophyll b

***Ans*.Yellow green**

Quest.Oxygen required for photosynthesis comes from

***Ans*.Water**

Quest.The product of photosynthesis which is used for growth and development of plants

***Ans*.Glucose**

Quest.Photosynthesis can be measured by measuring

***Ans*.O_2 given off and CO_2 uptake**

Quest.Chemicals which retard transpiration rate called

***Ans*.Anti-transparent**

Quest.Which organism/groups do not have photosynthesizing capability?

***Ans*.Fungi**

Quest.The first biological process that begins in a seed soon after in imbibes water

***Ans*.Respiration**

Quest.C_4/Light reaction/Hill reaction take place in

***Ans*.Grana of Chlorophyll**

Quest.C_3/Dark reaction/Calvin cycle take place in

***Ans*.Stroma of Chlorophyll**

Quest.Grana and Stroma are found in

***Ans*.Chloroplast**

Quest.C_3 cycle is also known as

***Ans*.Blackman reaction**

Quest.Final product of C_3 pathway is

***Ans*.3 PGA**

Quest.C_3 plants are

***Ans*.Rice, Wheat, Pea, Soybean etc**

Quest.The most important enzyme involved in photosynthetic CO_2 fixation in C_3 plants

***Ans*.Rubisco**

Quest.C_4 cycle is also known as

***Ans*.Hatch and slack pathway**

Quest.First product of C_4 pathway is

***Ans*.Oxalo acetic acid (OAA)**

Quest.C_4 plants are

***Ans*.Maize, Sorghum, Sugarcane, millets etc.**

Quest.The most important enzyme involved in photosynthetic CO_2 fixation in C_4 plants

***Ans*.PEP carboxylase**

Quest.C_4 plants have

***Ans*.Kranz type leaf**

Quest.CAM denotes

***Ans*.Crassulacean Acid Metabolism**

Quest.The example of CAM plants are

***Ans*.Pineapple and Opuntia**

Quest.The water use efficiency of C_4 is …….. than C_3 plants

***Ans*.High**

Quest.The photosynthetic rate of C_4 is …….. than C_3 plants

***Ans*.Low**

Quest.C_4 plants normally give more biological yield than C_3 plants because of

***Ans*.Less respiration**

Quest.One $NADH_2$ produces how many ATP molecules?

***Ans*.3**

Quest.Oxygen is required by the plants for

***Ans*.Respiration**

Quest.Glycolysis occurs in

***Ans*.Cytoplasm**

Quest.Final product of Glycolysis

***Ans*.Pyruvate**

Quest.Net gain ATP during glycolysis

***Ans*.2**

Quest.Kreb cycle and ETC occurs in

***Ans*.Mitochondria**

Quest.Net gain ATP synthesis from one molecule of glucose in respiration

***Ans*.36 ATP**

Quest.One molecules of ATP yields

***Ans*.7.6 Kcal energy**

Quest.An energy spending process

***Ans*.Photorespiration**

Quest.Photorespiration occurs in

***Ans*.Night**

Quest.Photorespiration occurs only in

***Ans*.Chlorophyllous cells**

Quest.The loss of water in the form of vapour from the living aerial parts of the plant is known as

***Ans*.Transpiration**

Quest.The principle organ of transpiration is

***Ans*.Stomata of leaf (90% transpiration)**

Quest.The water is lost during transpiration in the form of

***Ans*.Vapour**

Quest.Stomata is found mainly on

***Ans*.Lower surface of leaves**

Quest.Opening and closing of stomata are due to its

***Ans*.Turgidity and faccidity**

Quest.The types of stomata mostly present on lower surface of leaves

***Ans*.Potato type**

Quest.Stomata that is present on only under surface of leaf.

***Ans*.Apple and Mulberry type**

Quest.The loss of water (contains salts and minerals) through hydathodes in liquid form during night and regulated by root pressure

***Ans*.Guttation**

Quest.The irreversible change in any plant part (s) with respect to size, form, weight, volume etc.

***Ans*.Growth**

Quest.The phasic change of individual cells into tissues, organs and organisms

***Ans*.Development**

Quest.The growth rate of plants is measured by
***Ans*.Auxanometer and Crescograph**

Quest.The element which takes part in the growth and development of plants
***Ans*.Plant nutrients**

Quest.Organic compounds which inhibit or modify any physiological process
***Ans*.Plant Growth Regulators (PGRs)**

Quest.Growth promoters are
***Ans*.Auxins, Gibberellins and Cytokinin**

Quest.Example of growth inhibitors
***Ans*.Abscisic acid and Ethylene**

Quest.The PGR causes apical bud dominance
***Ans*.Auxins**

Quest.The senescence is delayed by
***Ans*.Cytokinin**

Quest.Seed dormancy of seed is broken by
***Ans*.Cytokinin**

Quest.Seed dormancy is induced by
***Ans*.Abscisic acid**

Quest.PGR used for fruit ripening
***Ans*.Ethylene**

Quest.Abscisic acid is synthesized from
***Ans*.Actively growing points**

Quest.Cytokinin is mainly synthesized in
***Ans*.Root tips**

Quest.PGR related to drought tolerance and stress hardness in plants
***Ans*.Abscisic acid**

Quest.The physiological response of plants in relation to length of light
***Ans*.Photoperiodism**

Quest.Short day plants require day length
***Ans*.<10 hrs**

Quest.Kharif crops requires

***Ans*.Shorter day length**

Quest.Generally rabi crops are

***Ans*.Long day plants**

Quest.Long day plants require day length

***Ans*.>14 hrs**

Quest.The sites of Vernalisation

***Ans*.Apical buds/Growing point**

Quest.For germination, seed depends on external source for supply of

***Ans*.Water**

Quest.The temperature at which highest percentage of seed germination occurs in short period of time

***Ans*.Optimum temperature**

Quest.Ca is essential for

***Ans*.Cell wall formation**

Quest.The region of plants in which food to be translocated originates

***Ans*.Source**

Quest.The region of plants in which translocated food is utilized or immobilized

***Ans*.Sink**

Quest.Concentration of a nutrient in plant tissue where growth of the plant is slowed down

***Ans*.Critical concentration**

Chapter 7

Major Pest and Diseases of Important Crops

(1) Pest of Rice

Quest.The scientific name of Yellow Stem Borer

Ans.Scirphophaga incertulas

Quest.The scientific name of Rice Gall Midge

Ans.Orseolia oryzae

Quest.The scientific name of Green Leaf hopper (GLH)

Ans.Nephotetrix nigropictus

Quest.The scientific name of White-backed Plant-hopper (WBPH)

Ans.Sogatella furcifera

Quest.The scientific name of Brown Plant hopper (BPH)

Ans.Nilaparvata lugens

Quest.Which pest causes severe damage to rice panicle at night?

Ans*.Rice Army worm (*Mythimna saparata)

Quest.Chaffy grains with black spot is the infestation of

***Ans*.Gundhi Bug (*Leptocorisa acuta*)**

Quest.Clipping off the top of rice seedlings containing immature stages of insects reduces the carry over of infestation of

***Ans*.Rice hispa**

(2) Wheat

Quest.The scientific name of Pink Stem Borer

Ans.Sesamia inferens

Quest.Pink stem borer attacks to plants in

***Ans*.Night**

Quest.The scientific name of Wheat Termites
Ans.Odentotermis obesus

Quest.The scientific name of Cut Worm
Ans.Agrotis ipsilon

Quest.Which pest attacks all the parts of the plant?
***Ans*.Termite**

(3) Sorghum

Quest.The scientific name of Sorghum Shoofly
Ans.Atherigona varia soccata

(4) Chickpea

Quest.The scientific name of Cut worm
Ans.Agrotis ipsilon

Quest.The scientific name of Pod borer
Ans.Helicoverpa armigera

(5) Pigeonpea

Quest.The scientific name of Pod borer
Ans.Etiella zincknella

Quest.The scientific name of Plume moth
Ans.Exelastis atomosa

Quest.The scientific name of Pod fly
Ans.Melanagromyza obtuse

Quest.The scientific name of Pod bug
Ans.Clavigralla gibbosa

(6) Soybean

Quest.The scientific name of Soybean Girdle beetle
Ans.Oberea brevis

Quest.The scientific name of stemfly
Ans.Melanagromyza sojae

Quest.Which pest is known as stem borer of soybean
***Ans*.Girdle beetle**

(7) Groundnut

Quest.The scientific name of Groundnut aphid
Ans.Aphis craccivora

Quest.The scientific name of White Grub of groundnut
Ans.Holotrachia conseguina

Quest.The scientific name of Groundnut Leaf minor
Ans.Stomoperyx nertaria

(8) Mustard

Quest.The scientific name of Mustard aphid
Ans.Lipaphis erysimi

Quest.The scientific name of Mustard sawfly
Ans.Athaliya proxima

Quest.The scientific name of Mustard Painted Bug
Ans.Bargrada cruciferarum

(9) Sunflower and Linseed

Quest.The scientific name of Capitulai/Head borer
Ans.Helicoverpa armigera

(10) Cotton

Quest.Rosetting of flowers and double seed formation is the symptoms of
***Ans*.Pink Bollworm (*Pectinophora gossypiella*)**

Quest.The pest causing flaring of squares in cotton
Ans*.Spotted Bollworm (*Earias vitella)

Quest.The scientific name of American Bollworm
Ans.Helicoverpa armigera

Quest.The main symptom of American bollworm is
***Ans*.Larger circular bore holes with faecal pellets.**

Quest.The vector of leaf curl virus

***Ans*.White Fly (*Bemisia tabaci*)**

Quest.The scientific name of Red Cotton Bug

Ans.Dysdercus koenigii

Quest.Which cotton pest causes hopper burn?

***Ans*.Cotton Jassid (*Amrasca bigutulla*)**

Quest.Curling of leaf upwards and yellowing of terminal cotton shoots is a characteristics symptom of presence of

***Ans*.Cotton Aphid**

Quest.Highest consumption of pesticides found in

***Ans*.Cotton (54%)**

(11) Sugarcane

Quest.The scientific name of Sugarcane Pyrilla/Leaf hopper

Ans.Pyrilla purpusilla

Quest.Which pest causes Bunchi top appearance in sugarcane

***Ans*.Top Borer (*Tryporza novella*)**

Quest.The scientific name of Sugarcane shoot borer

Ans.Chilo sacchariphagus

Quest.The scientific name of Sugarcane root borer

Ans.Emmalocera depressella

Quest.The scientific name of Whitefly of sugarcane

Ans.Aleurolobus barodensis

(12) Potato and Tobacco

Quest.The scientific name of Potato aphid

Ans.Aphis gossypii

Quest.The scientific name of Potato tuber moth

Ans.Phthorimaea operculella

Quest.The scientific name of Tobacco cutworm

Ans.Spodoptera litura

(13) Pest of Fruit Crops

Quest.The scientific name of Mango hopper
Ans.Amritodus atkinsoni

Quest.The scientific name of Mango mealy bug
Ans.Drosicha mangiferae

Quest.Sticky bands around tree trunks provide protection against
***Ans*.Mango mealy bug**

Quest.The scientific name of Banana Stem weevil
Ans.Odoiporus longicollis

Quest.The scientific name of Guava fruitfly
Ans.Bactrocera diversus

Quest.The scientific name of Fruit sucking moth of citrus
Ans.Otheris materna

Quest.The scientific name of Lemon butterfly
Ans.Papillio demoleus

Quest.The scientific name of Citrus Psylla
Ans.Diaphorina citri

Quest.The scientific name of Papaya fruitfly
Ans.Bactrocera/Dacus dorsalis

Quest.The scientific name of Fruit Borer of pomegranate
Ans.Conogethes punctiferalis

Quest.The scientific name of Woolf aphis of apple
Ans.Eriosoma lanigerum

(14) Pest of Vegetable Crops

Quest.The scientific name of Tomato fruit borer
Ans.Helicoverpa armigera

Quest.The scientific name of Brinjal fruit and shoot borer
Ans.Leucinodes orbonalis

Quest.The scientific name of fruit and shoot borer of Okra

Ans.Earias vitella

Quest.The scientific name of Chilly thrips
Ans.Thrips tabaci

Quest.The scientific name of Red Pumpkin beetles of cucurbits
Ans.Raphidopalpa foveicollis

Quest.The scientific name of Cucurbits fruitfly
Ans.Dacus cucurbitae

Quest.The scientific name of Diamond back moth (DBM) of cabbage
Ans.Plutella xylostella

Quest.The scientific name of Cabbage head borer
Ans.Hellula undalis

(15) Stored Grain Pests

Quest.The scientific name of Khapra beetle or Wheat beetle
Ans.Trogoderma granarium

Quest.The scientific name of Red flour beetle
Ans.Tribolium castaneum

Quest.The scientific name of Pulse beetle
Ans.Callosobruchus chinensis

Quest.The scientific name of Rice moth
Ans.Corcyra cephalonica

DISEASES OF IMPORTANT CROPS

(1) Rice

Quest.The causal organism of brown spot of rice
Ans.Helminthosporium oryzae

Quest.The brown spot of rice is
Ans.Externally seed borne disease

Quest.Poor man's disease of rice
***Ans*.Bacterial leaf blight (*Xanthomonas oryzae*)**

Quest.The most destructive phase of the bacterial blight of rice is known as

***Ans*.Kresek**

Quest.The air borne disease of rice
***Ans*.Rice Blast (*Pyricularia oryzae*)**

Quest.Rice blast is effectively controlled by spraying of
***Ans*.Edifenphos**

Quest.The soil borne disease of rice
***Ans*.Sheath blight of rice (*Rhizoctonia oryzae*)**

Quest.Khaira disease of rice is caused by
Ans*.*Zinc deficiency

Quest.Khaira disease of rice is controlled by spraying
***Ans*.Zinc sulphate (5 kg)+ lime (2.5 kg/ha) in 10 days nursery**

Quest.The main symptom of Tungro disease of rice
***Ans*.Yellowing of leaves**

Quest.The vector of Tungro disease
***Ans*.GLH**

Quest.The disease responsible for the great Bengal famine in 1942-43
***Ans*.Brown spot of rice**

Quest.Montek disease of rice is caused by
***Ans*.Rice root nematode**

(2) Wheat and Barley

Quest.The soil, air and seed borne disease of wheat
***Ans*.Kernal bunt (*Neovossia indica*)**

Quest.The foul smell of kernel bunt infected field is due to
***Ans*.Trimethyl-amine**

Quest.Loose smut of wheat is a
***Ans*.Internally seed borne disease**

Quest.Loose smut of wheat is caused by
Ans*.*Ustilego nuda triticii

Quest.Loose smut of wheat can be controlled by seed treatment with

***Ans*.Vitavax**

Quest.Solar heat treatment is used to control

***Ans*.Loose smut of wheat**

Quest.Which rust was earliest appeared in India on wheat

***Ans*.Brown/Orange/Leaf rust**

Quest.Alternate host of black stem rust of wheat in India is

***Ans.Berberries* sp.**

Quest.The causal organism of Black/stem rust

Ans.Puccinia gramini triticii

Quest.The causal organism of Yellow/strip rust

Ans.Puccinia striformis

Quest.The causal organism of Brown/orange/leaf rust

Ans.Puccinia recondita

Quest.Which disease of wheat is discovered in Haryana?

***Ans*.Kernal bunt**

Quest.Bacterial rot of wheat ears is also known as

***Ans*.Spike blight/Tundu/Yellow slime disease**

Quest.The causal organism of covered smut of barley

Ans.Ustilago hardei

Quest.Sooty or charcoal like powdery mass usually appearing on floral organs particularly the ovary is

***Ans*.Smut**

Quest.Which stage of the wheat rust fungus is considered as the perfect stage ?

***Ans*.Telial stage**

(3) Maize, Sorghum and Bajra

Quest.White bud of maize is caused by

Ans.Zn deficiency

Quest.The causal organism of Grain Smut of sorghum

Ans.Sphacelotheca sorghi

Quest.Grain Smut of sorghum is also known as
Ans.Covered/Kernel/Shoot smut

Quest.Grain and Head smuts are
***Ans*.Seed borne disease**

Quest.The causal organism of Head Smut of sorghum
Ans.Sphacelotheca relliana

Quest.The most serious smut among the smuts affecting sorghum is
***Ans*.Grain smut**

Quest.Downey Mildew/Green Ear disease of Bajra is caused by
Ans.Sclerospora graminicola

Quest.Ergot disease of Bajra is caused by
Ans.Claviceps fusiformis

Quest.Ear showing honey dew symptoms is characteristic feature of
***Ans*.Grain smut of bajra**

Quest.Smut disease infect the plant at
***Ans*.Tillering stage**

(4) Chickpea and Pigeonpea

Quest.Wilt disease is a
Ans.Soil borne disease

Quest.Wilt disease of chickpea is caused by
Ans.Fusarium oxisporium

Quest.Wilt of pigeonpea is caused by
Ans.Fusarium oxisporum f. sp. udum

Quest.The vector of sterility mosaic of pigeonpea
Ans*.Mite *(Aceria cajani)

(5) Groundnut

Quest.Leaf spot of groundnut is also known as
***Ans*.Tikka disease**

Quest.Early leaf spot of groundnut is caused by

Ans.Cercospora arachidicola

Quest.Late leaf spot of groundnut is caused by
Ans.Cercospora parsonata

Quest.The causal organism of collar rot disease
Ans.Aspergillus niger

Quest.Rust of groundnut is caused by
Ans.Puccinia arachidis

Quest.Vector for bud necrosis of groundnut is
***Ans*.Thrips**

(6) Rapseed and Mustard

Quest.Alternaria blight of mustard is caused by
Ans.Alternaria brasicae

Quest.White rust of crusifers is a
***Ans*.Pseudo rust**

Quest.White rust/Blister is caused by
Ans.Albugo candida

(7) Soybean

Quest.Yellow Mosaic of soybean is caused by
***Ans*.Mungbean yellow mosaic virus (MYMV)**

Quest.The causal organism of Anthracnose/Pod blight
Ans.Colletotrichum truncatum

(8) Sunflower and Sesame

Quest.Alternaria blight or leaf spot of sunflower is caused by
Ans.Alternaria helianthi

Quest.Root and collar rot of sunflower is caused by
Ans.Sclerotium rolfssi

Quest.The causal organism of Phyllody disease of sesame
***Ans*.MLO**

(9) Cotton

Quest.Fusarium wilt is caused by
Ans.Fusarium moniliform

Quest.The wilt of cotton is
Ans.Seed and Soil borne

Quest.Black arm or bacterial blight is due to
Ans.Xanthomonas compestris

Quest.Bacterial blight disease is
Ans.Internally seed borne

Quest.Bacterial blight/Angular leaf spot is caused by
Ans.Xanthmonas malvacearum

(10) Sugarcane

Quest.Most serious of sugarcane
***Ans*.Red rot disease**

Quest.Red rot disease is caused by
Ans.Colletrotricum falcatum

Quest.Red strip of sugarcane is caused by
Ans.Pseudomonas riubrilinus

Quest.The causal organism of sugarcane smut
Ans.Ustilego citamini

Quest.Grassy shoot of sugarcane is cased by
Ans.MLO

Quest.The pith of the red rot affected can emits
***Ans*.Rotten fish like smell**

Quest.The whip smut of sugarcane is caused by
Ans.Ustilago hordei

(11) Potato and Tobacco

Quest.Most dangerous disease of potato
***Ans*.Late blight**

Quest.Late blight of potato is caused by
Ans.Phytophthora infestans

Quest.Early blight of potato is caused by
Ans.Alternaria solani

Quest.The tuber borne disease of potato
***Ans*.Black scurf (*Rhizoctonia solani*)**

Quest.Which potato disease causes Irish famine (1845)?
***Ans*.Late blight**

Quest.Wart disease of potato is caused by
Ans.Synchutium endobioticum

Quest.Potato virus diseases are spread by
***Ans*.Aphids**

Quest.Damping off of tobacco is caused by
Ans.Pythium aphanidermaum

Quest.Tobacco Mosaic disease is caused by
***Ans*.Nicotiana Virus-1**

Quest.Root knot disease of tobacco is effective controlled by
***Ans*.Carbofuran**

(12) Mango

Quest.Mango Malformation is caused by
Ans.Fusarium monilliformae

Quest.Mango malformation is common in
***Ans*.North-West India**

Quest.Black tip/Mango necrosis is caused by
Ans.Boron deficiency

(13) Other Fruit Diseases

Quest.Scab disease in apple is caused by
Ans.Venturia inaequalis

Quest.Anthracnose of guava is caused by

Ans.Collectotrichum psidii

Quest.Leaf curl and mosaic of papaya is caused by

Ans.Virus

Quest.Panama wilt of banana is also called as

Ans.Fusarium wilt

Quest.Bunchy top of banana is caused by

Ans.Virus

Quest.Which pathogen caused heavy losses to wine industry in France due to its epidemics in 1875?

Ans.Plasmopara viticola

Quest.Citrus canker is caused by

Ans.Xanthomonas compestris pv citri

Quest.Citrus gumosis is caused by

Ans.Phytophthora palmivora

Quest.Mottle leaf of citrus is due to deficiency of

***Ans*.Zinc**

Quest.Greening of citrus is caused by

***Ans.Gracillicuts* (a *gram negative bacteria*)**

Quest.Downy mildew of grape vine is controlled by

***Ans*.Bordeaux mixture**

(14) Tomato and Brinjal

Quest.Leaf curl of tomato is spread by

***Ans*.White fly**

Quest.Early blight of tomato is caused by

Ans.Alternaria solani

Quest.Wilting in Brinjal is caused by

Ans.Pseudomonas solanacearum

Quest.Phomopsis blight or Fruit rot of Brinjal is caused by

Ans.Phomopsis vexans

Quest.Damping off of Brinjal seedlings is due to
Ans.Pithium sp

(15) Other Vegetable Diseases

Quest.Yellow vein mosaic of okra is transmitted through
Ans.White fly

Quest.Damping off of chilly seedlings is due to
Ans.Pithium sp

Quest.Anthracnose/Ripe rot/Die back of chilly is caused by
Ans.Collectotrichum capsici

Quest.White blister of cabbage is caused by
Ans.Albugo candida

Quest.Black rot of cabbage is caused by
Ans.Xanthomonas compestris

Quest.A cabbage disease which is known to be more severe in acidic soils is
***Ans*.Black rot**

Quest.Powdery mildew of cucurbits is caused by
Ans.Erysiphe cichoracearum

Quest.Downey mildew of cucurbits is caused by
Ans.Pseudopernospora cubensis

Quest.Downy mildew disease can be effectively managed by spraying of
***Ans*.Metalaxyl**

Chapter 8

Horticulture

(I) BASIC HORTICULTURE

Quest.The term 'Horticulture' is derived from

***Ans*.Latin word**

Quest.The science of growing of fruits, vegetables, ornament plants and preservation of foods

***Ans*.Horticulture**

Quest.The science of production of fruit crops

***Ans*.Pomology**

Quest.The term 'Pomology' is derived from

***Ans*.Latin word**

Quest.The science of growing vegetable crops

***Ans*.Olericulture**

Quest.The science of growing flower and ornamental plants.

***Ans*.Floriculture/Ornamental horticulture**

Quest.A method by which food is kept out from spoilage after harvest

***Ans*.Preservation**

Quest.Which process is involved in the senescence of fruits and vegetables?

***Ans*.Respiration**

Quest.Fruits experiencing sudden increase in the rate of respiration at the time of ripening.

***Ans*.Climacteric Fruits**

Quest.Mango, Banana, Guava, Papaya, Jackfruit, Sapota, Apple are known as

***Ans*.Climacteric Fruits**

Quest.Fruits experiencing simple gradual decline in the rate of respiration at the time of ripening.

***Ans*.Non-Climacteric Fruits**

Quest.Litchi, Lemon, Citrus, Grape, Ber, Pineapple are known as

***Ans*.Non-Climacteric Fruits**

Quest.Which operation controls the shape of plant?

***Ans*.Training**

Quest.Most widely used training system for commercial fruits

***Ans*.Modified Leader System**

Quest.Removal of any excess or undesirable/unproductive branches, shoots or any other parts of plants

***Ans*.Pruning**

Quest.Heading back and thinning out are associated with

***Ans*.Pruning**

Quest.The most common pit size for fruit planting

***Ans*.1 m × 1 m × 1 m**

Quest.The simplest system of fruit planting

***Ans*.Square System**

Quest.In which planting system, a tree is planted on a corner of each angle

***Ans*.Triangle System**

Quest.The 'filler tree technology' is associated with

***Ans*.Quincunx System**

Quest.A pruning process in which a circular ring of bark measuring about 3 cm in length is removed.

***Ans*.Ringing/Girdling**

Quest.Which fruit has the highest Vitamin A?

***Ans*.Mango**

Quest.Which grafting is used for repairing the plant?

***Ans*.Bridge grafting**

(II) CULTIVATION OF IMPORTANT FRUIT CROPS

(1) Mango

Quest.Mango is also known as

***Ans*.King of fruits/National fruit/Bathroom fruit**

Quest.The botanical name of mango
Ans*.*Mangifera indica

Quest.Mango belongs to which family
***Ans*.Anacardiaceae**

Quest.The origin place of mango
***Ans*.Indo-Burma region**

Quest.Leading Mango producing state having maximum area under mango
***Ans*.Uttar pradesh**

Quest.The commercial propagation method of mango
***Ans*.Veneer grafting**

Quest.The normal planting space of mango
***Ans*.10m × 10m**

Quest.High density planting (2.5 m × 2.5 m) of mango is done in
***Ans*.Amrapalli variety**

Quest.Most popular variety of India
***Ans*.Alphanso**

Quest.Sweetest variety of mango
***Ans*.Chousa**

Quest.Regular bearer varieties of mango
***Ans*.Ratna, Neelum, Himsagar, Gulab khas, Pairy and Totapari**

Quest.Seedless variety of mango
***Ans*.Sindhu**

Quest.Mallika is a cross of
***Ans*.Neelam × Dashehari**

Quest.Amrapalli is a cross of
***Ans*.Dashehari × Neelam**

Quest.Ratna is a cross of
***Ans*.Neelam × Alphanso**

Quest.Sindhu is a cross of
***Ans*.Ratna × Alphanso**

Quest.Most commonly used for flower induction
***Ans*.Paclobutrazol**

Quest.The pollinator of mango is
***Ans*.Housefly**

Quest.Bearing habit of mango is
***Ans*.Terminal**

Quest.Fruit drop in mango is controlled by
***Ans*.2, 4-D**

Quest.Mango malformation is controlled by
***Ans*.NAA**

Quest.Spongy tissue is due to
***Ans*.Convection heats**

Quest.Internal fruit necrosis is due to
***Ans*.Boron deficiency**

(2) Guava

Quest.The botanical name of guava
Ans*.*Psidium guajava

Quest.The normal planting space of guava
***Ans*.10m × 10m**

Quest.The commercial propagation method of guava
***Ans*.Air layering**

Quest.Which guava variety is known as Sardar
***Ans*.Lucknow- 49**

Quest.Dual purpose variety of guava
***Ans*.Lalit**

Quest.Parthenocarpic variety of guava
***Ans*.Allahabad round**

Quest.Kohir safed is a cross of
***Ans*.Kohir × Allahabad Safeda**

Quest.Safed Jam is a cross of
***Ans*.AS × Kohir**

Quest.The fruiting time of Mrig bahar
***Ans*.Nov-January**

(3) Papaya

Quest.Origin of Papaya
***Ans*.Tropical America**

Quest.Yellow pigment in papaya
***Ans*.Caricaxanthin**

Quest.The commercial propagation method of papaya
***Ans*.Seed (500 g/ha)**

Quest.Planting space of papaya
***Ans*.2m×2m**

Quest.Best suited variety for high density planting of papaya
***Ans*.Pusa nanha (1.25m×1.25m)**

Quest.Highest papain yielding variety
***Ans*.Pusa majesty**

Quest.Pusa delicious, Pusa majesty, CO^{-3} and Coorg honew dew are
***Ans*.Gynodioecious varieties**

Quest.The serious disease of papaya
***Ans*.Damping off**

Quest.The fruiting time of papaya
***Ans*.Feb-June**

Quest.The chemical used for better colour and keeping quality of papain
***Ans*.Potassium meta-bi-sulphite (KMS)**

Quest.Enzyme present in dried latex of papaya
***Ans*.Pepsin**

Quest.Pusa dwarf, Pusa Nanha and Pusa giant are naturally
***Ans*.Didecious**

(4) Pomegranate

Quest.The botanical name of pomegranate
Ans*.*Punica granatum

Quest.The normal planting space is
***Ans*.6m × 6m**

Quest.Commercial propagation method
***Ans*.Air layering**

Quest.The hybrid variety of pomegranate
***Ans*.Amlidana**

Quest.Most popular vary
***Ans*.Ganesh and Dholka**

Quest.Fruit cracking is most probable in
***Ans*.Mrig bahar season**

(5) Citrus

Quest.The botanical name of acid lime
Ans*.*Citrus aurentifolia

Quest.Break fast fruit is
***Ans*.Grape fruit (*C. paradise leaf*)**

Quest.The botanical name of Sweet Orange
Ans*.*Citrus sinensis

Quest.Which citrus species is known as *Fancy fruit*?
Ans*.*C. reticulate

Quest.Thornless species of citrus
***Ans*.Tahiti lime (*C. latifolia*)**

Quest.Monoembryonic species of citrus
***Ans*.Pumelo**

Quest.Polyembryonic species of citrus
***Ans*.Acid lime**

Quest.Which species of citrus produces seedless fruits?

***Ans*.Tahiti lime**

Quest.The normal planting space of citrus
***Ans*.5-6m × 5-6m**

Quest.Commercial propagation method
***Ans*.Seed and Budding**

Quest.Rootstock of mandarin orange is
***Ans*.Rangpur lime**

Quest.Best method for irrigation of citrus
***Ans*.Ring method**

Quest.'Kinnow' is a cross between
***Ans*.King × Willow leaf**

Quest.Seedless variety of mandarin orange
***Ans*.Satsuma**

Quest.Lucknow seedless is a variety of
***Ans*.Lemon**

(6) Banana

Quest.The banana is commonly known as
***Ans*.Adam's fig and Tree of paradise**

Quest.The normal planting space of banana
***Ans*.1.8-2m × 1.8-2m**

Quest.Commercial propagation method
***Ans*.Sword Suckers**

Quest.Banana inflorescence is known as
***Ans*.Spadix**

Quest.Best variety for chips making
***Ans*.Narendran**

Quest.Gold finger is a
***Ans*.Hybrid banana**

Quest.How much sugar contains in ripe banana?

***Ans*.26%**

Quest.Degreening of banana is done by
***Ans*.Ethylene**

Quest.Removal of male bud after completion of female phase is known as
***Ans*.Denavelling**

Quest.Removal of undesired suckers, done once in 45 days of planting
***Ans*.Desuckering**

Quest.*Tetrazolium test* is used for detection of
***Ans*.Bunchy top virus**

(7) Other Fruit Crops

Quest.Which crop is commonly known as *Single seeded nut?*
***Ans*.Litchi**

Quest.Litchi is commercial propagated by
***Ans*.Air layering and Seed**

Quest.Red pigment in litchi is due to
***Ans*.Anthocyanin**

Quest.Sapota is grown in
***Ans*.Tropical climate**

Quest.Commercial propagation method of sapota
***Ans*.Inarching**

Quest.Most popular varieties of sapota
***Ans*.Kali patti, Pili patti, Oval, Cricket ball, Chatri, Barahmasi.**

Quest.CO-1 is a cross of
***Ans*.Cricket ball × oval**

Quest.Botanical name of Monkey jack
Ans.Autocarpus heterophylus

Quest.Jackfruit is commercially propagated by
***Ans*.Air layering**

Quest.The popular varieties of jackfruit

***Ans*.Champa, Rudrakshi and Singapore**

Quest.Aonla is commercially propagated by
***Ans*.Inarching**

Quest.The popular varieties of Aonla
***Ans*.Banarasi, Krishna, Chakaiya, Hathi jhul, Kanchan, NA-7, 9**

Quest.Most widely used training system of aonla
***Ans*.Modified central leader system**

Quest.Ber is commonly known as
***Ans*.Poor man's fruit and king of arid fruits**

Quest.The commercially cultivated variety of ber
***Ans*.Umran**

Quest.Early variety of ber
***Ans*.Seb**

Quest.Best time for prunning of ber
***Ans*.End of May to Mid June**

Quest.Ber fruits are matured at
***Ans*.5-6 months after flowering**

Quest.Richest source of Vit-B_2
***Ans*.Bael**

Quest.Active ingredient present in Bael
***Ans*.Marmelosin**

Quest.The most ideal stage of bael for making preserve
***Ans*.Mature green stage**

Quest.Paras is a variety of
***Ans*.Jamun**

Quest.Seedless variety of Jamun is
***Ans*.Narendra Jamun-6**

Quest.The commercial propagation method of pineapple
***Ans*.Suckers and slips**

Quest.Singapore, Mauritious and Giant Kew are the varieties of
***Ans*.Pineapple**

Quest.The enzyme contains in pineapple fruit
***Ans*.Bromelin**

Quest.The chemical used for inducing flowering in pineapple
***Ans*.Ethrel and NAA**

Quest.Queen of temperate fruit
***Ans*.Apple**

Quest.Apple bowl of India
***Ans*.Himachal Pradesh**

Quest.Apple is commercially propagated by
***Ans*.Tongue grafting and Whip budding**

Quest.Redness in apple is due to
***Ans*.Anthocyanin**

Quest.Delicious, Rome beauty and Parlin's Beauty are
***Ans*.Late maturing apple**

Quest.Diploid variety of apples are
***Ans*.Self fertile**

Quest.Usually apple is graded on
***Ans*.6 size**

Quest.Discolouration of apple after cutting is due to
***Ans*.Enzymes**

Quest.Commercial propagating method of grapevine
***Ans*.Hard wood cutting**

Quest.Arka Hans is a cross of
***Ans*.Banglore Blue × Anab-e-shahi**

Quest.Most widely accepted training system of grapevine in India
***Ans*.Bower system**

Quest.Which is used for improving fruit quality of grape?
***Ans*.20 ppm GA**

Quest.Which fruit is commonly known as "*Kalpavriksha*
***Ans*.Coconut**

Quest.Cashew nut and almond are the richest source of
***Ans*.Fat**

Quest.Richest source of Iron
***Ans*.Karonda**

(III) CULTIVATION OF IMPORTANT VEGETABLE CROPS

(1) Tomato

Quest.No. 1 processing vegetable
***Ans*.Tomato**

Quest.The new botanical name of tomato
Ans*.*Solanum lycopersicon

Quest.A pigment responsible for red colour in tomato
***Ans*.Lycopene**

Quest.Pusa Rubi is a cross of
***Ans*.Sioux × Improved Maruti**

Quest.The best combiner variety of tomato
***Ans*.Pusa Rubi**

Quest.Pusa Rubi, Arka sourav, Pant bahar and Best of all are
***Ans*.Indeterminate varieties**

Quest.The best suited variety for drought condition
***Ans*.Arka Vikas**

Quest.Most serious pest for tomato plant
***Ans*.Root knot nematode**

Quest.Nematode and Bacterial wilt resistant variety of tomato
***Ans*.Arka vardan**

Quest.Most important nutrients required for tomato cultivation
***Ans*.Boron and zinc**

Quest.The recommended seed rate of tomato per hectare

***Ans*.300-350 gm/ha**

Quest.Harvesting stage of tomato for distant market/transportation
***Ans*.Mature green stage**

Quest.Best method of extraction of tomato seed
***Ans*.Alkali method**

Quest.Blossom end rot of tomato is due to
***Ans*.Ca deficiency**

Quest.Fruit cracking of tomato is due to
***Ans*.B deficiency**

(2) Brinjal

Quest.Brinjal is also known as
***Ans*.Egg plant**

Quest.Brinjal fruits are good source of
***Ans*.Vit.-B**

Quest.White brinjal is preferred by
***Ans*.Diabetics patients**

Quest.The normal seed rate of brinjal
***Ans*.200 g/ha**

Quest.Extra early maturing variety of brinjal
***Ans*.Pusa purple long**

Quest.Phomopsis blight and Bacterial blight resistant variety of brinjal
***Ans*.Pant Samrat**

Quest.The normal seed rate of brinjal
***Ans*.100 sq.m/ha**

Quest.Nursery area of brinjal
***Ans*.1.5-2.0 kg/ha**

(3) Chilly

Quest.The botanical name of chilly
Ans*.*Capsicum annum

Quest.Causes of red colour in chilli
***Ans*.Capsenthin**

Quest.The cause of pungency in chilli
***Ans*.Capsicin**

Quest.Variety suitable for HDP
***Ans*.Jwalamukhi**

Quest.Leaf curl resistant varieties
***Ans*.Pusa Jwala, Pusa Sadabahar, Pant C^{-1}**

Quest.The chemical used for fruit setting
***Ans*.Triacontanol**

Quest.Green to dry chilli ratio
***Ans*.10:1**

(4) Cucurbits

Quest.Cultivation practise followed in cucurbits
***Ans*.Daria cultivation**

Quest.Cultivated pumpkin is botanically known as
Ans.Cucurbita moschata

Quest.Seed rate of pumpkin
***Ans*.1.0-1.5 kg/ha**

Quest.Chief pollinator of pumpkin
***Ans*.Honey bee**

Quest.PKM 1 is a variety of
***Ans*.Snake guord**

Quest.Botanical name of bottle gourd
Ans.Lagenaria siceraria

Quest.Seed rate of bottle gourd
***Ans*.3-4 kg/ha**

Quest.Popular varieties of bottle guard
Ans.Pusa Summer Prolific long, Summer Prolific Round, Pusa Manjari, Pusa Megdoot

Quest.Which cucurbit is also known as Bitter cucumber
***Ans*.Bitter gourd**

Quest.Seed rate of bitter gourd
***Ans*.4.5-5 kg/ha**

Quest.Gynomonoecious flowers are found in
***Ans*.Cucumber**

Quest.Pusa Sanyog is a variety of
***Ans*.Cucumber**

Quest.Fruit type of cucumber is
***Ans*.Pepo**

Quest.Bitterness in cucumber is due to
***Ans*.Metaxenia**

Quest.Pusa Nasdar and Satputia are popular varieties of
***Ans*.Ridge guard**

Quest.*Trichosanthus dioca* is botanical name of
***Ans*.Pointed gourd**

Quest.Pointed gourd is propagated through
***Ans*.Vine cutting**

Quest.Pusa Chikni, Pusa Supriya and Harita are the varieties of
***Ans*.Sponge guard**

Quest.How much water contains by water melon fruit?
***Ans*.95%**

Quest.The seed rate of water melon
***Ans*.3.5-5 kg/ha**

Quest.Sugar Baby is the popular variety of
***Ans*.Water melon**

Quest.Pusa bedana is a cross of
***Ans*.Tetra-2 × Pusa Rasal**

Quest.Pink bedana is the variety of
***Ans*.Musk melon**

Quest.Fruit of okra is known as
***Ans*.Capsule**

(5) Other Vegetables

Quest.Richest source of protein is
***Ans*.Beans**

Quest.The seed rate of okra is
***Ans*.8-10 kg/ha**

Quest.Pusa Sawani and Parbhani Kranti is famous variety of
***Ans*.Okra**

Quest.Yellow vein mosaic resistant variety of okra
***Ans*.Pusa Sawani**

Quest.A deep rooted crop is
***Ans*.Sweet potato**

Quest.Edible part of cabbage
***Ans*.Head**

Quest.Seed rate of cabbage is
***Ans*.350-500 gm/ha**

Quest.Anti-cancer property of cabbage is due to
***Ans*.Indole-3-Cardinal**

Quest.The botanical name of cauliflower
Ans.Brassica oleracia.var botrytis

Quest.Seed rate of cauliflower is
***Ans*.500-600 gm/ha**

Quest.Edible part of cauliflower
***Ans*.Curd**

Quest.The important process of cauliflower
***Ans*.Blanching**

Quest.Pusa Snowball is a variety of
***Ans*.Cauliflower**

Quest.Seed rate of knol khol is
***Ans*.1-1.5 kg/ha**

Quest.Economic part of knol khol is
***Ans*.Extended stem**

Quest.Temperature required for bolting in onion is
***Ans*.< 15 ˚C**

Quest.Japanese white is a variety of
***Ans*.Raddish**

Quest.The variety of carrot which is richest source of vitamin A
***Ans*.Pusa Meghali**

Quest.IIHR is located at
***Ans*.Bangalore**

Quest.Which growth regulator is isolated from yam?
***Ans*.Batasin**

Quest.Only tuber crop, which is rich in protein?
***Ans*.Colocasia**

Quest.Toxic substance present in colocasia
***Ans*.Ca oxalate**

Quest.The product of cassava is
***Ans*.Sago**

Quest.Pungency in garlic is due to
Ans.Alicin, Allinase

Quest.Economical part of sweet potato
***Ans*.Adventious roots**

Quest.Pungency of onion is due to
Ans.Allyl Propide di-sulphide

Quest.Irritation of eye due to cutting onion is due to presence of
***Ans*.Pyruvic acid**

(IV) ORNAMENTAL HORTICULTURE

Quest.Leading cut flower exporter in the world is

***Ans*.Netherlands**

Quest.Concept of lawn was developed in

***Ans*.England**

Quest.In which garden, arrangement of rocks is main feature?

***Ans*.Japanese garden**

Quest.Shrubs or trees planted at regular intervals on boundry for fencing

***Ans*.Hedges**

Quest.The green carpet for the landscape maintained by growing and mowing grasses.

***Ans*.Lawn**

Quest.Thorny fencing plant used as a hedge

Ans*.*Inga dulcus

Quest.Planting of low growing plants along with paths, roads, flower beds, lawns etc. for demarcation and beautification

***Ans*.Edge**

Quest.The art of developing the plant or training the plant into different forms or shapes like animals, birds, arches, etc.

***Ans*.Topiary**

Quest.The arrangement of colourful potted plants in different tiers around a central object which may be tree trunk, lamp post or pillar.

***Ans*.Trophy**

Quest.Growing of shrubs in a group

***Ans*.Shrubbery**

Quest.A group of ornamental plants used to grow over walls, trellis, arches, pergolas, arbours, pillars, bowers *etc*.

***Ans*.Climbers and Creepers**

Quest.An art of growing and training of a plant to a miniature form having a natural look of old age.

***Ans*.Bonsai**

Quest.The father of rose breeding

***Ans*.Dr. Bhattachaterji**

Quest.The fruit of rose is known as
***Ans*.Hip**

Quest.Rose can be cultivated up to
***Ans*.5 years**

Quest.Commercial propagation method of rose
***Ans*.'T' budding**

Quest.Floribundas is a cross of
***Ans*.Hybrid tea × Dwarf polyantha**

Quest.Yellow coloured rose species is
Ans*.*R. foitida

Quest.Thornless variety of rose
***Ans*.Chitra**

Quest.The single borne rose species
***Ans*.Hybrid tea**

Quest.Crimson Glory and Super Star are which type of rose
***Ans*.Hybrid tea**

Quest.Rose species having large flowers in clusters
***Ans*.Floribundas**

Quest.The growth habit of Chrysanthemum
***Ans*.Perennial**

Quest.Commercial propagation method of Chrysanthemum
***Ans*.Root suckers and Terminal cuttings**

Quest.Which chrysanthemum allows single bloom on a branch?
***Ans*.Standard Chrysanthemum**

Quest.Off-season variety of chrysanthemum
***Ans*.Haldi ghati, Himansu, Jaya and Jwala**

Quest.Per hectare of seed rate of marigold
***Ans*.1.2-1.5 kg/ha**

Quest.Commercial propagation method of gladiolus
***Ans*.Corms**

Quest.Annual carnation is propagated by
***Ans*.Seeds**

Quest.True marigold is also known as
***Ans*.Calendulas**

Quest.Golden Age and Crown of Gold are the variety of
***Ans*.African Marigold**

Quest.Tuber is commercially propagated by
***Ans*.Tubers**

Quest.Queen Elizabeth is a variety of
***Ans*.Floribundas rose**

Quest.The botanical name of hollyhock
Ans*.*Althaea rosea

Quest.The flower colour of Chrysanthemum
***Ans*.Yellow and white**

(V) POST HARVEST TECHNOLOGY

Quest.Who is known as Father of food preservation?
***Ans*.Nicolas Apart**

Quest.A heat treatment food material at 72°C for 15 seconds, or 63°C for 30 minutes
***Ans*.Pasteurization**

Quest.Juices are mostly preserved by
***Ans*.Freezing**

Quest.The original colour of beverages for longer period are retained by
***Ans*.Benzoic acid**

Quest.Removal of moisture from the food materials for preservation
***Ans*.Dehydration**

Quest.Which of the following is used for killing microorganisms in food?
***Ans*.Heat processing**

Quest.The concentration of sugar required for preservation of fruits and jam
***Ans*.66%**

Quest.The concentration of salt sufficient to preserve most of the food products

***Ans*.15-25%**

Quest.A thermal process mostly used for vegetables prior to freezing, drying, or canning in order to soften the texture.

***Ans*.Blanching**

Quest.The peeling of fruits and vegetables is known as

***Ans*.Lye peeling**

Quest.The solution made by dissolving Salt (NaOH) in water is called as

***Ans*.Brine solution**

Quest.Which fruit beverage contains atleast 10% fruit juice and 10% soluble solids?

***Ans*.Ready-To-Serve (RTS)**

Quest.The fruit beverage commonly prepared from Mango, Papaya, Bel, Aonla

***Ans*.Nectar**

Quest.A fruit juice normally contains 25% juice and 40% TSS

***Ans*.Squash**

Quest.Mango pulp is preserved by

***Ans*.Sugar**

Quest.Which fruit beverage is diluted before serving?

***Ans*.Syrup**

Quest.TSS of jam should not be

***Ans*.< 70%**

Quest.TSS of cooking jam is measured by

***Ans*.Hand Refractometer**

Quest.A semi-solid transparent product prepared from pectin containing fruit

***Ans*.Jelly**

Quest.For jelly making, fruit should be harvested at

***Ans*.Firm ripe stage**

Quest.The pH of final jelly should be

***Ans*.3.2**

Quest.The instrument used to know pectin content

***Ans*.Jellimeter**

Quest.A fruit or vegetable impregnated with the cane sugar or glucose syrup
***Ans*.Candied fruit or vegetable**

Quest.A product prepared from strained pulp of fully ripe tomato fruits after cooking
***Ans*.Tomato Sauce/Ketchup**

Quest.TSS% of Tomato sauce is
***Ans*.30%**

Quest.The salt concentration in pickle is maintained at
***Ans*.8-10%**

Quest.CFTRI denotes
***Ans*.Central Food Technological Research Institute, Mysore**

Chapter 9

Agricultural Extension and Economics

(I) Agricultural Extension

Quest.An educational process to bring about desirable changes
***Ans*.Extension**

Quest.'Extension' is a
***Ans*.Latin word**

Quest.Extension activity was started first time in
***Ans*.USA**

Quest.The term "Extension education" was originated from
***Ans*.England (1866)**

Quest.The term "Extension education" was firsed used by
***Ans*.Cambridge University, England (1873)**

Quest.The father of extension education in India
***Ans*.J.P. Leagans**

Quest.Extension education is both
***Ans*.Science and Art**

Quest.The basic principle of extension education is
***Ans*.Help to those who helps themselves.**

Quest.The right approach of Agril. Extension
***Ans*.Bottom up approach**

Quest.'EDUCARE' (Latin word) means
***Ans*.To bringup physically or mentally.**

Quest.A statement of situation, objectives, problems and solutions
***Ans*.Programme**

Quest.The process by which human behavior is modified

***Ans*.Education**

Quest.Extension education is

***Ans*.Informal educaion**

Quest.School education is

***Ans*.Formal education**

Quest.Situation, Objectives, teaching, evaluation and reconsideration are the steps of

***Ans*.Extension education**

Quest.Attention → interest → desire → conviction → action → satisfaction are the steps of

***Ans*.Extension teaching**

Quest.An understood information possessed by a person

***Ans*.Knowledge**

Quest.The process of working with rural people in an effort to recognize the problems and determine possible solutions.

***Ans*.Programme planning**

Quest.The father of rural sociology

***Ans*.August Compte**

Quest.The science of human behaviours

***Ans*.Psychology**

Quest.The interchange of ideas between two persons, in such a way that they act on the existing knowledge to achieve some useful results

***Ans*.Communication**

Quest.The suitable medium to establish commonness between sender and receiver of message

***Ans*.Communication**

Quest.Communication is a

***Ans*.Two way/Double way Process**

Quest.Shannon and Weaver (1949) proposed model of communication

***Ans*.Source → Transmitter → Signal → Receiver → Destination**

Quest.Berlo Model of communication (1960)

***Ans*.Source → Encoder → Message → Signal → Decoder → Receiver**

Quest.Leagans Model (1963) is

***Ans*.Communicator → Message → Channel → Treatment → Audience → Audience response**

Quest.Speaker → Speech → Audience is a communication model proposed by

***Ans*.Aristotle**

Quest.A specific way adopted by the communicator to communicate his message effectively so that whole message is understood by maximum number of audience.

***Ans*.Treatment of message**

Quest.The process by which an innovation is communicated through certain channels overtime among the members of a social system

***Ans*.Diffusion**

Quest.A decision to continue full use of an innovation

***Ans*.Adoption**

Quest.The mental process through which individual passes from fires hearing about an innovation to final adoption.

***Ans*.Adoption process**

Quest.Stages of adoption are

***Ans*.Awareness → Interest → Evaluation → Trial → Adoption**

Quest.An attention with a sense of concerns focused upon some object

***Ans*.Interest**

Quest.Which stage of adoption helps to establish "Bench mark"?

***Ans*.Evaluation**

Quest.The people who adopt immediately after getting knowledge and constitutes only 2.5% of the total population.

***Ans*.Innovators**

Quest.The people adopt through local leaders and constitute only 13.5% of the total population.

***Ans*.Early adopters**

Quest.The percentage population of early majority over total population

***Ans*.34%**

Quest.The farmer who accepts new practices very last with in his social system is known as

***Ans*.Laggard (16 per cent)**

Quest.A process by which an idea or innovation spreads

***Ans*.Diffusion**

Quest.The process of arranging situations that stimulate and guide learning activities in order to bring desirable changes in the behaviour of people

***Ans*.Teaching**

Quest.Traditional teaching method

***Ans*.Drama**

Quest.Central element in learning situation

***Ans*.Learner**

Quest.A mental and/or physical reaction that makes through seeing

***Ans*.Learning experience**

Quest.Formulae of Intelligent Quotient

***Ans*.I.Q. (%) =** $\frac{\text{Mental age}}{\text{Chronological age}} \times 100$

Quest.The method of face-to-face or person-to-person contact between the rural people and extension workers

***Ans*.Individual contact**

Quest.Farm and home visit, Office calls, Telephone calls, Personal letters, Result Demonstration are comes under

***Ans*.Individual contact**

Quest.A method in which 20 to 30 rural people or farmers are contacted in a group

***Ans*.Group-contact**

Quest.Conferences, Pannel, Symposium, Discussion, Meeting, Workshops, Field trips, Tour are comes under

***Ans*.Group contact**

Quest.The media used for mass contact

***Ans*.Radio, Television, Exhibitions, Bulletins, Leaflets, News letter, Circular letters, Posters, folder/pamphlet etc.**

Quest.A sheet of paper with pictorial slogan, which is utilized to attract the mass attention for single idea.

***Ans*.Poster**

Quest.The most common size of poster

***Ans*.50cm x 75cm**

Quest.Round table discussion is called

***Ans*.Panel**

Quest.Mostly widely used pamphlet size

***Ans*.12 to 24 pages**

Quest.A published material on a small paper in which there is brief information of a subject

***Ans*.Leaflet**

Quest.When a paper folds ones or twice with detail information on specific aspects is called as

***Ans*.Folder**

Quest.A small published book consisting of 24 to 48 pages

***Ans*.Bulletin**

Quest.A series of illustrated cards flashed before a group in proper sequence to tell a complete story step by step to the group of the learners.

***Ans*.Flash cards**

Quest.For a group of 10-25, people use flash cards of size

***Ans*.10"x12" (25 cm x 30 cm)**

Quest.The letter used to send the same information to many people at the same time is called

***Ans*.Circular Letter**

Quest.When two or more brief talks presenting phases of the some general topic called

***Ans*.Symposium**

Quest.A systematic display of models, specimens, charts, real objects and any informative materials.

***Ans*.Exhibition**

Quest.The basic principle of Demonstration

***Ans*.Learning by seeing and doing**

Quest.The concept of demonstration was given by

***Ans*.Dr. Seeman A. Knapp**

Quest.Method demonstration is

***Ans*.Short -type demonstration**

Quest.The oldest form of teaching

***Ans*.Method demonstration**

Quest.The main purpose of method demonstration is

***Ans*.To provide skill**

Quest.The basic principle of method demonstration

***Ans*.Learning by doing**

Quest.The father of method demonstration

***Ans*.Dr. Seeman A. Knapp**

Quest.A single practice demonstration used to show method of sowing

***Ans*.Method demonstration**

Quest.A demonstration practice used to compare two technologies *i.e*. old and new

***Ans*.Result demonstration**

Quest.The demonstration used to improve skill, knowledge and attitude

***Ans*.Result demonstration**

Quest.Result demonstration is based on

***Ans*.Seeing by doing**

Quest.The front-line demonstrations conducted by researchers on the farmers field

***Ans*.National demonstrations**

Quest.Tape-recorder, Radio and Telephone are

***Ans*.Audio Aids**

Quest.Non-projected visual aids

***Ans*.Posters, Charts, Flashcards, Bulletin board, Photograph etc.**

Quest.Television is a type of

***Ans*.Projected Audio Visual Aid**

Quest.The best media to communicate with farmers and for village people

***Ans*.Puppets**

Quest.A transparent picture or photograph in an individual mount, projected through slide projector

***Ans*.Slides**

Quest.The basic unit of civilization

***Ans*.Family**

Quest.The basic unit of rural society

***Ans*.Village**

Quest.A family consists of husband, wife and their children known as
***Ans*.Nuclear family**

Quest.The uniformly accepted ways of acting about some social aspects of life are known as :
***Ans*.Custom**

Quest.They are uniformly accepted ways of thinking
***Ans*.Tradition**

Quest.Cooperative Movement (1904) was initiated by
***Ans*.F. Nicholson**

Quest.Concept of Village Level Worker was related with the programme
***Ans*.Sri Niketan**

Quest.Gurgaon Project (1920) was started by
***Ans*.Mr. F.L. Brayne**

Quest.Young Men Christian Association was associated with
***Ans*.Marthandom Project (1928)**

Quest.Rural Development programme was started on
***Ans*.1935**

Quest.The district level extension programme launched in independent India was in
***Ans*.Etawah**

Quest.Etawah Pilot Project (1948) was initiated by
***Ans*.Albert Mayer**

Quest.Five year plans were started on
***Ans*.1951**

Quest.Community Development Project (CDP) was started on
***Ans*.2nd Oct, 1952**

Quest.Which programme is called as Package programme
***Ans*.Intensive Agriculture District Programme (1960)**

Quest.High Yielding Varietal Programme (HYVP) was started on
***Ans*.1966-67**

Quest.The programme initiated at occasion of ICAR Golden Jubille celebration

***Ans*.Lab to Land Programme (1979)**

Quest.Training and Visit programme (1974) is also known as

***Ans*.Baster and Benor Scheme**

Quest.Who had recommended Panchayat Raj System?

***Ans*.Balwant Rai Mehata Committee**

Quest.The basic principle/slogan of TRYSEM was

***Ans*.Learning by doing**

Quest.The primary aim of Integrated Rural development Programme (IRDP)

***Ans*.All round development of family**

Quest.NABARD is started on

***Ans*.12th July, 1982**

Quest.A programme to provide atleast 100 days wage employment in rural areas

***Ans*.National Rural Employment Guarantee Act (NAREGA, 2006)**

Quest.A guarantee programme for the people below poverty line.

***Ans*.National Food Security Mission (2007)**

(II) Agricultural Economics

Quest.The science of Wealth

***Ans*.Economics**

Quest.The economic concerned with individual unit *i.e*., single industry, form or single consumer.

***Ans*.Micro economics**

Quest.The economic deal with the whole economic setup *i.e*. total production, total expenditure, total income etc.

***Ans*.Macro economics**

Quest.Father of Agricultural Economics

***Ans*.Adam Smith**

Quest.The potential exchangeable means of satisfying human wants

***Ans*.Wealth**

Quest.The part of wealth used for further regenerating wealth

***Ans*.Capital**

Quest.Reward of Labour
***Ans*.Wages**

Quest.Reward of Capital
***Ans*.Interest**

Quest.Population theory was proposed by
***Ans*.Malthus**

Quest.The market used for food grains
***Ans*.Regional or State market**

Quest.The market used for durable goods
***Ans*.National market**

Quest.A time based market basically for perishable goods
***Ans*.Short period market**

Quest.Food grain markets, vegetable markets, wool market are the example of
***Ans*.Special market**

Quest.Which market ensure fair price
***Ans*.Regulate market**

Quest.Which one is a competitive market?
***Ans*.Perfect market**

Quest.The market which is permanent in nature
***Ans*.Secular market**

Quest.The 1st function performed in the marketing of agricultural commodities
***Ans*.Packing**

Quest.Which is not a function of marketing
***Ans*.Harvesting**

Quest.FCI was established in
***Ans*.1965**

Quest.The Warehousing Corporations Act came into operation on
***Ans*.18th March, 1962**

Quest.NAFED was established in the year
***Ans*.October, 1958**

Quest.When there is a single salers of a product
***Ans*.Monopoly market**

Quest.A market consisting of single buyer of a product
***Ans*.Monosony market**

Quest.When few salers of a commodity
***Ans*.Oligopoly market**

Quest.When few buyers of a commodity
***Ans*.Oligopsony market**

Quest.A market where homogenous products and large no. of buyers and salers are found
***Ans*.Pure Market**

Quest.The contribution of central govt. in the capital share of Regional Rural Bank
***Ans*.50%**

Quest.WTO come in to effect from
***Ans*.1995**

Quest.The portion of the total produce in stock which the farmer is willing to sell.
***Ans*.Marketable surplus**

Quest.The portion which is usually brought to the market at a particular time for sale.
***Ans*.Marketed surplus**

Quest.The relationship between Marketable to Marketed surplus for perishable products
***Ans*.Equal**

Quest.Marketable surplus is given by
***Ans*.MS = P – C**

Quest.The minimum price at which the govt. is prepared to buy agril. commodities
***Ans*.Minimum Support Price (MSP)**

Quest.MSP is fixed by
***Ans*.Commission of Agricultural Cost and Price (CACP)**

Quest.National institute of Agricultural Marketing is situated at
***Ans*.Jaipur**

Quest.The difference between value in use and value in exchange

***Ans*.Consumer surplus**

Quest.The excess of what we are prepared to pay over what we actually pay for a commodity is known as

***Ans*.Consumer surplus**

Quest.Short term loan is given for

***Ans*.1 to 1½ years**

Quest.Long term loan is given for the period of

***Ans*.5 to 30 years**

Quest.The 3 Rs of credit are

***Ans*.Returns, Repayment capacity and Risk bearing ability.**

Quest.Loan repaying capacity of a farmer is judged on the basis of

***Ans*.Net income of farmer**

Quest.Increase in money supply and fall in production causes

***Ans*.Inflation**

Quest.Risks arise due to changes in Government policies are termed as a

***Ans*.Institutional risk**

Quest.AGMARK Act was passed in

***Ans*.1937**

Quest.Central AGMARK Lab is located at

***Ans*.Nagpur**

Quest.1st bank in India was established on

***Ans*.1806**

Quest.Money supply in Indian national economy is regulated by

***Ans*.RBI**

Quest.RBI was established and nationalized in

***Ans*.1st April, 1935 and 1st January, 1949**

Quest.The bank who credits to marginal, small and Agricultural labours

***Ans*.RRB (1975)**

Quest.The full form of NABARD

***Ans*.National Bank for Agricultural and Rural Development**

Quest.14 commercial banks were nationalization on

***Ans*.19th July, 1969**

Quest.Income Tax is an example of

***Ans*.Direct tax**

Quest.The tax which is levied on goods or services produced or purchased.

***Ans*.Indirect tax**

Quest.A multistage sales tax with credit for taxes paid on business purchases.

***Ans*.VAT**

Quest.A farmer having an area of <1 ha

***Ans*.Marginal farmer**

Quest.The operational land holding of small farmers

***Ans*.1-2 ha**

Quest.The land holding of large farmers

***Ans*.> 10 ha**

Quest.On which basis, CACP fixed minimum prices of crops

***Ans*.Cost of production**

Quest.A science of decision making

***Ans*.Farm Management**

Quest.Production function is also known as

***Ans*.Input Output relation**

Quest.Transformation of physical inputs into physical outputs is termed as

***Ans*.Production**

Quest.Cost calculated per hectare is known as

***Ans*.Cost of Production (COC)**

Quest.The most important unit of farm management

***Ans*.Production unit**

Quest.The basis of Cobb - Douglas Production function is

***Ans*.Constant elasticity of substitution**

Quest.When $MPP_X > APP_X$; then APP_X is

***Ans*.Increasing**

Quest.Under perfect competition market, maximum profit is obtained when

***Ans*.Marginal Return = Marginal Cost**

Quest.Optimum profit will be obtained at a point where

***Ans*.MC = MP**

Quest.Marginal cost is equal to

***Ans*.** $\frac{\text{Change in total cost}}{\text{Change in output}}$

Quest.When the demand and price are equal, called as

***Ans*.Equilibrium price**

Quest.The principle applied for production function "How much to produce"

***Ans*.Principal of diminishing returns/costs**

Quest.The principle applied for "How to produce"

***Ans*.Principal of least cost combination**

Quest.The principle applied for "What to produce"

***Ans*.Principal of opportunity cost/Equimarginal returns**

Quest.Optimum level of input use without resource limitation

***Ans*.Law of diminishing return**

Quest.Basic fundamental law of agriculture is

***Ans*.Law of diminishing return**

Quest.Choose best crop enterprises

***Ans*.Principal of opportunity cost**

Quest.When total Assets are divided by total liabilities, called as

***Ans*.Net Capital Ratio (NCR)**

Quest.The formulae of Rate of Turn Over

***Ans*.Rate of Turn Over =** $\frac{\text{Gross Income}}{\text{Total Farm Assets}} \times 100$

Quest.When MP = 0, then $E_P = 0$ is called

***Ans*.Completely inelastic demand**

Quest.When MP > AP then $E_P > 1$ is called

***Ans*.Elastic demand**

Quest.When MP = AP, then $E_P = 1$

***Ans*.Unit inelastic demand**

Quest.Demand of Agri. Products are always comes under

***Ans*.Unit inelastic demand**

Quest.Inflexion point is found on

***Ans*.Irrational zone (Stage – I)**

Quest.The zone at which TP increases but at decreasing rate

***Ans*.Rational zone (Stage – II)**

Quest.E_P is always less than zero in

***Ans*.Irrational zone (Stage – III)**

Quest.Price Ratio is equal to

***Ans*.Cost per unit of added resource** $PR = \frac{\text{Cost per unit of added resource}}{\text{Cost per unit of replaced resource}}$

Quest.Present value of future investment is calculated by

***Ans*.Discounting**

Quest.A line represents the different combinations of two variable inputs used in the production of a given amount of output.

***Ans*.Isoquant**

Quest.Isoquant is used in

***Ans*.F - F relationship**

Quest.A line indicates all possible combinations of two inputs which can be purchased with a given amount of investment fund

***Ans*.Iso-Cost line**

Quest.The line join the end points of Isoquants

***Ans*.Ridge line**

Quest.The line by which all the least cost combination points are joined to each other

***Ans*.Expansion Path**

Quest.Two or more products when produced in the same production process called

***Ans*.Joint product**

Quest.When the increase in one product is directly proportionate to increase the other product is called

***Ans*.Complementary Production**

Quest.Crop production and dairy enterprise having

***Ans*.Supplementary relationship**

Quest.Fixed Cost + Variable Cost is

***Ans*.Total cost**

Quest.The costs, related to fixed resources

***Ans*.Fixed Costs**

Quest.Rent, interest on fixed capital, depreciation of building, taxes and wages of the permanent labourers constitute

***Ans*.Fixed Costs**

Quest.The cost related to the variable resources and change with the output

***Ans*.Variable Costs**

Quest.Gross income - Total Cost is equal to

***Ans*.Profit**

Quest.The change in cost associated with an increase of one unit of output.

***Ans*.Marginal cost (MC)**

Quest.Variable cost is also known as

***Ans*.Prime cost/Input cost**

Quest.Fixed cost is also known as

***Ans*.Overhead cost**

Quest.All actual expenses in cash and kind incurred in production by owner operator

***Ans*.Cost-A**

Quest.Cost A_1 + rent paid for based in land

***Ans*.Cost A_2**

Quest.Cost A_2 + interest on value of owned capital assets (including land)

***Ans*.Cost B_1**

Quest.Cost B_1 + rental value of owned land and rent paid by leased in land

***Ans*.Cost B_2**

Quest.The total cost of production which includes all cost items, actual as well as imputed.
***Ans*.Cost C**

Quest.Cost C is equal to
***Ans*.Cost B + imputed value of family human labour**

Quest.Gross Returns – Cost A is
***Ans*.Farm business income**

Quest.Gross returns - Cost B is
***Ans*.Family labour income**

Quest.Net income is
***Ans*.Gross returns - Cost C**

Quest.Benefit Cost Ratio is
***Ans*.Gross income/Cost C**

Quest.When farms is classified on the basis of utilization of land and resources, termed as
***Ans*.Types of Farming**

Quest.The farming having 50% income by single enterprise
***Ans*.Specialized farming**

Quest.Crop Production + livestock raising is called
***Ans*.Mixed farming**

Quest.The farming which has < 50% income by single enterprise
***Ans*.Diversified farming**

Quest.Farming in an areas having average annual rainfall of £ 50 cm.
***Ans*.Dry farming**

Quest.Natural grazing pattern is known as
***Ans*.Ranching**

Quest.When farm is classified on the basis of organizational setup, termed as
***Ans*.System of farming**

Quest.The joint agriculture operation by farmer on voluntary basis
***Ans*.Cooperative farming**

Quest.The cooperative farming in which Ownership and operations both Individual
***Ans*.Cooperative better farming**

Quest.The cooperative farming in which Ownership is individual and operations is collectively

***Ans*.Cooperative joint farming**

Quest.The farming in which investment of land and capital is done by big businessperson or capitalist

***Ans*.Capitalistic farming**

Quest.Government carries out farming is

***Ans*.State farming**

Quest.When farmers follows agricultural practices in their own way and managers and organizers of their farm business

***Ans*.Peasant faming**

Quest.A process of deciding in the present what to do in the future about the best combination of crops and live stock to be raised

***Ans*.Farm Planning**

Quest.Long-term planning is done for

***Ans*.5-10 years**

Quest.A process of estimating costs, returns and net profit of a farm or a particular enterprise

***Ans*.Farm Budgeting**

Quest.The basis of farm budgeting is

***Ans*.Cost benefit analysis**

Quest.When new variety is recommended, which type of budget should be prepared?

***Ans*.Partial budget**

Quest.Net worth is calculated from

***Ans*.Balance Sheet**

Quest.The farm accounting/accountancy is also called as

***Ans*.Farm Book keeping**

Chapter 10

Agricultural Statistics

(I) Elements of Statistics

Quest.Mean, Median and Mode are

***Ans*.Measures of Central tendency**

Quest.A figure obtained by dividing the sum of all variable by their total number of variables.

***Ans*.Averages/Arithmetic Mean**

Quest.Sum of deviation of items from the A.M. is

***Ans*.0**

Quest.Which mean is affected by change in origin and scale both?

***Ans*.AM**

Quest.Middle most value of the series

***Ans*.Median**

Quest.Which one represents median?

***Ans*.50^{th} Percentile**

Quest.Most frequently occurred item

***Ans*.Mode**

Quest.Relationship between AM, median and Mode in asymmetrical distribution

***Ans*.Mode = 3 Median – 2 Mean**

Quest.The best measures of central tendency

***Ans*.Arithmetic Mean (AM)**

Quest.The ratio of no. of observations to the sum of the reciprocal of the value of the different observations.

***Ans*.Harmonic Mean**

Quest.The order of three averages for a given data

***Ans*.AM > GM > HM**

Quest.Mean applied when deals with rate, price and speed of a vehicle

***Ans*.HM**

Quest.Mean applied when deals with relative changes eg. Bacterial growth, cell division, population

***Ans*.GM**

Quest.The average of the sum of squares of the deviation about mean

***Ans*.Variance**

Quest.The degree of scatterness or variation of the variable about a central tendency

***Ans*.Disperson**

Quest.MD, SD and Variance are

***Ans*.Measures of Disperson/Spread**

Quest.½ of the interquartile range is

***Ans*.Quartile deviation**

Quest.The best measure of Disperson is

***Ans*.Standard Deviation (SD)**

Quest.SD is always calculated by

***Ans*.AM**

Quest.SD is ranges from

***Ans*.0 to ∞**

Quest.The difference between highest and lowest value of the series

***Ans*.Range**

Quest.Unit less figure based on two values

***Ans*.Range**

Quest.Coefficient of variation calculated by

***Ans*.CV = (SD/Mean) x 100**

Quest.The variation used to compare the variability between two series

***Ans*.CV**

Quest.Which is not a measure of Disperson?

***Ans*.CV**

Quest.The measures of the direction and degree of asymmetry

***Ans*.Skewness**

Quest.The formulae of Karl pearson's coefficient of Skewness

***Ans*.CSK=** $\frac{(\text{Mean} - \text{Mode})}{\sigma}$

Quest.Coefficient of skewness for normal distribution is

***Ans*.0**

Quest.An idea about the flatness/peakedness of the curve

***Ans*.Kurtosis**

Quest.The term 'Kurtosis' was introduced by

***Ans*.Karl Pearson (1906)**

Quest.The curve have $\beta_2 > 3$ or $Y_2 > 0$ is

***Ans*.Leptokurtic curve**

Quest.The curve have $b_2 = 3$ or $Y_2 = 0$ is

***Ans*.Mesokurtic curve**

Quest.The study the association or degree and deviation between two or more variables.

***Ans*.Correlation**

Quest.Correlation lies between

***Ans*.-1 to +1**

Quest.Which is used to measure the average relationship between two or more variables?

***Ans*.Regression**

Quest.Regression coefficient is independent of

***Ans*.Origin**

Quest.The distribution in which Mean > Variance

***Ans*.Bionomial distribution**

Quest.The distribution in which Mean = Variance

***Ans*.Poison distribution**

Quest.The degree of freedom of Normal distribution

***Ans*.n-3**

Quest.The term used to denote chance of happening or not happening of an event.

***Ans*.Probability**

Quest.Probability is formulated by

***Ans*.Probability** = $\frac{\text{No. of favourable cases}}{\text{Total no. of equally likely cases}}$

Quest.Probability ranges from

***Ans*.0 to 1**

Quest.The test used for comparing two means when sample size is small (up to 30)

***Ans*.'T' test**

Quest.Students t test is used when

***Ans*.Small samples size and SD is unknown**

Quest.Students t test was proposed by

***Ans*.W.S. Gosset**

Quest.To test the proportions and variance, we use

***Ans*.'F' test**

Quest.To test the goodness of fit or homogeneity, we use

***Ans*.CHI^2 test**

Quest.CHI^2 test was given by

***Ans*.Karlpierson**

Quest.When the calculated F is greater than table F value at 5% only, the differences in treatments is considered.

***Ans*.Significant**

Quest.With increasing number of error degree of freedom, table F value follow _____ trend.

***Ans*.Gradually decreased**

(II) Field Experimentation

Quest.Logical constructions of the experiments in which the degree of uncertainty with which the inference (Result/confusion) on may be well defined.

***Ans*.Design of Experiments**

Quest.The objects of comparison, which an experiment has to try in the field for assessing their value.

***Ans*.Treatment**

Quest.The 3 basic principles of field experimentation

***Ans*.Replication, Randomization and Local control**

Quest.Repeated application of treatments
***Ans*.Replication**

Quest.Allocation of treatments to the different experimental units by a random process
***Ans*.Randomization**

Quest.Which principle of experimentation eliminates human biases
***Ans*.Randomization**

Quest.Local control helps in reducing the
***Ans*.Experimental error**

Quest.The transformation required when data not follow normal distribution.
***Ans*.Data transformation**

Quest.The most appropriate transformation for percentage
***Ans*.Angular transformation**

Quest.Which transformation is applied when mean a variance
***Ans*.Square root**

Quest.The hypothesis under test
***Ans*.Null hypothesis**

Quest.The variation due to uncontrolled factors
***Ans*.Experimental error**

Quest.The error in which hypothesis is true but our test rejects it.
***Ans*.Type I error**

Quest.Out of the two types of error in testing, the more severe error is
***Ans*.Type II error**

Quest.The simplest experimental design
***Ans*.Complete Randomized Design (CRD)**

Quest.The experimental design which provides maximum degree of freedom for error
***Ans*.CRD**

Quest.Which design is applied when experimental material are limited and homogenous
***Ans*.CRD**

Quest.The error degree of freedom in CRD is formulated as
***Ans*.N - t**

Quest.The most commonly used design

***Ans*.Randomized Block Design (RBD)**

Quest.RBD is also called as

***Ans*.One way elimination of heterogeneity design/Two way classification of ANOVA**

Quest.When fertility gradient in one direction, the statistical design to be used

***Ans*.RBD**

Quest.The maximum no. of treatments adopted in RBD

***Ans*.20**

Quest.In RBD, the number of blocks is equal to

***Ans*.No. of replications (b = r)**

Quest.The error degree of freedom of RBD is formulated as

***Ans*.(t-1) (r-1)**

Quest.The design in which fertility gradient is in two way direction

***Ans*.Latin Square Design (LSD)**

Quest.LSD is also known as

***Ans*.Two way elimination of heterogeneity design/Three way classification of ANOVA**

Quest.In LSD, the no. of row or column or treatment is equal to

***Ans*.No. of replications (r = c = t)**

Quest.The optimum number of treatments studied in latin square design

***Ans*.5 to 12**

Quest.The error degree of freedom of LSD is formulated as

***Ans*.(t-2) (t-1)**

Quest.Which design provides main effects and interactions

***Ans*.Factorial RBD**

Quest.The treatment df for 3 factors each at 2 levels is

***Ans*.$2^3 = 6-1 = 5$**

Quest.The technique of reducing the size of replication over a number of blocks at the cost of loosing some informations on same effect

***Ans*.Confounding Design**

Quest.Which are unimportant in Confounding Design?

***Ans*.Interactions**

Quest.Confounding Design is adopted when the number of treatments is

***Ans*.10**

Quest.If an interaction effect is confounded with all the replicates of the treatment

***Ans*.Complete/total confounding**

Quest.The most appropriate design, when all factors are not of equally important in experimentation.

***Ans*.Split Plot Design (SPD)**

Quest.To study two factors with different level of precision, which design is used

***Ans*.Split plot design**

Quest.The factor requires larger units to be applied and may produce larger differences

***Ans*.Main plot**

Quest.The error degree of freedom of SPD is formulated as

***Ans*.D (r-1) (d-1)**

Quest.In a split plot design, 5 levels of main plot and 4 levels of sub plot treatments studied with 3 replications. What will be the d.f. for error b source?

***Ans*.30**

Quest.If sub treatments are laid out in strips then the design is called

***Ans*.Strip Plot Design**

Quest.How many no. of error variance are applied in Strip Plot Design

***Ans*.3**

Quest.In Strip Plot Design, which one is to be tested with higher precision

***Ans*.Interaction**

Chapter 11

Agroforestry

Quest.A system where agriculture and forestry are practised either simultaneously or separately on the same unit of land

***Ans*.Agroforestry**

Quest.Agroforestry is a form of

***Ans*.Multiple cropping**

Quest.The area under forest land in India

***Ans*.67 mha (20.36%)**

Quest.Optimum area under forest required

***Ans*.33% of total geographical area**

Quest.Contribution of forest product in world GDP

***Ans*.1 %**

Quest.Indian Forest Act was come in existence

***Ans*.1927**

Quest.Forest Conservation Act was made in

***Ans*.1980**

Quest.Forest school is established at

***Ans*.Dehradun**

Quest.The Van Mahotsav Day in India is observed on

***Ans*.1 July**

Quest.State having highest forest area in India

***Ans*.M.P.**

Quest.Forest type found maximum in India

***Ans*.Tropical dry deciduous forest**

Quest.National Research Centre for Agroforestry is situated at

***Ans*.Jhansi (1988)**

Quest.International Centre for Research in Agroforestry (ICRAF) is situated at
***Ans*.Nairobi, Kenya**

Quest.The most important Agroforestry practice is
Ans*.*Acacia leucophloea* + *Cenchrus setigerus

Quest.The oldest known agro forestry practice
***Ans*.Shifting cultivation**

Quest.Cultivation of Trees + Crops is known as
***Ans*.Agri-Silviculture**

Quest.Perennial hedges + crops
***Ans*.Alley cropping**

Quest.Fruit trees + crops
***Ans*.Agri-horticulture**

Quest.Trees + fruit trees + crops
***Ans*.Agri-silvi-horticulture**

Quest.Trees + crops + pasture/animals
***Ans*.Agri-silviculture**

Quest.Trees+ pasture/animals
***Ans*.Silvi-pasture**

Quest.Fruit trees + honeybees
***Ans*.Horti-apiculture**

Quest.Trees + fishes
***Ans*.Aqua-forestry**

Quest.Forage trees + pasture
***Ans*.Forage forestry**

Quest.Trees + crops during initial years
***Ans*.Energy plantation**

Quest.Multiple combination of trees, fruit trees, vegetables atc.
***Ans*.Homestead**

Quest.Trees is on boundary + crops
***Ans*.Boundary plantation**

Quest.Taungya system means
***Ans*.Hill cultivation**

Quest.Most common example of taungya system
***Ans*.Planting of Teak in Myanmar**

Quest.Nitrogen fixing tree
Ans.Leucaena leucocephala

Quest.Non leguminous nitrogen fixing trees
Ans.Alnus nepalensis

Quest.Bio-drainage plant
Ans.Eucalyptus tereticornis

Quest.Most suitable woodlot trees in India
Ans.Casuarina and Leucaena

Quest.Fodder producing tree
Ans.Prosopis cineraria

Quest.Fuel wood tree
Ans.Albizia lebbeck

Quest.Green manuring tree
Ans.Thespesia populnea

Quest.Shifting cultivation causes
***Ans*.Deforestation**

Quest.Miracle forest tree (as it provides fodder, fuel, pulpwood and timber)
***Ans*.Subabul**

Quest.Fast growing forest tree species
Ans.Eucalyptus sp.

Quest.Multipurpose tree species
Ans.Albizia lebbeck

Quest.The most appropriate and effective type of crop cultivation in forests
***Ans*.Intercropping**

Quest.Ratanjot and Karanj are

***Ans*.Biofuel plants**

Quest.Oil percentage in Ratanjot (*Jatropha sp*.)

***Ans*.35% (from seed)**

Quest.Spacing maintained between hedge row intercropping in alley cropping

***Ans*.4-8 meter**

Quest.Tree species suitable for alley cropping

Ans*.*Cassia siamea, Leucaena* and *Sesbania

Quest.Forestry outside the conventional forests which primarily aim at providing continuous flow of goods and services for the benefit of people

***Ans*.Social forestry**

Quest.A forest system which promote commercial tree growing by farmers on their own land

***Ans*.Farm Forestry**

Quest.Pollarding is done at

***Ans*.2 m height from ground**

Quest.A belt of trees and or shrubs maintained for the purpose of shelter from wind, sun, snow drift, etc.

***Ans*.Shelterbelts**

Quest.A protective plantation in a certain area, against strong winds. It is usually comprised of a few rows of trees (or shrubs)

***Ans*.Wind breaks**

Quest.Raising of forests of public or community land

***Ans*.Community forestry**

Quest.The ratio of height, width and length in shelterbelt system

***Ans*.1:25:10 meter**

Quest.A process in which the branch of a plant is cut off in order to produce a flush of new shoots

***Ans*.Pollarding**

Quest.The main stem of a tree is called

***Ans*.Bol**

Quest.Full form of ICARF

Chapter 12

Environmental Science and Ecology

Quest.The sum total condition in which organisms live is called as

***Ans*.Environment**

Quest.A self supporting community - plants and animals interacting with each other and the non-living environment to provide a balanced system is a

***Ans*.Ecosystem**

Quest.The word 'ecosystem' was coined by

***Ans*.A.G.Tansley**

Quest.The region existing between two ecosystems which contain species of both ecosystems is

***Ans*.Ecotone**

Quest.The study of interactions between living organism and environment is called as

***Ans*.Ecology**

Quest.The term ecology was introduced by

***Ans*.Hackel**

Quest.Large portions of the earth with similar climate, soil, plant and animal life community is known as

***Ans*.Biosphere**

Quest.The earth contains a thin region known as the biosphere, in which life exists. The three parts of the biosphere are

***Ans*.Atmosphere, hydrosphere and lithosphere**

Quest.Sphere of Water or 70% of global is occupied by

***Ans*.Hydrosphere**

Quest.The characteristics of the type of environment where an organism normally lives?

***Ans*.Habitat**

Quest.All the populations of the different species living and inter-acting in the same ecosystem?

***Ans*.Community**

Quest.The variety of living organisms (flora and fauna) is called as
***Ans*.Biodiversity**

Quest.The environment which includes producers, consumers and decomposers?
***Ans*.Biotic environment**

Quest.Abiotic environment does not include
***Ans*.Plants**

Quest.The environment which has been modified by human activities is called
***Ans*.Anthropogenic environment**

Quest.The group of organisms which convert light into food are called
***Ans*.Autotrophs**

Quest.The plants, which produce food themselves through photosynthesis?
***Ans*.Phototrophs**

Quest.The ecosystem component, feed on producer or consumers?
***Ans*.Heterotrophs**

Quest.The Heterotrophs, feed on plants and called primary consumers?
***Ans*.Herbivores**

Quest.The Heterotrophs, feed on meats and called secondary consumers?
***Ans*.Carnivores**

Quest.The main constituent of CNG is
***Ans*.Methane**

Quest.The Heterotrophs, feed on both plants and meats?
***Ans*.Omnivores**

Quest.The base of the food chain in the ocean is the
***Ans*.Phytoplankton**

Quest.Primary consumers in aquatic system are?
***Ans*.Zooplanktons**

Quest.The ecosystem component, which break down dead organic matter and wastes?
***Ans*.Decomposers**

Quest.Decomposers include
***Ans*.Bacteria and Fungi**

Quest.In which ecosystem, producers are of large size
***Ans*.Grassland ecosystem**

Quest.Natural resources which are renewable
***Ans*.Water and wood**

Quest.Non Renewable resources are
***Ans*.Minerals, fossil, fuels.**

Quest.The main constituent of LPG is
***Ans*.Butane**

Quest.The source of energy for all plants is
***Ans*.Sun**

Quest.The ecological factors, related to soil and substratum, are called
***Ans*.Edaphic Factor**

Quest.The term used to refer the weight of all the organisms at a tropical level.
***Ans*.Biomass**

Quest.The unit of energy is
***Ans*.Joule**

Quest.Which is not included under biomass?
***Ans*.Water**

Quest.Plants which grow on other plants are called
***Ans*.Epiphytes**

Quest.Increasing industrialisation is causing much danger to man's life by
***Ans*.Polluting the environment**

Quest.Major pollutants that contribute to 90% of global air pollution
***Ans*.CO and CO_2**

Quest.Global warming focuses on an increase in the level of which gas in the atmosphere?
***Ans*.Carbon dioxide**

Quest.Colourless and odourless air pollutant is
***Ans*.SO_2**

Quest.Most poisonous pollutant in water
***Ans*.Arsenic**

Quest.Most commonly used disinfectant in water purification

***Ans*.Chlorine**

Quest.The test which has self purification capacity of water body

***Ans*.BOD (Biochemical Oxygen Demand) test**

Quest.Materials that cause BOD include

***Ans*.Wood, animal wastes, sewage**

Quest.Permissible limit of iron in drinking water

***Ans*.1 ppm**

Quest.A disease caused by mercury (Hg) poisoning of water at Japan in 1953

***Ans*.Minamata**

Quest.*Manimata* disease is due to

***Ans*.Mercury toxicity**

Quest.*Itai-Itai* disease is due to

***Ans*.Cadmium (Cd) toxicity**

Quest.The chief green house gases are

***Ans*.CO_2 and CH_4**

Chapter 13

About ICAR and IARI

I.C.A.R.

- The highest body controlling agricultural research and education in India is" **Indian Council of Agricultural Research** (ICAR)."
- It was established on July 16, 1929 with the name "Imperial Council of Agricultural Research" under the Societies Registration Act, 1860 in pursuance of the report of the Royal Commission on Agriculture.
- ICAR headquarters at Krishi Bhavan, New Delhi.
- The ICAR was bestowed with the **King Baudouin Award** in 1989 for its valuable contribution in the Green Revolution. Again awarded King Baudouin Award in 2004 for research and development efforts made under partnership in Rice Wheat Consortium.
- First Director-General was **Dr. B.P. Pal** (1965)
- Union Minister of Agriculture is the ex-officio President of the ICAR Society. (Present-**Sharad Pawar**)
- New Director-General of ICAR: **Dr. S. Ayyappan** (from 01.01.2011)
- 4 Deemed universities are part of the ICAR.

I.A.R.I.

- 1905: Agricultural Research Institute was established at Pusa, Bihar by Lord Curzon. The land was donated by Mr. Phipps of USA after whom the place was named as Pusa. The Phipps laboratory in division of Soil Science and Agricultural Chemistry.
- 1911: Renamed as Imperial Agricultural Research Institute.
- 1923: Institute started offering Diploma of Associateship.
- 1934: Major Earth quake damages the buildings at Pusa.
- 1936: Shifted to New Delhi.
- 1936: **B. Vishwanath** became the first Indian Director of the Institute.
- 1946: The Diploma of Associateship was recognised equivalent to M.Sc.

- 1947: Name has been changed from Imperial Agricultural Research Institute to **Indian Agricultural Research Institute**.
- 1958: Recognized as "Deemed University" under UGC Act of 1956.

Chapter 14

Agricultural Research, Education and Extension

DEEMED UNIVERSITIES - 4

1.	Indian Agricultural Research Institute (IARI)	: New Delhi
2.	National Dairy Research Institute (NDRI)	: Karnal
3.	Indian Veterinary Research Institute (IVRI)	: Izatnagar
4.	Central Institute on Fisheries Education (CIFE)	: Mumbai

NATIONAL RESEARCH INSTITUTES - 45

1.	Central Rice Research Institute (CRRI)	: Cuttack
2.	Vivekananda Parvatiya Krishi Anusandhan Sansthan (VPKAS)	: Almora
3.	Indian Institute of Pulses Research (IIPR)	: Kanpur
4.	Central Tobacco Research Institute (CTRI)	: Rajahmundry
5.	Indian Institute of Sugarcane Research (IISR)	: Lucknow
6.	Sugarcane Breeding Institute (SBI)	: Coimbatore
7.	Central Institute of Cotton Research (CICR)	: Nagpur
8.	Central Research Institute for Jute and Allied Fibres (CRIJAF)	: Barrackpore
9.	Indian Grassland and Fodder Research Institute (IGFRI)	: Jhansi
10.	Indian Institute of Horticultural Research (IIHR)	: Bangalore
11.	Central Institute of Sub Tropical Horticulture (CISTH)	: Lucknow
12.	Central Institute of Temperate Horticulture (CITH)	: Srinagar
13.	Central Institute of Arid Horticulture (CIAR)	: Bikaner
14.	Indian Institute of Vegetable Research (IIVR)	: Varanasi
15.	Central Potato Research Institute (IPRI)	: Shimla
16.	Central Tuber Crops Research Institute (CTCRI)	: Trivandrum
17.	Central Plantation Crops Research Institute (CPCRI)	: Kasargod
18.	Central Agricultural Research Institute (CARI)	: Port Blair
19.	Indian Institute of Spices Research (IISR)	: Calicut
20.	Central Soil and Water Conservation Research & Training Institute (CSWCRTI)	: Dehradun

21.	Indian Institute of Soil Sciences (IISS)	: Bhopal
22.	Central Soil Salinity Research Institute (CSSRI)	: Karnal
23.	ICAR Research Complex for Eastern Region including Centre of Makhana	: Patna
24.	Central Research Institute of Dryland Agriculture (CRIDA)	: Hyderabad
25.	Central Arid Zone Research Institute (CAZRI)	: Jodhpur
26.	ICAR Research Complex	: Goa
27.	ICAR Research Complex for NEH Region	: Barapani
28.	National Institute of Abiotic Stress Management (NIASM)	: Malegaon
29.	Central Institute of Agricultural Engineering (CIAE)	: Bhopal
30.	Central Institute on Post-harvest Engineering and Technology (CIPET)	: Ludhiana
31.	Indian Institute of Natural Resins and Gums (IINRG)	: Ranchi
32.	Central Institute of Research on Cotton Technology (CIRCT)	: Mumbai
33.	National Institute of Research on Jute & Allied Fibre Technology (NIRJAFT)	: Kolkata
34.	Indian Agricultural Statistical Research Institute (IASRI)	: New Delhi
35.	Central Sheep and Wool Research Institute (CSWRI)	: Avikanagar
36.	Central Institute for Research on Goats (CIRG)	: Makhdoom
37.	Central Institute for Research on Buffaloes (CIRB)	: Hissar
38.	National Institute of Animal Nutrition and Physiology (NIANP)	: Bangalore
39.	Central Avian Research Institute (CARI)	: Izatnagar
40.	Central Marine Fisheries Research Institute (CMFRI)	: Kochi
41.	Central Institute Brackishwater Aquaculture (CIBA)	: Chennai
42.	Central Inland Fisheries Research Institute (CIFRI)	: Barrackpore
43.	Central Institute of Fisheries Technology (CIFT)	: Cochin
44.	Central Institute of Freshwater Aquaculture (CIFA)	: Bhubneshwar
45.	National Academy of Agricultural Research & Management (CAARM)	: Hyderabad

NATIONAL RESEARCH CENTRES - 17

1.	National Research Centre on Plant Biotechnology (NRCPB)	: New Delhi
2.	National Centre for Integrated Pest Management (NCIPM)	: New Delhi
3.	National Research Centre for Litchi (NRCL)	: Muzaffarpur
4.	National Research Centre for Citrus (NRCC)	: Nagpur
5.	National Research Centre for Grapes (NRCG)	: Pune
6.	National Research Centre for Banana (NRCB)	: Trichi
7.	National Research Centre Seed Spices (NRCSS)	: Ajmer
8.	National Research Centre for Pomegranate (NRCP)	: Solapur
9.	National Research Centre on Orchids (NRCO)	: Pakyong, Sikkim

10. National Research Centre Agroforestry (NRCA)	: Jhansi
11. National Research Centre on Camel (NRCC)	: Bikaner
12. National Research Centre on Equines (NRCE)	: Hisar
13. National Research Centre on Meat (NRCM)	: Hyderabad
14. National Research Centre on Pig (NRCP)	: Guwahati
15. National Research Centre on Yak (NRCY)	: West Kemang
16. National Research Centre on Mithun (NRCM)	: Medziphema
17. National Centre for Agril. Economics & Policy Research (NCAEPR)	: New Delhi

NATIONAL BUREAUX - 6

1. National Bureau of Plant Genetics Resources (NBPGR)	: New Delhi
2. National Bureau of Agriculturally Important Micro-organisms (NBAIM)	: Mau
3. National Bureau of Agriculturally Important Insects (NBAII)	: Bangalore
4. National Bureau of Soil Survey and Land Use Planning (NBSSLUP)	: Nagpur
5. National Bureau of Animal Genetic Resources (NBAGR)	: Karnal
6. National Bureau of Fish Genetic Resources (NBFGR)	: Lucknow

INTERNATIONAL ORGANIZATIONS OF CROP IMPROVEMENT

CIAT	International Centre for Tropical Agriculture	: Cali, Columbia
CIFOR	Center for International Forestry Research	: Jakarta, Indonesia
CIMMYT	International Centre for Wheat and Maize Improvement	: Baton, Mexico
CIP	International Potato Centre	: Lima, Peru
IBPGR	International Board for Plant Genetic Resources	: Rome, Italy
ICARDA	International Centre for Agricultural Research in the Dry Areas	: Alleppo, Syria
ICGES	International Centre for Genetic Engineering and Biotechnology	: Triesta, Italy
ICRAF	International Centre for Research in Agroforestry	: Nairobi, Kenya
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics	: Hyderabad, India
IFPRI	International Food Policy Research Institute	: Washington, USA
IITA	International Institute of Tropical Agriculture	: Ibadan, Nigeria
IIMI	International Irrigation Management Institute	: Colombo, Srilanka
ILRI	International Livestock Research Institute	: Nairobi, Kenya
INSFFER	International Network on Soil Fertility and Fertilizer Evaluation on Rice	: New Delhi, India
IPGRI	International Plant Genetic Resource Institute	: Rome, Italy
ISNAR	International Service for National Agricultural Research	: Netherlands
IRRI	International Rice Research Institute	: Manila, Phillipines
	International Water Management Institute	: Columbo, Sri Lanka

IWMI		
WFC	World Fish Centre	: Bayan Lepas, Malaysia
WARDA	West African Rice Development Association	: Monrovia, Liberia

STATE AGRICULTURE UNIVERSITIES - 50

1.	Acharya NG Ranga Agricultural University	: Rajendra Nagar, Hyderabad (AP)
2.	Anand Agricultural University	: Anand, Gujarat
3.	Assam Agricultural University	: Jorhat, Assam
4.	Bidhan Chandra Krishi Viswavidyalaya	: Mohanpur, Nadia, (WB)
5.	Birsa Agricultural University	: Ranchi, Jharkhand
6.	Central Agricultural University	: Imphal, Manipur
7.	Chandra Shekar Azad University of Agriculture & Technology	: Kanpur (UP)
8.	Chaudhary Charan Singh Haryana Agricultural University	: Hisar, Haryana
9.	CSK Himachal Pradesh Krishi Vishvavidyalaya	: Palampur, Himachal Pradesh
10.	Dr Balasaheb Sawant Konkan Krishi Vidyapeeth	: Dapoli Distt, Maharashtra
11.	Dr Panjabrao Deshmukh Krishi Vidyapeeth	: Akola, Maharashtra
12.	Dr Yashwant Singh Parmar Univ of Horticulture & Forestry	: Solan, Himachal Pradesh
13.	Govind Ballabh Pant University of Agriculture & Technology	: Pantnagar, Uttaranchal
14.	Guru Angad Dev Veterinary and Animal Science University	: Ludhiana, Punjab
15.	Indira Gandhi Krishi Vishwavidyalaya	: Raipur, Chhattisgarh
16.	Jawaharlal Nehru Krishi Viswavidyalaya	: Jabalpur (MP)
17.	Junagadh Agricultural University	: Junagad, Gujarat
18.	Kerala Agricultural University	: Trichur, Kerala
19.	Maharana Pratap Univ. of Agriculture & Technology	: Udaipur, Rajasthan
20.	Maharashtra Animal Science & Fishery University	: Nagpur, Maharashtra
21.	Mahatma Phule Krishi Vidyapeeth	: Rahuri, Maharashtra
22.	Marathwada Agricultural University	: Parbhani, Maharashtra
23.	Narendra Deva University of Agriculture & Technology	: Faizabad (UP)
24.	Navsari Agricultural University	: Navsari, Gujarat
25.	Orissa Univ. of Agriculture & Technology	: Bhubaneshwar, Orissa
26.	Punjab Agricultural University	: Ludhiana, Punjab
27.	Rajasthan Agricultural University	: Bikaner, Rajasthan
28.	Rajendra Agricultural University	: Pusa, Bihar
29.	Sardarkrushinagar-Dantiwada Agricultural University	: Sardar Krushinagar,

		Gujarat
30.	Sardar Ballabh Bhai Patel Univ. of Agriculture & Technology	: Modipuram (UP)
31.	Sher-E-Kashmir Univ of Agricultural Sciences & Technology	: Railway Road, Jammu
32.	Sher-E-Kashmir Univ of Agricultural Sciences & Technology of Kashmir	: Srinagar, J &K
33.	Sri Venkateswara Veterinary University	: Tirupati
34.	Tamil Nadu Agricultural University	: Coimbatore, Tamil Nadu
35.	Tamil Nadu Veterinary & Animal Science University	: Chennai, Tamil Nadu
36.	University of Agricultural Sciences	: Bangalore, Karnataka
37.	University of Agricultural Sciences	: Dharwad, Karnataka
38.	U.P. Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya evam Go Anusandhan Sansthan	: Mathura (UP)
39.	Uttar Banga Krishi Viswavidyalaya	: Coach Bihar (WB)
40.	West Bengal University of Animal & Fishery Sciences	: Kolkata, (WB)
41.	Karnataka Veterinary, Animal and Fisheries Sciences University	: BIDAR, Karnataka
42.	University of Agricultural Sciences	: Raichur, Karnataka
43.	University of Horticultural Sciences	: Bagalkot, Karnataka
44.	Andhra Pradesh Horticultural University	: Tadepalligudem, Andhra Pradesh
45.	Rajmata Vijay Raje Sciendia Krishi Vishwa- vidyalaya	: Gwalior (MP)
New Approved Universities		
46.	Bihar Agricultural University	: Bhagalpur, Bihar
47.	Kerala University of Fisheries and Oceanography	: Kochi (Kerala)
48.	Manyavar Shri Kanshi Ramji Agriculture Technology	: Banda (U.P.)
49.	Rajasthan University of Veterinary Sciences	: Bikaner (Rajasthan)
50.	Tamilnadu Horticultural University	: Krishnagiri (TN)

Chapter 15

Useful Information

FATHERS OF DIFFERENT DISCIPLINES

Fatherof	*Name*
☆ Agronomy	: Pietro Decrescenzi
☆ Agro meteorology	: D. N. Walia
☆ Agricultural chemistry	: Justus von Liebig
☆ Bacteriology	: Leuwenhoek
☆ Biochemistry	: Justus von Liebig
☆ Cooperative movement in India	: F. Nicholson
☆ Extension education	: A. Seaman/Leagnes
☆ Experimental genetics	: Thomas Hunt Morgan
☆ Field plot experiment	: J. B. Boussingault
☆ Fruit and vegetable preservation	: M. Nicholas Apart
☆ Genetics	: Gregor Johann Mendel
☆ Green revolution	: Dr. N. E. Borlaug
☆ Green revolution in India	: M.S.Swaminathan
☆ Golden revolution in India	: Dr. K.C. Chadha
☆ Golden rice	: Dr. Ingo Potrykus
☆ Hybrid rice	: Yuan Long Ping
☆ Hybrid cotton	: C.T. Patel
☆ Indian plant pathology	: E.J. Butler
☆ Indian Rust	: Dr. K.C. Mehta
☆ Microbiology	: Louis Pasture
☆ Modern Genetics	: T.H. Morgan
☆ Mutation Theory	: Hugo de vries
☆ Ornamental Gardening	: M. S. Randhawa
☆ Plant Pathology	: Anton De Bary
☆ Plant Physiology	: Stephen Hales
☆ Pedology	: V.V. Dokuchalev

☆ Plant Tissue Culture	: G. Haberlandt
☆ Sociology	: Auguste compte
☆ Statistics	: R.A. Fisher
☆ Soil Science	: Dokuchalev
☆ Soil Microbiology	: S.N. Winogradsky
☆ Super Rice	: Dr. G.H. Khush
☆ Tillage and Weeds	: Jethro Tull
☆ White Revolution	: Dr. Varghese Kurien

BOTANICAL NAME OF CROPS

Crops	*Botanical Name*
☆ **Cereal Crops**	
Rice	: *Oryza sativa* L.
Wheat	: *Triticum aestivum* L.
Maize	: *Zea mays* L.
Bajra/Pearlmillet	: *Pennisetum typhoides/P. glaucum* L.
Sorghum/Jowar	: *Sorghum bicolor/S. vulgare* L. Moench
Barley	: *Hordeum vulgare* L.
Triticale	: *Secale cereal*
Buckwheat/Pseudo cereal	: *Fagopyrum esculentum*
☆ **Millet Crops**	:
Cheena/Proso millet	: *Panicum miliacearum*
Foxtail/Italian /Jerman millet / Kakun	: *Seteria italica* L. Beauv.
Kodo/Coarsest millet	: *Paspulum scrobiculatum* L.
Little millet	: *Panicum sumatrense*
Madua/Ragi/Finger millet	: *Eleusine coracana* Gaertn
Sawan/Barnyard millet	: *Echinochloa frumentance* L.
☆ **Pulse Crops**	:
Gram/Chickpea/Bengal gram	: *Cicer aeritinum* L.
Field Pea/Grain pea	: *Pisum sativum var. arvense*
Arhar/Pigeon pea/Red gram	: *Cajanus cajan* L. Millsp.
Soybean	: *Glycine max* L. Merril
Black gram/Urdbean	: *Vigna mungo/Phaseolus mungo* L. Hepper
Green gram/Moong/Moongbean	: *Vigna radiate/Phaseolus aureus* L. Wilczek
French bean/Rajmash	: *Phaseolus vulgaris*

Indian Cowpea/Lobia	:	*Vigna unguiculata/V. sinensis* L.
Lentil	:	*Lens esculantum/L. culinaris*Moench
Lathyrus/Chickling pea/Grasspea	:	*Lathyrus sativus*
Mothbean	:	*Vigna/Phaseolus aconotifolia*
Horse gram/Kulthi	:	*Macrotyloma uniflorum*
☆ **Edible Oilseed Crops**	:	
Groundnut/Peanut/Monkeynut	:	*Arachis hypogea* L.
Sunflower	:	*Helianthus annus* L.
Safflower	:	*Carthamus tinctorius* L.
Rapseed and Mustard	:	*Brassica spp*. L.
Sesamum/Til	:	*Sesamum indicum* L.
Niger	:	*Guzotta abssicinia*
☆ **Non edible Oilseed Crops**	:	
Castor	:	*Ricinus communis* L.
Linseed/Flex	:	*Linnum ussitatisimum* L.
☆ **Fiber Crops**	:	
Cotton	:	*Gossipium spp*.
Jute/tita pat	:	*Corchorus capsularis*
Sunhemp	:	*Crotolaria juncea* L.
☆ **Forage Crops**		
Berseem	:	*Trifolium alexandrinum* L.
Lucerne/Alfalfa	:	*Medicago sativa* L.
Oat	:	*Avena sativa* L.
Napier grass	:	*Pennisetum purpureum* L.
Clusterbean/Gaur	:	*Cymopsis tetragonalaba* L.
☆ **Sugar Crops**	:	
Sugarcane/Cane	:	*Saccharum officinarum* L.
Sugarbeet	:	*Beta vulgaris* L.
☆ **Tuber Crops**	:	
Potato	:	*Solanum tuberosum* L.
Tapioca	:	*Manihot utilissima*
☆ **Stimulate Crops**	:	
Tobacco	:	*Nicotiana spp*.
Opium	:	*Papaver somniferum*
☆ **Medicinal Crops**	:	
Safed musli	:	*Chlorophytum borivilianum*

Ashwagandha/Winter cherry : *Withania somnifera*

Rouvolfia/Sarpagandha : *Rouvolfia serpentina*

Isabgol : *Plantago ovata*

Butch : *Acorus calamus*

Bramhi : *Bacopa morriei*

Nux vomica : *Strychnos Nuxvomica*

☆ **Aromatic Crops** :

Lemon grass : *Cymbopogan flexuasus*

Mentha/Mint : *Menthe arvensis*

Khus/Vetivar : *Vetiveria zizanoides*

Citronella : *Cymbopogan winterianus*

Tulsi/Basil : *Ocimum sanctum*

☆ **Fruit Crops** :

Kiwi fruits : *Actinidia chinensis*

Bael : *Aegle marmelos*

Custard apple : *Annona squamosa*

Pineapple : *Annanas comosus*

Jackfruit : *Autocarpus heterophyllus*

(Kair) : *Capparis decidue*

Papaya : *Carica papaya*

Karonda : *Carissa carandus*

Pecanut : *Carya illinoensis*

Lime : *Citrus aurantifolium*

Kinnow : *Citrus deliciosa*

Lemon : *Citrus limon*

Orange : *Citrus reticulata*

Sweet orange : *Citrus sinensis*

Aonla : *Emblica officinalis*

Wood apple : *Feronia limonia*

Fig : *Ficus carica*

Strawberry : *Fragaria sp.*

Phalsa : *Grewia subinaequalis*

Walnut : *Juglans regia*

Litchi : *Litchi chinensis*

Apple : *Malus domestica*

Mango : *Mangifera indica*

Mulberry	:	*Morus sp.*
Banana	:	*Musa paradisiaca*
Date palm	:	*Phoenix dactylifera*
Almond	:	*Prunus amygdalus*
Apricot	:	*Prunus armeniaca*
Pear	:	*Prunus communis*
Plum	:	*Prunus domestica*
Peach	:	*Prunus persica*
Guava	:	*Psidium guajava*
Pomegranate	:	*Punica granatum*
Raspberry	:	*Rubus idaeus*
Jamun	:	*Syzygium cumini*
Tamarind	:	*Tamarindus indica*
Ber	:	*Zizyphus mauritiana*
Grape	:	*Vitis vinifera*
Vegetable Crops	:	
Onion	:	*Allium cepa*
Garlic	:	*Allium sativum*
Elephant foot yam	:	*Amorphophyllus campanulatus*
Asparagus	:	*A. officinalis*
Beetroot	:	*Beeta vulgaris*
Palak	:	*B. vulgaris var. bengalensis*
Spinach	:	*Spinacea oleraceae*
Sweet Potato	:	*Ipomea batatas*
Cabbage	:	*Brassica oleracea var. capitata*
Cauliflower	:	*B. o. var. botrytis*
Brussel's Broccoli	:	*B. o. var. gemmifera*
Knol-khol	:	*B. caulorapa*
Turnip	:	*B. rapa*
Raddish	:	*Raphanus sativus*
Cucumber	:	*Cucumis sativus*
Musk melon	:	*Cucumis melo*
Snap melon (foot)	:	*Cucumis melo var. momordica*
Long melon (Kakri)	:	*C. melo var. utillisium*
Gherkin	:	*C. anguria*
Water melon	:	*Citrullus latanus*

Round melon	:	*C. l. var. fistulosus*
Pumpkin	:	*Cucurbita moschata*
Bottle gourd	:	*Lagenaria siceraria*
Ridge gourd	:	*Luffa acutangula*
Sponge gourd	:	*L. cylindrica*
Pointed gourd	:	*Trichosanthus dioca*
Snake gourd	:	*T. anguina*
Ash gourd	:	*Benincasa hispida*
Ivy gourd	:	*Coccinia indica*
Spine gourd	:	*Momordica chinensis*
Bitter gourd	:	*M. charantia*
Peas	:	*Pisum sativum var hartense*
French bean	:	*Phaseolus vulgaris*
Cluster bean	:	*Cymopsis tetragonalabus*
Cowpea	:	*Vigna unguiculata*
Fenugreek	:	*Trigonella foenugraecum*
Okra	:	*Abelmoschus esculantus*
Potato	:	*Solanum tuberosum*
Tomato	:	*S. lycopersicon*
Brinjal	:	*S. melongena*
Chilli	:	*Capsicum annum*
Sweet pepper	:	*C. annum*
Carrot	:	*Daucus carota*
Coriander	:	*Coriandrum sativum*
Celery	:	*Apium graveolens*
☆ **Flower Crops**	:	
Rosa	:	*Rosa indica*
Chrysanthemum	:	*Chrysanthemum spp*
Gladiolus	:	*Gladiolus spp.*
Carnation	:	*Dianthus spp.*
Marigold	:	*Tagetes spp*
Tuberose	:	*Polianthes tuberose*
Dahlia	:	*Dahlia pinnata*
Jasmine	:	*Jasminum spp.*
Bougainvillea	:	*Bougainvillea spp.*

FAMOUS NAME OF CROPS

FamousName	*Crops*
☆ King of cereals	: Wheat
☆ Queen of cereals	: Maize
☆ King of pulses	: Chickpea
☆ Queen of pulses	: Pea
☆ King of oilseeds	: Groundnut
☆ Queen of oilseeds	: Sesame (Til)
☆ Coarsest of all food grains	: Kodo *(Paspulum scrobiculatum)*
☆ King of fruits	: Mango
☆ Queen of fruits	: Pineapple
☆ King of temperate fruits	: Apple
☆ King of spices	: Black Pepper
☆ Queen of spices	: Cardamom
☆ King of vegetables	: Potato
☆ Queen of vegetables	: Okra
☆ Wonder crop	: Soybean
☆ King of fodder crops	: Berseem
☆ Queen of fodder crops	: Lucerne
☆ King of Arid and semi fruits	: Ber
☆ National fruits of India	: Mango
☆ Wonder tree	: Neem
☆ Bio energy plant	: Jatropha
☆ King of flower crops	: Rose
☆ Queen of flower crops	: Gladiolus
☆ Adams fig	: Banana
☆ Oldest cultivated tropical fruits	: Banana
☆ Tree of heaven	: Coconut
☆ King of nut crops	: Walnut
☆ Queen of nut crops	: Peanut
☆ White gold of America	: Cotton
☆ Yellow jewel of America	: Soybean
☆ Backbone of America	: Maize
☆ Sugar bowl	: Cuba

TERMS AND ASSOCIATED CROPS

Terms		Associated Crops
☆ Curing	:	Tobacco, Tea
☆ Nipping	:	Gram
☆ Wrapping	:	Sugarcane
☆ Dapog seedling	:	Rice seedling
☆ De- suckering	:	Tobacco
☆ De- tasseling	:	Maize
☆ Pegging	:	Groundnut
☆ Retting	:	Jute
☆ Ginning	:	Cotton
☆ Topping	:	Cotton
☆ Arrowing	:	Sugarcane
☆ Ratooning	:	Sugarcane
☆ Parboiling	:	Rice
☆ Earthing-up	:	Potato, Sugarcane

SEED RATE AND NATIVITY OF CROPS

(I) Recommended Seed Rate of Field Crops

Crops		SeedRate (kg/ha)
☆ Rice		
a) Transplanting	:	50 - 60
b) Broadcasting	:	80 - 100
☆ Wheat	:	100 - 125
☆ Maize		
a) Hybrid	:	20 - 25
b) Composite	:	15 - 20
☆ Sorghum, Moong, Arhar	:	12 - 15
☆ Pearlmillet	:	2 - 3
☆ Gram	:	60 - 80
☆ Field Pea	:	75 - 100
☆ Urd, Cowpea, Sunhemp	:	20 - 25
☆ Lathyrus		
a) Pure crop	:	40 - 50
b) Mixed crop	:	8 - 10
☆ Lentil, Linseed	:	30 - 40

☆ Soybean	: 70 - 80
☆ Safflower	: 15
☆ Sunflower, Sugarbeet, Jute	: 8 - 10
☆ Groundnut	
a) Bunch type	: 100 - 120
b) Spreading type	: 80 - 100
☆ Til	: 3 - 4
☆ Rapseed and Mustard	
a) Pure cropping	: 4 - 6
b) Mixed cropping	: 2 - 3
☆ Castor	: 10
☆ Cotton	: 10 - 12
☆ Hybrid cotton, Tobacco	: 2.5 - 3
☆ Potato	: 10 - 15 qt
☆ Kodo	: 6 - 8
☆ Lucerne	: 20
☆ Berseem	
a) Diploid spp	: 20 - 25
b) Tetraploid spp	: 30 - 35
☆ Fodder maize	: 40 - 60
☆ Fodder Bajra	: 20 - 30
☆ Oat	
a) Small seeded	: 80 - 100
b) Bold seeded	: 100 - 120

(II) Nativity of Field Crops

Crops	*Nativity*
☆ Rice, Sugarcane :	: South East Asia
☆ Wheat, Barley, Buckwheat, Gram, Lucerne	: South West Asia
☆ Soybean, Rapseed and Mustard, Tea	: China
☆ Tobacco	: America
☆ Maize, Teosinate	: Mexico
☆ Potato, Tomato	: Peru
☆ Linseed	: Afghanistan
☆ Sunflower,	: USA
☆ Arhar, Mung, Urd, Cotton, Jute, Kodo, Kutki, Oat, Mango	: India

- Sorghum, Bajra, Sunhemp, Sesamum, Cowpea, Castor, Clusterbean : Africa
- Groundnut : Brazil
- Berseem : Egypt
- Napier grass : Rhodesia

IMPORTANT VARIETIES OF FIELD CROPS

- Paddy : Aaditya, Purnima, IR36, 64, 20, MTU1001, 1010, Indira sona, Kranti, Mahamaya, Safri17, Bumleshwari, Pusa basmati-1, Shyamla, etc.
- Wheat : Lok-1, C306, HW 2004, WH 147, Sujata, GW 173, 273, Kanchan, Raj.
- Maize : Ganga-1, 3, 5, 101, Ganga safed-2, Ranjit, Himalaya, VL-54, Ganga-4., Navjot, Chandan makka-3, Chandan safed makka-1 etc.
- Kodo : GPUK-3, ICCK 737, IPS 147-1, JK 1, 155, Pali.
- Kutki : PRC3, IGL4, 10
- Kulthi : BK-1, AK-21, JND-2
- Ragi : VL-147, PR 202, HR-374
- Arhar : Type-21, Prabhat, UPAS-120, pragati, Asha, Gwalior-3, Bahar, Rajiv Lochan
- Moong : Pairy moong 2, pragya, Pusa Baisakhi, JM-721, K-851, PDM-1, 3,11
- Urd : Pant U-30, JU-2, Type-9, Gwalior-2, Sarla, Barkha, Prabha, CO-1
- Gram : JG-11, 74, 315, Vijay, Vaibhav, Shweta, JGK-1, 2, JGG-1
- Pea : Rachna, Ambika, Subhra, Aparna, Paras, JP 855, KPMR 144-1, Vikash
- Lathyrus : Ratan, Pratik, Mahativda.
- Lentil : K 75, Lens 4076, Nuri, Sheri, JL-3.
- Soybean : Indira soya-9, JS-2, 335, 93-05, PK 472, Gourav, Ankur, Durga
- Groundnut : ICGS 1, 10, 11, 37, 44, SB-11, JL24, Chandra, Junagarh-11, Vikram, Verginia
- Sunflower : Modern, Jwalamukhi, MSFH-8, 17, KBSH-1, 44
- Safflower : JSF1, 2, 5, JS I7, JSH 129, Annagiri,
- Mustard : Pusa kalyani, Sufla, Kranti, Varuna, Krishna, Pusa bold, Vardan, Rohni
- Til : Selection-5, Krishna, JT-21, TC-25
- Ramtil : IGP-76, GP 10, JNS-1, 6
- Castor : Kranti, Jwala, Jyoti, JCH-4, DCH-32
- Linseed : RLC 92 (Indravati), Deepika, Kiran, Indira Alsi-32 (RLC-81), Jwahar 552
- Cotton : Anjali, Khandwa-2, Jwahar tapti, JKH-2, Pratima.
- Sugarcane : CO 671, COJ 64, 8338, 86-141, CO 86032, 62175

MUTANT VARIETIES OF CROPS

- Rice : *Jaganna th, Prabha va ti*
- Chickpea : BGM-48, BGM-413,

- ☆ Pea : Hans
- ☆ Arhar : Trombay, Vishakha-1
- ☆ Wheat : Sarbati sanora
- ☆ Cotton : MCU-7, MCU-10
- ☆ Tobacco : Jayshri, Bhavya
- ☆ Moong : Dhulli, Pant mung 2, MUM 2
- ☆ Urd : CO1, Sarla
- ☆ Mango : Rosica

IMPORTANT WEED FLORA OF CROPS

Sl.No.	*Botanical Name*	*Family*	*English Name*	*Common Name*
1.	*Achyranthes aspera*	Amaranthceae	Prickly chafflower	चिरचिटा / लटजीरा
2.	*Ageratum conyzoides*	Compositae	Bill goat weed	मह्कुआ / फुलनी
3.	*Amaranthus spinosus*	Amaranthceae	Spiny amaranthus	कांटेदार चौलाई
4.	*Amaranthus viridis*	Amaranthceae	Slender amaranthus	जंगली चौलाई
5.	*Agremone maxicana*	Papaveraceae	Mexican prickly poppy	सत्यानासी
6.	*Avena fatua*	Gramineae	Wild oat	जंगली जई
7.	*Boerhavia diffusa*	Nyctaginaceae	Spreading hog weed	विषखपरा
8.	*Brassica sinensis*	Cruciferae	Wild mustard	जंगली सरसों
9.	*Calotropis gigantean*	Ascletiabaceae	Giant swallow wort	आंक / मदार
10.	*Carthamus oxyacanthe*	Compositae	Wild safflower	जंगली कुसुम
11.	*Cassia tora*	Leguminosae	Buffalo gram	चरोटा / चकौड़ा
12.	*Celosia argentea*	Amaranthceae	White cock's comb	सिलयारी
13.	*Chenopodium album*	Chenopodiaceae	Lambsquate/Dog tooth grass	बथुआ
14.	*Cichorium intybus*	Compositae	Chicory/Blue daisy	कासनी
15.	*Convolvulus arvensis*	Convolvulaceae	Bind weed	हिरणखुरी
16.	*Corchorus acutangulus*	Tilliaceae	Wild jute	चेज
17.	*Cuscuta sp.*	Convolvulaceae	Dodder	अमरबेल
18.	*Cynodon dactylon*	Gramineae	Bermuda grass	दुब घास
19.	*Cyperyus rotundus*	Cyperaceae	Purple nutsedge	मोथा
20.	*Cyperus iria*	Cyperaceae	Yellow nutsedge/Rice flat sedge	मोथा
21.	*Cyperyus difformis*	Cyperaceae	Umbrella sedge	मोथा
22.	*Datura alba*	Solanceae	Thorne apple	कांटेदार धतुरा
23.	*Datura stramonium*	Solanceae	Jimson weed	धतुरा
24.	*Dicanthum annulatum*	Gramineae	Marvel grass	कांदी
25.	*Digitaria sanguinalis*	Gramineae	Crab grass	घुड–दुब

26.	*Echinochloa colonum*	Gramineae	Jungle rice	सांवा
27.	*Echinochloa crusgalli*	Gramineae	Barnyard grass	सांवा ;मुंछवालाद्ध
28.	*Eclipta alba*	Compositea	False daisy	भृंगराज/भंगड़ा
29.	*Eichhonia crassipes*	Pontederiaceae	Water hyacinth	जलकुंभी
30.	*Eleusine indica*	Gramineae	Goose grass	जंगली रागी
31.	*Euphorbia geniculata*	Compositae	Garden spurge	बड़ी दुधी
32.	*Euphorbia hirta*	Compositae	Pill pod spurge	छोटी दुधी
33.	*Ipomea repens*	Convolvulaceae	Swamp morning glory	जलकर्मी
34.	*Ischoemum rugosum*	Gramineae	Wrinkle grass	टोरा–टोरी
35.	*Lantana camara*	Verbenaceae	Prickly lantana	जरायन
36.	*Lathyrus sativus*	Leguminoceae	Lathyrus	खेसारी
37.	*Melilotus alba*	Leguminoceae	White sweet clover	सफेद सेंजी
38.	*Melilotus indica*	Leguminoceae	Yellow sweet clover	पीली सेंजी
39.	*Mimosa pudica*	Leguminoceae	Touch me not	लाजवंती
40.	*Mimosa spinosa*	Leguminoceae	Touch me not	लाजवंती ;कांटेदारद्ध
41.	*Ocimum camum*	Labiatae	Haory basin	बनतुलसी
42.	*Opuntia dilenaii*	Cacaceae	Prickly pear	नागफनी
43.	*Oryza sativa var fatua*	Gramineae	Wild rice	जंगली धान
44.	*Orobanche sp.*	Orobanchaceae	Broom rape	बिल्ली
45.	*Oxalis ocetorella*	Oxalidaceae	Sorrel	खट्टी–बुटी
46.	*Oxalis corniculata*	Oxalidaceae	Indian sorel	खट्टी–बुटी
47.	*Parthenium hysterophorus*	Compositae	Congress grass/Wild carrot grass	गाजर घास
48.	*Paspalum sanguinale*	Gramineae	Knot grass	-
49.	*Phalaris minor*	Gramineae	Canary grass	गेहूं का मामा
50.	*Portulaca oleracea*	Portulaceae	Purslane	जंगली पालक
51.	*Portulaca quodrifolia*	Portulaceae	Purslane	नुनिया
52.	*Phyllanthus nururi*	Euphorbiaceae	Corn spurry/Niruri	हजारदाना
53.	*Physalis minima*	Solanaceae	Ground cherry/Hog weed	चिरपोटी
54.	*Saccharum spontaneum*	Gramineae	Tiger grass	कांस
55.	*Sataria glauca*	Gramineae	Green fox tail	बंदरा–बंदरी
56.	*Sida rhombifolia*	Malvaceae	Sida	बरयारा ;पीलीद्ध
57.	*Sida spinosa*	Malvaceae	Sida	बरयारा ;हराद्ध
58.	*Solanum nigrum*	Solanaceae	Black night shade	मकोई
59.	*Solanum xanthocarpum*	Solanaceae	Prickly brinjal	भटकटैया
60.	*Sorghum halepanse*	Gramineae	Johnson grass	बरु
61.	*Spilanthus comelia*	Compositae	Wild mint	जंगली अकरकरा

62.	*Striga lutea*	Scrophulariaceae	Witch weed	अगिया
63.	*Trianthema monegyna*	—	Carpet weed	पथरचटा
64.	*Tridex procumbens*	Compositae	Mexican daisy	बारहमासी
65.	*Typha sp.*	Typhaceae	Cattail	टायफा
66.	*Vicia hirsute*	Leguminoceae	Common vetches	मुनमुना
67.	*Vicia sativa*	Leguminoceae	Vetches	टकरा अकरी
68.	*Xanthium strumerium*	Compositae	Cocklebur/Bur-weed	बड़ी गोखरु
69.	*Zizyphus rotundifolis*	Rhamnaceae	Wild ber	झरबेरी

IMPORTANT FOREST TREES

Sl.No.	*Botanical Name*	*Common Name*	*Toxicant Present*
1.	*Acacia catechu*	खैर	Tannin
2.	*Acacia leucophloea*	सफेद बबूल	Tannin
3.	*Acacia nilotica*	बबूल	Tannin
4.	*Aegle marmelos*	बेल	Tannin
5.	*Albizia lebbeck*	काला सिरस	Tannin
6.	*Albizia procera*	सफेद सिरस	Tannin
7.	*Anthocephalus indicus*	कदम	—
8.	*Azadirachta indica*	नीम	Azadirachtin, Nimbin
9.	*Bambusa arundinacea*	बांस	HCN
10.	*Bauhinia variegata*	कचनार	Tannin
11.	*Butea monosperma*	पलास	—
12.	*Cassia fistula*	अमलतास	—
13.	*Delbergia sissoo*	शीशम	Tannin
14.	*Delonix regia*	गुलमोहर	—
15.	*Emblica officinalis*	आंवला	—
16.	*Eucalyptus tereticornis*	नीलगीरी	—
17.	*Ficus banghalensis*	बरगद	Tannin
18.	*Ficus religiosa*	पीपल	Tannin
19.	*Leucaena leucocephala*	सूबबूल	Mimosine
20.	*Madhuca latifolia*	महुआ	Saponin
21.	*Mangifera indica*	आम	Amylase inhibitors
22.	*Morus alba*	मलबेरी	Tannin
23.	*Musa paradisiaca*	केला, बनाना	Amylase inhibitors, Seratonin
24.	*Polyalthia longifolia*	अोक	—
25.	*Pongamia pinnata*	करंज	Karanjin, Pongamol

26.	*Populus deltoides*	पोपुलर	—
27.	*Psidium guajava*	अमरूद	—
28.	*Pterocarpus marsupium*	बीजा	—
29.	*Shorea robusta*	साल	—
30.	*Syzygium cuminii*	जामुन	Tannin
31.	*Tamarandus indica*	इमली	—
32.	*Tectona grandis*	सागोन ;Teakद्ध	—
33.	*Terminalia arjuna*	अर्जुन	—
34.	*Terminalia belirica*	बहेड़ा	—
35.	*Terminalia chaibula*	हर्रा	—

IMPORTANT MEDICINAL AND AROMATIC CROPS

Sl.No	*Botanical Name*	*Common Name*	*Plant Part Used*	*Chemical Found*
Medicinal crops				
1..	*Chlorophytum borivilianum*	Safed Musli	Root	Saponins
2.	*Withania somnifera*	Ashwagandha	Leaves & Root	Alkaloids
3.	*Rauvolfia serpentina*	Sarpagandha	Root (Dried)	Serpentine (alklo.)
4.	*Plantago ovata*	Isabgol	Husk of the seed	Glycoside
5.	*Acorus calamus*	Buch	Rhizome (Dried)	—
6.	*Bacopa morrieri*	Bramhi	Whole plant	Hydrolytin (alklo.)
7.	*Papaver somniferum*	Opium poppy	Latex & Seeds	Alkaloids
8.	*Strychnos nuxvomica*	Nux vomica	Seeds	Strychnine (alklo.)
Aromatic crops				
9.	*Cymbopogan flexuosus*	Lemon grass	Fresh grasses	Citral a & b
10.	*Mentha arvensis*	Pudina or Mint	Herbage	Menthol
11.	*Hibiscus sabadriffa*	Roselle	Fresh Calyces	Fatty oils
12.	*Vetiveria zizanoides*	Khus/Vetiver	Root	Khusol, Vetiverone
13.	*Cymbopogan winterianus*	Citronella	Fresh herbage	Citronellol, Geraniol
14.	*Ferula foetida*	Asafoetida/Hing	Gum resin	Organic sulpher
15.	*Ocimum sanctum*	Tulsi/Basil	Leaves	Eugenol
16.	*Cymbopogon martini*	Palmarosa	Floral shoots	Geraniol

TEST WEIGHT OF CROPS

Crop	*Test Weight*	*Crop*	*Test Weight*
☆ Rice	:25	Linseed, Safflower	:10
☆ Basmati rice	:21	Lucerne	:2-4

☆ Wheat, Barley, Oat	:30-40	Sunflower	:40-50
		Soybean	:55
☆ Cotton, Arhar	:70-72	Moong	:34-36
☆ Pea	:100	Cowpea	:80
☆ Mustard	:3-5	Bajra	:5-7
☆ Sorghum	:25-30	French bean	:38-44/1000 seeds
☆ Tobacco	:2.5-3/10000 seeds		

☆**Test weight**: weight of 1000 seeds of a crop

☆**Seed Index**: weight of 100 seeds of a crop (used for bold seeded)

FRUIT TYPES AND EDIBLE PARTS OF DIFFERENT CROPS

Crops/Fruits	*Fruit Types*	*Edible Parts*
☆ All cereals crops and grasses	Caryopsis	Endosperm and Embryo
☆ Most of leguminous crops *i.e.* gram, Pea, Arhar	Legume/Pod	Seed/Cotyledons
☆ Groundnut	Lomentum	Seed/Cotyledons
☆ Mango	Drupe	Mesocarp
☆ Ber, Plum, Datpalm	Drupe	Apicarp and Mesocarp
☆ Tomato, Grape, Brinjal, Banana, Chilli	Berry	Pericarp and Placenta
☆ Papaya	Berry	Mesocarp
☆ Citrus spp.	Hesperidium	Endocarpic juicy hairs
☆ Pomegranate	Blusta	Aril
☆ Apple, Pear	Pome	Mansal thalamus
☆ Bael	Amphisarca	Succulent Placenta
☆ Cucurbits	Pipo	Apicarp and Mesocarp
☆ Coconut	Nut	Endosperm
☆ Jackfruit, Pineapple	Sorosis	Bracts/Perianth

ANTITRANSPIRENTS

1. Stomatal closure type	: 2,4-D, Atrazine, PMA, Phosphon D, Potassium metabisulphate
2. Film farming type	: Hexadeconol, Cetyl alcohol, Paclobutrazole Mobileaf, Waxol, S-800, Hico-110R, Folicot, Silicon
3. Reflectant type	: Kaoline (5 per cent), China clay, Ca. bicarbonate, Lime water
4. Growth retardant type	: Cycocel (CCC), Phosphor

IMPORTANT METEOROLOGICAL INSTRUMENTS AND THEIR USES

Instruments		*Uses/Measures*
☆ Altimeter	:	Height
☆ Aneroid barometer	:	Atmospheric pressure
☆ Anemometer	:	Wind speed/velocity
☆ Auxanometer	:	Growth of plant
☆ Barograph	:	Continuous atmospheric pressure
☆ Crescograph	:	Growth of plant
☆ Cambel stokes recorder	:	Sunshine duration
☆ Drosometer	:	Dew
☆ Hygrometer/Psychrometer	:	Relative humidity (RH)
☆ Evaporometer	:	Evapotranspiration
☆ Irrometer	:	Water stress, soil moisture tension
☆ Infiltrometer	:	Infiltration
☆ Lactometer	:	Fats % in milk
☆ Lysimeter	:	Evapotranspiration
☆ Pyrheliometer	:	Direct solar radiation
☆ PAR	:	Quantum sensor
☆ Psychrometer	:	Leaf water potential/RH
☆ Porometer	:	Transpiration rate (ET)
☆ Pyranometer	:	Total incoming solar radiation
☆ Peizometer	:	Depth of water table
☆ Rain gauge	:	Amount of rainfall
☆ Tensiometer	:	Soil moisture tension (0.8 bar)
☆ Wind vane	:	Wind direction
☆ Tensiometer	:	Soil moisture tension (0.8 bar)
☆ Wind vane	:	Wind direction

CLASSIFICATION OF SOIL PARTICLES
Based on size (mm)

Classification		*IISS*	*USDA*
Stone	:	> 250	> 250
Cobble	:	75–250	75–250
Gravel	:	2–75	2–75

Very course sand	:	–	1.0–2.0
Course sand	:	2–0.2	0.5–1.0
Fine sand	:	0.2–0.02	0.1–0.25
Very Fine sand	:	–	0.05–0.1
Silt	:	0.02–0.002	0.002–0.05
Clay	:	< 0.002	< 0.002

NUTRIENT CONTENTS OF COMMON FERTILIZERS

Sl.No.	*Fertilizers*		*Nutrient Content (%)*			
			N	P_2O_5	K_2O	S
Nitrogenous Fertilizers						
(A)	***Nitrate form***					
1.	Sodium nitrate	:	16.0	-	-	-
2.	Calcium nitrate	:	15.5	-	-	-
(B)	***Ammomcal form***					
1.	Ammonium phosphate	:	16.0	20.0	-	-
2.	Ammonium chloride	:	24-26	-	-	-
3.	Ammonium sulphate	:	20.6	-	-	24
4.	Anhydrous ammonia	:	81.0	-	-	-
(C)	***Ammonical Nitrate form***					
1.	Ammonium nitrate	:	33-34	-	-	-
2.	CAN	:	26.0	-	-	-
3.	Amm. sulphate nitrate	:	26.0	-	-	15
(D)	***Ammide form***					
1.	Urea	:	46.0	-	-	-
2.	Calcium cyanide	:	21.0	-	-	-
Phosphatic Fertilizers						
(A)	***Water soluble***					
1.	SSP (single)	:	-	16-18	-	-
2.	DSP (double)	:	-	32.0	-	-
3.	TSP (triple)	:	-	46-48	-	-
4.	DAP	:	18	46	-	-
(B)	***Citric acid soluble***					
1.	Di calcium phosphate	:	-	34-39	-	-
2.	Basic slag	:	-	14-18	-	-
	Bone meal	:	-	23-30	-	-

3.					
(C)	***Insoluble***				
1.	Rock phosphate	: -	20-40	-	-
2.	Rock bone meal	: -	20-25	-	-
3.	Steamed bone meal	: -	22.0	-	-
Phosphatic Fertilizers					
1.	Murate of potash/KCl	: -	-	60.0	-
2.	Sulphate of potash	: -	-	48.0	-
3.	Potassium nitrate	: -	-	44.0	-

CHEMICAL PROPERTIES OF SALINE, SODIC and ALKALINE SOILS

Types of Soil		*EC (dSm) at 25°C*	*ESP (%)*	*pH*
Saline soil	:	> 4	< 15	< 8.5
Saline alkaline soil/Sodic	:	> 4	> 15	< 8.5
Alkaline soil	:	< 4	> 15	8.5 - 10.0

FUNCTIONS OF PGRs

1.	Auxins	: Cell division and root formation.
2.	Gibberellin	: Cell division, breaking dormancy and cell elongation.
3.	Cytokinin	: Delay senescence, breaking dormancy of seed and development of embryos in seed.
4.	Abscisic acid	: Abscission of leaf and fruit, induce dormancy & maintain cell turgidity, facilitate stomata closure.
5.	Ethylene	: Fruit ripening, iso-diametric growth of stems and roots.

DISEASES OR SYMPTOMS CAUSED DUE TO DEFICIENCY OF NUTRIENTS IN PLANTS

Deficiency of Nutrient		*CausesDiseases/Symptoms*
N	-	Buttoning in cauliflower
P	–	Sickle leaf disease.
K	–	Scorching and burning of leaves.
Ca	–	Blossom end rot in tomato and Ber, Tip hooking/burning in Cauliflower.
Mg	–	Sand drawn disease of Tobacco.
S	–	Tea yellow disease.
Fe	–	White eye of Paddy, Leaf bleaching in Sugarcane

Mn	– Water core in Brassica, Marsh disease in Pea, Spotted yellow disease in Sugarbeet.
Cu	– Dieback and little leaf in Citrus, Reclaimation disease in cereals.
Mo	– Yellow spot disorder in Citrus, Whiptail disease in Cauliflower.
Zn	– Little leaf in Brinjal and Mango, Bronzing in Guava, White bud in Maize, Khaira disease in Paddy.
Bo	– Internal necrosis in Aonla and Mango, Browning in Cauliflower, Heat rot in Sugarbeet, Hen and Chicken disorder in Grape.

REVOLUTION IN AGRICULTURE

Revolution	*Related to*
☆ Green revolution	: Food grain production
☆ White revolution	: Milk production
☆ Yellow revolution	: Oilseeds production
☆ Gray revolution	: Manures and Fertilizers
☆ Blue revolution	: Fish production
☆ Red revolution	: Meat/Tomato production
☆ Round revolution	: Potato production
☆ Silver revolution	: Egg production/Poultry
☆ Pink revolution	: Prawn production
☆ Golden revolution	: Fruit production (apple)
☆ Brown revolution	: Non-conventional energy source
☆ Black revolution	: Bio fuel (Jatropha) production
☆ Rainbow revolution	: Agriculture (1996)
☆ Food chain revolution	: Food grain production
☆ Evergreen revolution	: Reduction in wastage of food grains, fruits and vegetables
☆ Parbhani revolution	: Okra

IMPORTANT AGRICULTURAL DAYS

☆ Feb., 2 : National Wetland day	☆ Mar., 11 : Water Resources day
☆ Mar., 21 : World Forest day	☆ Mar., 22 : World Water day
☆ Apr., 22 : World Earth day	☆ May, 1 : International Labour day
☆ Jun., 5 : World Environment day	☆ Jul., 1 : National Agricultural day
☆ Jul., 1-7th : Van Mahotsava	☆ Jul., 16 : ICAR day
☆ Sept., 16 : World Ozone day	☆ Oct. 4 : World Animal Welfare day
☆ Oct., 16 : World Food day	☆ Dec., 4 : Agriculture Women day
☆ Dec., 23 : National Farmer's day	

PRODUCTION OF FIELD CROPS IN INDIA (2010-11)

Sl.No.	*Crops*	*Final Estimates*		*2nd Advance Estimates of Production (Mt.) 2010-11*
		Production (Mt.) 2008-09	*Production (Mt.) 2009-10*	
1.	Rice	99.02	89.13	94.01
2.	Wheat	80.70	80.80	81.47
3.	Maize	19.70	16.70	-
4.	Sorghum	7.2	7.0	-
5.	Bajra	8.9	6.5	-
6.	Course cereals	39.48	33.77	40.08
7.	Arhar	2.3	2.6	-
8.	Gram	7.1	7.3	-
9.	Total pulses	14.60	14.66	16.51
10.	**Total foodgrains**	**234.40**	**218.20**	**232.07**
11.	Groundnut	7.2	5.5	-
12.	Rapseed & Mustard	7.2	6.4	-
13.	9 oilseeds (Total)	27.70	24.93	27.85
14.	Cotton	22.30	24.22	33.93
15.	Sugarcane	295.00	292.30	336.70
16.	Jute & Mesta	10.30	11.82	10.08

AREA, PRODUCTION & PRODUCTIVITY OF HORTICULTURAL CROPS IN INDIA

Sl.No.	*Crops*	*2009-10 Final*		
		Area (000Mha)	*Production (000 Mt.)*	*Productivity (Mt/ha)*
Fruits				
1.	Mango	2312	15027	6.5
2.	Banana	770	26470	34.4
3.	Citrus	987	9638	9.8
4.	Guava	220	2572	11.4
5.	Grapes	106	881	8.3
6.	Litchi	74	483	6.5
7.	Papaya	96	3913	40.9
8.	Pineapple	92	1387	15.1
9.	Pomegranate	125	820	6.6

10.	Sapota	159	1347	8.5
11.	Apple	283	1777	6.3
12.	Others	1105	7201	6.5
	Total	**6329**	**71516**	**11.3**
Vegetables				
1.	Potato	1835	36577	19.9
2.	Onion	756	12159	19.6
3.	Tomato	634	12433	16.6
4.	Brinjal	612	10563	17.2
5.	Cabbage	331	7281	22.0
6.	Cauliflower	348	6569	18.9
7.	Okra	452	4803	10.6
8.	Peas	365	3029	8.3
9.	Sweet Potato	119	1095	9.2
10.	Others	2300	31168	13.6
	Total	**7985**	**133738**	**16.7**
Aromatic:		509	573	1.1
Almond/Walnut:		142	193	1.4
Flowers Loose:		183	1021	-
Plantation Crops:		3265	11928	3.7
Spices:		2464	4016	1.6

% GROWTH OF HORTICULTURAL CROPS

Sl.No.	*Crops*	*09-10 over 08-09*	
		Area	*Production*
1.	Horticulture	1.0	3.9
2.	Fruit	3.7	4.5
3.	Vegetable	0.1	3.6

Availability of Agriculture Products/Capita/Day

Sl.No.	*Particular*	*Requirement*
1.	Cereals	407 g
2.	Pulses	37 g
3.	Fruits	120 g
4.	Vegetables	240 g

5.	Milk	263 g
6.	Egg	45 (no.)

Chapter 16

Recent Research/Technologies in Agriculture

NANOTECHNOLOGY

- The term 'Nanotechnology' was The term 'Nanotechnology' was coined by **Nario Taniguchi** in 1974 at Univ. of Tokyo.
- Nanotechnology is understanding and control of matter of dimension of 1-100 nm.
- Example of Nano based Smart Delivery System - **Halloysite**
- Nano Pesticide – Nano Particles (NPs) of ZnO, SiO_2 and TiO_2 used for Bacterial and Green algae.

BIO-INFORMATICS

- **Bio-informatics** is the application of computer science and information technology to the field of biology to the management of biological information.
- Computers are used to gather, store, analyze and integrate biological and genetic information which can then be applied to gene-based drug discovery and development.
- The primary goal of bioinformatics is to increase the understanding of biological processes and developing and applying computationally intensive techniques (*e.g.*, pattern recognition, data mining, machine learning algorithms, and visualization) to achieve this goal.

TRANSGENIC PLANTS/CROPS (GMO)

- **Transgenic plants** are crops which have been genetically modified with genes from another organism to make the plants more agriculturally productive.
- Transgenic plants are only those with genes from other species, whereas genetically modified plants can have both new genes and a re-arrangement of the genes already found in the plant.
- Transgenic plants have been developed for a variety of reasons: longer shelf life, disease resistance, herbicide resistance, pest resistance, and improved product quality.
- The First transgenic plant - **Flavr SavrTM tomato** for *delayed ripening* was released for commercial cultivation in 1994 by **Calgene** (Company).

- Crop having highest transgenic plant cultivation area – **Soybean** > Corn > Cotton

TERMINATOR TECHNOLOGY

- Terminator technology refers to research of seeds/plants that produce sterile seeds.
- This technology could be used to prevent any gene flow between biotechnology and traditional crops.
- Recently, it is used in **Cotton**.

HYDROPONICS

- **Hydroponics** is a method of growing plants using mineral nutrient solutions, in water, without soil.
- Terrestrial plants may be grown with their roots in the mineral nutrient solution only or in an inert medium, such as gravel, mineral wool or coconut husk.
- Hydroponics is a *subset of soil less culture*.

AEROPONICS

- **Aeroponics** is a system wherein roots are continuously or discontinuously kept in an environment saturated with fine drops (a mist or aerosol) of nutrient solution.
- The method requires no substrate and entails growing plants with their roots suspended in a deep air or growth chamber with the roots periodically wetted with a fine mist of atomized nutrients.
- Excellent aeration is the main advantage of aeroponics.

VERTICAL FARMING

- **Vertical farming** is a concept that argues that it is economically and environmentally viable to cultivate plant or animal life within skyscrapers, or on vertically inclined surfaces.

SYSTEM OF RICE INTENSIFICATION (SRI)

- The System of Rice Intensification is an alternative system for growing rice that produces substantially higher yields with **fewer plants** (planting far fewer seedlings per hill and per square meter) and with **fewer inputs** than either traditional methods, *ie*., using less water, or more "modern" methods, requiring chemical fertilizer or agrochemicals.
- SRI is a combination of few practices that include changes in nursery management, seedling age while planting, planting method, spacing, water and nutrients management.
- The major components of SRI method are:
  - Planting of young seedlings (8-12 days old)

- Planting of young seedlings (8-12 days old).
- Planting single seedlings/hill along with soil carefully.
- Wider spacing of 25cm×25cm.
- Weeding with conoweeder to provide aeration and incorporation of biomass.
- Applying mostly organic manures.
- Water just at saturation point but no flooding.

AEROBIC RICE

- The main objectives are to improve the productivity and sustainability of rice-wheat cropping systems through increased efficiency of water and nutrient use.

The aerobic rice practice includes:

- Dry sowing of rice with minimum land preparation *i.e.* in non-puddled and non- flooded soil.
- Efficient seed coating technology either with suitable Phosphobacterium and or Rhizobium cultures.
- Square sowing with wider spacing to avoid root competition for crop growth.
- Maintenance of moist soil but aerated soil during vegetative growth period.
- Efficient weed management either by use of herbicide or by use of frequent hand weeding especially in the early stages of crop.
- Allowing a thin film of water (1-2 cm) to be maintained after panicle initiation.

SUPER RICE

- *Super rice" is also k/s New Plant Type* (NPT).
- *"Super rice"* is a redesigned rice plant to break the yield –barriers of popular grown dwarf rice plant types and to face the new challenges of ever increasing population. In the 21st century. (acc. to Dr. G.S.KHUS)
- *Super* rice is a N.P.T. developed by IRRI that can produce yield of 12-15 tones/ha has 2-3 times greater no. of grains/panicle and thicker and sturdy stem.

The key aim of development of Super rice varieties is to increase per capita availability of rice and to a decline in real price of rice in International and Domestic markets.

SCUBA RICE

- Flooding affects 15–20 million hectares of lowland rice fields in Asia each year, it is a major contributor to the food insecurity and widespread poverty in these areas.

- IRRI scientists incorporated the *SUB1 gene* into popular local rice varieties collectively known as "scuba rice.
- Scuba rice varieties, which can survive up to 2 weeks of being under water, are now used by millions of farmers and serve as their first line of defence against flooding.

GOLDEN RICE

- Golden rice or GM rice is genetically engineered vitamin A rich rice.
- It was engineered to save million of children from blindness.

SUPER WHEAT

- 'Super varieties' of wheat resistant to the deadly stem rust fungus Ug99 and with up to 15 per cent better yields than today's varieties.

KISHAN KHAD

- It is also known as **CAN** (Calcium Ammonium Nitrate)
- Kishan khad is commercially prepared from ammonium nitrate and ground limestone or dolomite containing 20% nitrogen.
- It contains 26% nitrogen.
- One half of the nitrogen is in nitrate form and the remaining half in the ammonical form.
- It is almost neutral in nature.

Bt COTTON

- **Cotton with Bt gene** (*Bacillus thuringiensis*) is resistance against the pest, Helicoverpa.
- It is developed by U.S. based seed company 'Monsanto' and registered the name '*Bollgard*'.
- Bt variety obtained 25-27% more cotton along with reduced the cost of pesticides and protect environment from pesticidal hazards.

KISAN CALL CENTRE

- Kisan Call Centre (KCC), started since 21st **Jan 2004** (toll free No. 1551).

KISAN CREDIT CARD SCHEME (KCC)

- Kisan Credit Card Scheme was introduced **in August 1998**.
- KCC aims at providing adequate and timely support from the banking system to the farmers for their short-term credit needs for cultivation of crops.

- This mainly helps farmer for purchase of inputs etc., during the cropping season.
- Credit card scheme proposed to introduce flexibility to the system and improve cost efficiency.

NATIONAL AGRICULTURAL INSURANCE SCHEME

- National Agricultural Insurance Scheme was introduced in **1999-2000**.
- **Crop insurance** is purchased by agricultural producers, including farmers, ranchers, and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities.
- The two general categories of crop insurance are called crop-yield insurance and crop-revenue insurance.

PRECISION FARMING

- Precision farming means high tech agriculture, spatial variability management.
- It is the technique or method to find out the use of appropriate inputs, appropriate technology, decreasing cost of cultivation decisions, optimizing outputs for safety and security of food according to site or soil condition.

CONTRACT FARMING

- Contract farming is a system for the production and supply of agricultural products under forward contracts between cultivators and buyers.
- Here, the cultivator commits to provide an agricultural product of a specific type at a specific time and at a specified price that is required by the committed buyers.
- The main feature is that the contractor supplies all the material inputs and technical advice required for cultivation to the cultivator. In turn, the cultivator supplies the required land and labour.

LEISA

- LEISA stands for Low-External-Input Sustainable Agriculture.
- LEISA is an agricultural technique which makes optimal use of locally available natural and human resources (such as soil, water, vegetation, local plants and animals, and human labour, knowledge and skill) and which is economically feasible, ecologically sound, culturally adapted and socially just.

GLOBAL WARMING

- *"Global warming is the extraordinary increase of Earth's surface temperature due to the increase of greenhouse gases concentration on the atmosphere."*
- **Greenhouse gases** (carbon dioxide, methane, nitrous oxide, and CFC) are the heat-trapping gases in the atmosphere.
- They trap the heat that came from the solar energy (sun radiation) which results continually warming of the earth.

OZONE DEPLETION

- Ozone layer is a protective layer in our atmosphere.
- It's about 19 to 30 km in distance from the Earth surface.
- It blocks the harmful ultraviolet (UV) rays that come from the sun.
- The concentration of the layer is usually under 10 parts ozone per million.
- Ozone layer concentration is measured by Ozonometer.
- The ozone layer is made up by the action of sunlight to oxygen, and the amount is stabled by the existence of nitrogen.
- If there was no ozone layer ever, cancer would dominate and even no life would be in this world.

ARTIFICIAL RAIN

- The clouds are injected with a seeding agent like dry ice, sodium chloride and silver iodide from an aircraft or using a ground generator for producing artificial rain.

ACID RAIN

- Acid rain (CO_2+*Rain drops*) basically have Carbonic acid with pH of less than 5.6.
- This is caused by the presence of air pollutants, like sulphur dioxide and nitrogen oxides. They produce acids if combined with water.