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A Novel Approach in AGRITECH

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Abstract - Research on AgriTech help the users to get information's regarding modernized technologies and methods in various domains like Seeds, Soil test, Fertilizers and pesticides and Machineries. It will gives brief introduction on inventions and techniques which has been used to improves the crops development and efficiency and reduce the amount of natural resources. which also helpful to improve the potential and comparative advantages. The main purpose of this research paper is all about to reach information to the people easily and help to gain the benefits due to modernized agriculture.

***Keywords*: seeds,soil test,machinaries,and invetions.**

.Introduction

The research on AgriTech give the brief description about the modern technologies in various domains like seeds, soil testing and machinery etc, which contains the new methodologies techniques includes computing device components and devices used the area perspective and gives the outcomes of inventions represented by pi chat and tables of records.

II. SEEDS AND METHODS

Seed enhancement technologies have expanded over last ten years due to the vegetables demands and uniform stand establishment. Precision seeding reduces the seed costs per acre and seed enhancement increases production flexibility and harvest pack-out. Since many of the leafy vegetables and cole crops mature in 60-90 days and flower plug productions requires even less time. Plant uniformity establishment has become critical production consideration (H.J Hill).

Crops /seeds	Area (Lakh hectare)			Production (million Tonnes)		
	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
Rice	441.36	441.10	433.88	106.65	105.48	104.32
Wheat	304.7	314.65	302.27	95.85	86.52	93.50
Pulses	252.12	235.54	252.59	19.25	17.15	17.15
Food grains	1250.4	1243.00	1226.50	265.04	252.22	252.22
Oilseeds	280.50	255.96	261.34	27.51	25.30	25.30
Cotton	119.60	128.19	118.2	362.33	362.16	362.16

Modern Methods:

1.Seed Pelleting and Pellet improvements:

Pelleting defines inert materials are added to change the seed size and shape for improvements palatability. Small and irregular shaped seeds can now be treated as larger, round-shaped seeds. Singulation of the seed in the field is therefore easier. For crops like onion, preside seeds placements is an great advantage.

There are two components to seed pellet: bulking (coating)

and binder. Bulking material can be a mixture of several minerals and organic substances or single components. Coating materials are “work-horse” of the duet. The coating materials will change the size, shape and weight of the seed.

The second component binder, holds the coating material together. binder concentration is less critical because too much binder delay germination. For onion, the seed can increase in size 6-fold due to pelleting. There are approximately 230 raw seed per gram and after pelleting the diameter may be 13.5/64 inch (0.54cm).etc.

Pellet improvements over last ten years

• Increased oxygen penetration/availability.

• Wider pellet density range.

• Pellet loading.

• Better field visibility.

2. Seed Priming:

Priming could be defined as controlling the hydration level within seeds so the metabolic activity necessary for germination occur but radical emergence is prevented. The initiation of radical emergence requires a seed water content. By limiting the water content all the metabolic step necessary for germination can occur without the irreversible act of radical emergence. Several priming methods are reported in priming method to be used commercially. Among them liquid or osmotic priming appear to have greatest(Khan et al., 1991).

Benefits of priming:[10]

• Extension of the temperature range at which seed can germinate

• From the practical stand point priming is enables seeds of several species to germinate and emerge all supra-optional temperature.

3. Seed-Lot-Upgrading:

Conditioning the upgrades the quality of the seed lot by eliminating immature and damaged seeds. Conditioning can also used to remove non viable and low vigor seeds by exploiting differences in seed weight, seed size and seed volume. The influence of seed size and density of germination and emergence has been well documented for cotton(Krieg and Bartee, 1975) and soybean. Hydrated seeds may also be sorted by density.

One purpose of the seed-lot-upgrading is further improve the uniformity and vigor of particular seed lot so establishment is improved.

III. SOIL TESTING AND METHODS

Introduction:

Soil testing is important for several reasons to optimize the crop production, to protect the environment for protection by run of and leaching of excess fertilizers. To aid the diagnosis problem, to improve the nutritional balance of the growing media and to save energy and conserve energy by applying only the amount of fertilizer needed.

Modern methods of soil testing:

1.Soil Sampling:

The sample collected from the selected sites should be composite and mixed thoroughly in a container. From this lot a representative sample, about 500 gm should be taken out and air-dried under shade. The air-dried sample should be transferred into a clean cloth bag bearing a slip with a mention of complete address, field number, cropping sequence being followed, source of irrigation (tubewell/canal), soil type (coarse textured fine textured, alkali or waterlogged), fertilizer/manure schedule followed in the preceding crops and any other specific observation about the soil and/or the crops grown therein. Then the sample should be taken to the laboratory where facilities for testing soils for micronutrients are available.[11]

Sampling calibration:

• Soil test values and the uptake of applied plant nutrients

by a particular crop

• Calibration between soil tests values and crop yield responses to rates of plant nutrients applied through fertilizers in the field

• Changes in soil test values that occur when known quantities of fertilizers are applied to the soil

2. Saturated media extract (SME):

SME is currently "the" method of testing soilless greenhouse media and it is almost universally done by commercial and university labs, including the UMass Soil and Plant Tissue Testing Lab. In this test a paste is made using soil and water and then the liquid portion (the extract) is separated from the solid portion for pH, soluble salt, and nutrient analysis. Special skills and laboratory equipment are required to perform this test. SME is probably not suitable for a grower to use unless the greenhouse operation is large enough to support a lab, a technically trained person is hired to carry out the tests, and there is a commitment to frequent testing and tracking of the results.[2]

3. Leachate Pour Thru Method

In addition to collecting a soil sample to test, growers can collect leachate from container grown plants using the Pour Thru method. One of the major advantages to leachate pour thru is that there is no media sampling or preparation. Unlike SME and 1:2 methods, plants do not have to be sacrificed or disturbed for testing because the extract is the leachate collected from the container during routine irrigation. The leachate can be analyzed on-site using the pH and EC pens or it can be sent to a commercial laboratory for a complete nutrient analysis.

4. Abundance of ammonifiers

The soil samples (5 g each) were suspended separately in 50 ml 0.85 % NaCl. Then, each sample was prepared in tenfold dilution series and each dilution (1 ml) was inoculated into triplicate broth culture tubes for incubation (7 days, 26 °C), as described by Sutton (2010). For AB growth, 1 % water-peptone medium (g l−1: casein 10.0; NaCl 5.0; Na2HPO4 1.5; KH2PO4 9.0) was applied (Wolińska et al. 2013). Following 1-week incubation, Nessler reagent (0.5 ml) was added into each tube in order to detect ammonia presence/absence based on the colour reaction. All tubes in the three series were examined for colour reaction, and the specific patterns of growth in the tubes were scored against a most probable number (MPN) table for a three-replicate design from the US Food and Drugs Administration's Bacterial Analytical Manual (Sutton 2010).

IV. TECHNOLOGIES

Introduction:

Agriculture technology refers to technology for the production of machines used in agricultural field. They have been designed for practically every stage of agriculture.

Agriculture technology is among the most revolutionary and impactful area of modern technology.

1. Barrix Ago Sciences

The Bangalore-based startup offers eco-friendly crop protection methods after much research on products that support organic farming to increase crop produce and quality with minimal expenditure.

Barrix Toxic pesticides contaminate water, soil and leave behind harmful residue, besides being expensive. Barrix's pheromone-based pest control traps have artificially synthesized smelling agents that attracts and traps pests. Instead of eating the crops, the pests are attracted to the pheromones in the traps.

Barrix uses bright yellow and blue colored recyclable sheets of wavelengths between 500 nm to 600 nm, proven to effectively attract and trap at least 19 high-risk pests from a long distance.

2. MITRAL

A Nashik-based start-up, MITRA (Machines, Information, Technology, Resources for Agriculture) aims to improve mechanization at horticulture farms with the use of R&D and high quality farm equipment.[14]

Air blast sprayers: Developed for fruits and vegetables in general, and grapes and pomegranates in particular, the sprayers, used to add hormones that help the growth of crops, reduce the expenditure on manual labour and are less time-consuming.

3. ERUVAKA TECHNOLOGIES

An organization based in Vijayawada, Andhra Pradesh, its mission is to accelerate the use of technology in aquaculture, an area where farmers face problems due to unavailability of adequate technology to measure and control water health.

Eruvaka Technologies, to help farmers monitor aquaculture ponds, develops solar-powered flouting buoys that measure different water parameters, such as oxygen levels, temperature and pH range, crucial for the growth and survival of fish and shrimp. The collected information is uploaded on the cloud and transmitted to individual customers through an Android app, SMS, voice call or the internet. Farmers can also remotely control automated equipment such as aerators and feeders.

V. INVENSTIONS

New Inventions In Agricultural Field:

1. NANOTECH IN AGRICULTURE

Nanotech is currently being researched and will be put to use in the future. The emergence of new Nano devices and Nano materials open up new avenues for the growth of agriculture in India. The application of Nano technology in agriculture will increase yield through Nano nutrient management and minimize nutrient loss in fertilization.

Nano particles, a farming application of Nano technology, is gaining attention by efficient control and precise release of pesticides, herbicides, and fertilizers. The development and invention of Nano devices and Nano material open up potential ways for applications in agriculture.

2. REMOTE SENSING

As satellites become more easy to use, it is more common for them to be used by business and private individuals to accomplish their tasks.

For example. Remote sensing is being used to monitor crops and crop damage. This is also being used by insurance companies to better assess insurance claims by farmers to cover crop manage. This could also be used to monitor the productivity from areas and find solutions more quickly

3. GENETIC ENGINEERING

Genetic Engineering technologies, such as CRISPR genome editing, make it possible to easily modify living organisms in specific ways. This could be used to create superior strains of crops which produce greater yield.

Today, most of the world only relies of on a handful of crops. The ability to use .Genetic engineering to breed disease and pest resistance into staple crops and make different crops commercially useful is, thus another safeguard against such a disaster.

4. AGRICULTURAL ROBOTS

Automation has enormous potential to transform agriculture. The use of robots to plant, reap, and process grains would make the process more efficient and easier to perform on the scale required to feed the world’s growing population. Robots could also be used to monitor plant growth and the health of the crops. There are proposals to use micro-robots for this purpose, to swarm fields to monitor the crops.

5. DRONES

The use of drones in agriculture has already begun and, in

2017, it will only increase. Drones can be used for a variety of purposes in agriculture that lower costs and increase potential crop yields. One use of drones in agriculture is for soil analysis since they can create high-quality 3-D images of the soil to determine the nutrients in the soil and how conducive it is to crop growth.

They can also be used for planting, crop spraying, and crop monitoring; for example, monitoring the health of crops and any fungal growths or infections which may hinder their development.

VI. MECHINERY

Introduction:

Agricultural machinery is machinery used in farming and other agriculture. [1]There are many types of such power tools to tractors and the countless kinds of farm implementations that they operate. Since the advent of mechanised agriculture, agriculture machinery is an indispensable part of how the world is fed.

1.COTTON PICKER

The cotton picker is a machine that automates cotton harvesting in a way that reduce harvest time and maximizes efficiency.

2.COMBINE HARVESTER

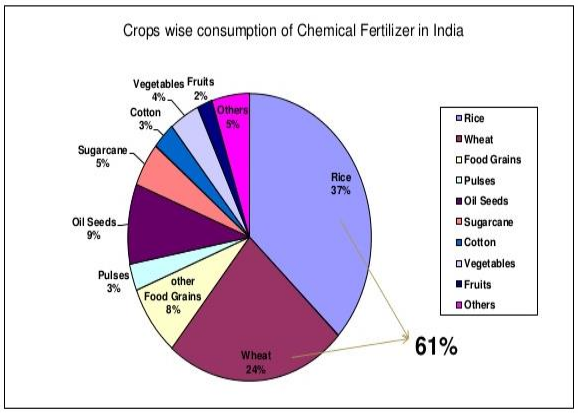
The modern combine harvester or simply combine is a versatile machine designed to efficiently harvest a verity of grain crops.

3 SUBSOILER

A subsoiler is a flat lifter is a tractor mounted farm implement used for deep tillage, loosing and breaking up soil at depths below the levels worked by mouldboard ploughs, disc harrows or rototillers.[13]

VII. FERTILIZERS AND

Fertilizers is a substances added to soil to improve plants growth and yield. First used by ancient farmers fertilizers technology developed significantly as the chemical needs of growing plants were discovered.



Modern Methods:

1. BROADCAST

Broadcast refers to spreading fertilizers uniformly all over the field. Suitable for crops with dense stand, the plant root permits the whole volume of the soil, large doses of fertilizers are applied and insoluble phosphate fertilizers such as rock phosphate are used.

2. PLACEMENT

Placement refers to the placement of fertilizers in soil at a specific place with or without references to the position of the seed.

Placement of fertilizers is normally recommended when the quality of fertilizers to apply to small development of the root system is poor, soil have a low level of fertility and to apply phosphate and potassic fertilizers.[10]

VIII. CONCLUSION

India has undergone many rational changes in last ten years, from Information Technology to the defense, from agriculture to education. Indian population has never been stagnant, and is increasing day by day. Our agricultural sector is fully dependent upon the rural population (50 percent of the total population as of till 2011) as farmers and cultivators are from rural areas.(Agriculture in India, Wikipedia.org) This research has done briefly has been referred by many websites

and portals it can be improved further suture enhancement.

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