

General Conditions for Cultivation of Crops

Objectives of the session:

- Enhance awareness of farmers on critical factors in the selection of crops and cropping patterns.
- Create an understanding of the judicious use of natural resources such as soil and water.
- Provide basic knowledge on seed and cropping systems.
- Emphasize the importance of mechanization.
- Sensitize farmers on Good Agricultural Practices (GAP).

End of session knowledge:

- Critical factors in the selection of crops and cropping patterns.
- Judicious use of natural resources such as soil and water.
- Basic knowledge of seed.
- Cropping systems.
- Mechanization.
- Good Agricultural Practices (GAP).

Factors influencing decisions on the selection of crops and cropping system:

- **Climatic factors:** Suitability for local weather parameters like temperature, rainfall, sunshine hours, relative humidity, wind velocity, wind direction, seasons, and agro-ecological situations.
- **Soil conditions:** Suitability for local soil type, pH, and soil fertility.
- **Water:**
 - Availability of adequate water sources like tanks, wells, dams, etc.
 - Adequate rainfall.
 - Distribution of rainfall suitable for identified crops.
 - Water quality.
 - Availability of electricity for water lifting.
 - Availability of pump sets and micro irrigation systems.
- **Cropping system options:** Opportunities for intercropping, mixed cropping, multi-storeyed cropping, relay cropping, crop rotation, etc. Knowledge on cropping systems management.
- **Past and present experiences of farmers:** Previous experiences and opinions from friends, relatives, and neighbors on proposed crop/cropping systems.

- **Expected profit and risk:** Anticipated profits, comparison with existing systems, risk management strategies, and worthiness of risks.
- **Economic conditions of farmers including landholding:** Suitability for land size, financial resource adequacy, and alternative financial mobilization.
- **Labour availability and mechanization potential:** Family labor management, availability of hired labor, equipment handling, and cost-effectiveness of machinery.
- **Technology availability and suitability:** Suitability of the proposed crop/cropping system, access to technologies, economic feasibility, and technical viability.
- **Market demand and infrastructure:** Market demand for crops, availability of market infrastructure, organized marketing systems, real-time market information, and market intelligence.
- **Policies and schemes:** Government policies favoring crops, existing schemes incentivizing crops, and eligibility for benefits.
- **Public and private extension influence:** Access to Agricultural Technology Management Agency (ATMA), Kissan Call Centers, Krishi Vigyan Kendras (KVKs), agricultural universities, ICAR organizations, agricultural magazines, newspapers, input dealers, agribusiness companies, NGOs, agriclincs, and agribusiness centers.
- **Availability of required agricultural inputs including agricultural credit:** Timely availability of seeds, fertilizers, pesticides, and implements, and access to institutional credit.

Crop Rotation Systems

- **Sequential cropping system:** Growing crops in sequence within a crop year, e.g., rice followed by pigeonpea, pigeonpea followed by wheat.
- **Intercropping system:** Growing more than one crop in the same area in rows of definite proportion and pattern.
 - Remunerative intercropping practices in India's groundnut growing states, e.g., Maharashtra: Groundnut + Red gram (6:1/4:1), Groundnut + Soybean (6:2), Groundnut + Sunflower (6:2/3:1); Gujarat: Groundnut + Castor (9:2/3:1), Groundnut + Sunflower (3:1/2:1), Groundnut + Red gram (4:1).
- **Alley cropping:** An agroforestry practice where perennial, preferably leguminous, trees or shrubs are grown simultaneously with an arable crop, managed as hedgerows, with prunings used as green manure or mulch.

Season-based cropping system:

- **Kharif rice based cropping system**
- **Kharif maize based cropping system**

- **Kharif sorghum based cropping system**
- **Kharif millet based cropping system**
- **Kharif groundnut based cropping system**
- **Winter wheat and chickpea based cropping system**
- **Rabi sorghum based cropping system**

Mixed cropping:

- To minimize the risk and uncertainty of mono-cropping and to achieve sustainable yield and income, mixed cropping is advised.

Integrated Farming System (IFS)

- An approach involving extensive cropping systems transitioning to intensive cropping, emphasizing efficient natural resource management and sustainable production systems.
- IFS involves many enterprises, including animal components, based on available resources, location-specific/farmer-specific plans, high resource use efficiency, and sustainable farming practices.
- Objectives include maximizing by-product use, providing employment to family members, maximizing land use, value addition, self-sustainability, and reducing dependence on external resources.

Pest and Disease Management

Objectives of the session:

- To increase awareness and understanding about crop pests, diseases, and weeds.
- To strengthen farmers' knowledge on effective management of insects, diseases, and weeds in crops through Integrated Pest Management (IPM).
- To sensitize farmers on safe handling of chemicals.

What we know at the end of the session:

- Insects and their life cycles.
- Methods of insect control, including IPM.
- Plant protection equipment.
- Symptoms of major diseases.
- Integrated disease management.
- Major weeds.
- Methods of controlling weeds.

- Safe handling of chemicals.

Crop Pests and Their Importance:

Pests cause damage to plants, ranging from 30% to 90%, sometimes resulting in total loss. They include insects, diseases, and weeds. Non-insect pests include nematodes, snails, and rodents.

Life Stages of Insects:

- **Egg:** The initial stage of the insect.
- **Larva:** The damaging stage of insects to any crop.
- **Pupa:** An inactive stage preparing itself to develop into an adult.
- **Adult:** Mostly harmless, but some bugs and beetles can be harmful.

Methods of Controlling Pests:

1. **Natural Control:**
 - Understanding insect life cycles to manage pest populations through natural barriers and predation.
2. **Mechanical Control:**
 - Removal of affected parts, collection and destruction of insects, drying seeds, tar coating trees, and using barriers.
3. **Agronomical Methods:**
 - Summer plowing to expose pests to hot sun, using trap crops, mixed cropping, intercropping, crop rotation, and maintaining clean fields to manage weeds and pests.
4. **Pest Monitoring:**
 - Examining crops to determine pest presence and extent of damage to decide on pesticide application.
5. **Economic Threshold Level (ETL):**
 - The pest population density at which control measures must be taken to prevent economic injury.
6. **Biological Control Methods:**
 - Using parasites, predators, and diseases to control pests.
7. **Physical Control:**
 - Practices like mixing pulses with red earth, drying seeds in the sun, and using radiation.
8. **Traps:**
 - Light traps, pheromone traps, and yellow sticky traps to monitor and control pests.

9. Chemical Control:

- Selecting and using pesticides carefully, following recommended doses, and ensuring proper application techniques.

Integrated Disease Management Practices:

- **Use of Resistant Varieties:**
 - Cultivating varieties resistant to common or economically important diseases.
- **Seed Treatment:**
 - Treating seeds with fungicides to control diseases.
- **Proper Planting Practices:**
 - Planting at optimal times and maintaining appropriate plant populations.
- **Balanced Fertilization:**
 - Applying balanced fertilizers based on soil tests to avoid susceptibility to diseases.
- **Soil Management:**
 - Enriching soil with beneficial microorganisms like Trichoderma and maintaining soil organic matter content.

Pest and Disease Identification and Control:

- **Blackfly:** Control with acetamiprid, ensuring complete drenching of the tree.
- **Citrus Psylla:** Control with acetamiprid.
- **Leaf Miner:** Control with imidacloprid and thiamethoxam.
- **Bark Eating Caterpillar:** Clean wooden frass and treat tunnels with Emamectin benzoate.
- **Fruit Sucking Moth:** Collect dropped fruits and smoke the orchard.
- **Mites:** Control with Fenazaquin and wettable sulfur.

General Conditions for Cultivation of Crops

10. Climatic Factors:

- The crop/cropping system should be suitable for local weather parameters such as temperature, rainfall, sunshine hours, relative humidity, wind velocity, wind direction, seasons, and agro-ecological situations
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- **Soil Conditions:**

- The crop/cropping system should be suitable for local soil type, pH, and soil fertility

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- **11. Water Requirements:**

- The availability of adequate water sources like tanks, wells, dams, etc.
- Adequate rainfall and its distribution suitable to grow identified crops.
- Water quality and availability of electricity for lifting water.
- Availability of pump sets, micro irrigation systems

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Specific Crop Requirements

11. Mango Cultivation:

- **Climate and Soil:** Mango can be grown from alluvial to lateritic soils except black cotton soil which has poor drainage. The temperature between 24 and 27°C is ideal for mango cultivation.
- **Variety:** Dashehari, Langra, Chausa, Bombay Green, Lucknow Safeda, Mallika, and Amrapali.
- **Multiplication of Planting Material:** Mango can be propagated by veneer, wedge, and softwood grafting. The protected nurseries in polyhouses and use of sprinkler and drip irrigation help raise the humidity level required for higher grafting success rates.
- **Land Preparation:** The land should be prepared one month before planting. Pits of 1m x 1m x 1m size should be dug and exposed for 2 to 4 weeks to kill harmful soil organisms.
- **Soil Sterilization:** Achieved through physical means like steam and solar energy, and chemical methods including herbicides and fumigants. Soil solarization using transparent plastic mulch film is also effective.
- **Planting:** Square and rectangular systems are popular. Before planting, pits should be filled with FYM at the rate of 15-20 kg/plant. Grafts should be planted during July to September.
- **Planting Density:** High density (3m x 6m or 5m x 5m) planting helps increase yield per unit area. Normal planting distance of mango is 8m x 8m.
- **Canopy Management:** Training should be done after six months of planting. It is essential to space the branches properly to help in inter-cultural operations. Initial branching height between 60 to 70 cm is appropriate.

- **Water Requirement:** Varies with age. Young plants (up to 3 years) require 9-12 liters/day/tree, increasing to 120 liters/day/tree for fully grown trees. Drip irrigation systems are recommended for efficient water use.
- **Fertilizer Application:** Manured with phosphorus twice a year. Fertilizers (N and K) are applied in split doses throughout the year, with adult trees requiring specific quantities of N, P₂O₅, K₂O, and FYM annually. Micronutrients such as Zinc and Boron help in cell elongation.
- **Malformation Management:** Deblossoming at bud stage combined with NAA spray helps reduce malformed panicles.
- **Alternate Bearing Management:** Paclobutrazol applied through soil drenching can be used for regular bearing

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Climate Adaptation Strategies

13. Impact of Climate Change:

- **Temperature:** Increase in temperature requires more water for crops and may reduce yields, especially in cereals like wheat. Projected to rise 3.5 to 5°C by 2100.
- **Rainfall:** Regional variations, with increased summer rainfall and fewer rainy days. Increased frequency of extreme weather events like heatwaves, cold waves, droughts, and floods.
- **Sea Level Rise:** Rising at 2.5 mm/year since 1950, affecting coastal lands.
- **Pest and Disease Scenarios:** Changes in climate conditions may lead to alterations in pest and disease patterns, potentially increasing certain pests and diseases.
- **Soil:** Climate change affects soil organic matter, decomposition rates, and nutrient supply. Higher temperatures may reduce nitrogen availability due to volatilization and denitrification. Soil erosion and water balance are also impacted

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• **Adaptation Practices:**

- **Water Conservation:** Improved irrigation methods, water harvesting, and efficient water use.
- **Soil Management:** Practices like mulching, zero tillage, and the use of organic manures help improve soil health and water retention.
- **Crop Management:** Adoption of suitable cropping patterns, intercropping, and mixed farming to reduce risk and enhance resilience.

- **Agroforestry:** Integrating trees with crops to stabilize incomes and provide protection against extreme weather.
- **Shelterbelts:** Reducing wind velocity, moderating temperature, and conserving soil moisture through strategic planting of trees

Types of Fertilizers

- **Organic Fertilizers:**
 - **Advantages:** Balanced nutrient supply, enhance soil biological activity, improve soil structure, increase organic matter content, slow nutrient release for long-term soil fertility, help combat plant diseases.
 - **Disadvantages:** Low nutrient content, effectiveness only in the long run, may not supply all required nutrients, high cost, bulkiness.
- **Chemical Fertilizers:**
 - **Advantages:** Nutrients immediately available for plant uptake, lower price compared to organic fertilizers, small quantities needed due to nutrient richness.
 - **Disadvantages:** Over-application can lead to economic and environmental losses, can make plant tissues vulnerable to diseases, increase soil organic matter decomposition, nutrients can be easily lost through chemical reactions.

Efficient Fertilizer Use

- Select crops and varieties that suit local conditions and have the best fertilizer response.
- Select the right kind of fertilizer according to crop and soil.
- Plan fertilization for the cropping pattern, not for single crops.
- Decide application rates after soil analysis and consultation with local extension officers.
- Practice balanced fertilization.
- Maintain optimum plant population and proper spacing.
- Control pests and diseases to maximize fertilizer efficiency.
- Ensure optimal irrigation at critical growth stages to maximize yield increase from fertilizers.

Methods of Fertilizer Application

- **Broadcasting:** Distribute fertilizer manually over the field; common but highly inefficient with high economic and nutrient losses.
- **Placement:** Apply in bands or packets near plants; high efficiency but labor-intensive.
- **Ring Application:** Spread fertilizer around the tree at about one meter distance.
- **Foliar Application:** Spray liquid fertilizers on crops; highly efficient but requires special equipment and is costly.
- **Fertigation:** Combine fertilizers with irrigation water using systems like tanks, venturi systems, injector pumps, and automated systems.

Fertigation Advantages

- Ensures regular water flow, increased growth rates, and higher yields.
- Allows versatile timing of nutrient application to meet specific crop demands.
- Improves nutrient availability and uptake by roots.
- Safer application, eliminating root burn risk.
- Simplifies application, saving time, labor, equipment, and energy.
- Improves fertilizer use efficiency and reduces soil compaction and mechanical damage to crops.
- Reduces environmental contamination and allows convenient use of compound nutrient solutions.

Recommended Fertilizer Doses for Important Crops

- Example: For a recommended dose of 120 kg N, 60 Kg P, and 40 Kg K per hectare:
 - Urea: 261 kg (based on 46% N content)
 - Single Super Phosphate: 852 kg (based on 7.04% P content)
 - Muriate of Potash: 80 kg (based on 60% K content)

Soil Fertility Management

- Maintain a balance between nutrient uptake and application.
- Ensure adequate fertility at specific plant growth stages.
- Maintain soil fertility and organic matter.
- Minimize nutrient loss by avoiding excess application.
- Base nutrient demand on soil nutrient level, crop variety, yielding ability, soil moisture, and targeted yield.

- Use soil analysis to guide the quantity and quality of fertilizers needed.

Fertilizer Use in Morocco

Strategic Guidelines

- **Market Supply:**
 - Ensure timely availability of fertilizers, consider safety stock.
 - Support professional traders for distribution.
 - Improve farmers' access to finance for fertilizer acquisition.
 - Implement pricing mechanisms for fertilizers.
- **Rational Use of Fertilizers:**
 - Promote adoption of a "Technical Package" including improved seeds, weed control, plant protection, and appropriate cultivation techniques.
 - Develop regional fertilizer formulas based on soil and climatic conditions.
 - Conduct large-scale demonstration platforms.
 - Revise soil analysis subsidy criteria to encourage use.
- **Technology Transfer:**
 - Encourage research and development through human and financial resource allocation.
 - Establish a national network for fertilizer use efficiency research and dialogue between industry and research.
 - Involve fertilizer companies in developing regional fertilizer formulas.
 - Establish an effective extension system for fertilizer use (Ferti-Council).

Training and Awareness Programs

- Organize training sessions on soil analyses for technicians and farmers.
- Follow up with farmers using soil analyses for fertilizer recommendations.
- Develop research and research-development programs on soil test calibration for interpretation norms and new/adapted fertilizer formulations.

Soil Fertility Maps

- Develop national soil fertility maps as part of a collaboration involving MAPM, INRA, OCP Group, and other institutions.
- Provide information on administrative elements, main crops, natural water resources, climate, and soil fertility.
- Offer recommendations on soil fertilization needs based on the chosen crop and expected yield

General Conditions for Cultivation of Crops

Water Resources and Management:

- **Importance of Water Management:** Water resources are essential for increasing and stabilizing crop production. Wind erosion has been responsible for destroying valuable topsoil. The main cause of water erosion is unmanaged runoff, which can be influenced by climatic factors such as precipitation characteristics (duration, intensity, distribution, direction), temperature, humidity, and wind velocity. Watershed characteristics, barren land without vegetation, and soil types also play a role in runoff management
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Types of Irrigation:

- **Basin Irrigation:**
 - Basins can be constructed even on steep slopes by forming level terraces.
 - The size of the basin depends on factors such as land slope, soil type, stream size, required depth of irrigation application, and farming practices.
 - Maintenance of basins involves checking bunds regularly for erosion, repairing defects, and preventing damage from rats.
 - Advantages include conservation of rainfall, reduction in soil erosion, high water application efficiency, and suitability for various crops
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- **Furrow Irrigation:**
- Suitable for row crops and crops that cannot stand water for long periods.
- Water flows through small channels between crop rows, infiltrating the soil as it moves along the slope.
- Must consider slope, soil type, stream size, and cultivation practices when designing furrows
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Micro Irrigation Systems:

- **Benefits of Drip Irrigation:** Drip irrigation provides significant water savings and increases crop yields. It is especially efficient for crops like mango, banana,

grapevine, pomegranate, tomato, watermelon, sugarcane, cotton, onion, and potato. Drip irrigation systems are highly efficient in terms of water use compared to other methods like flood irrigation

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- **Government Schemes:**
- The Government of India supports micro irrigation schemes to increase the area under efficient irrigation methods like drip and sprinkler irrigation.
- The scheme includes subsidies for the installation of these systems and aims to improve water use efficiency and productivity
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Morocco Climate-Smart Agriculture Investment Plan (CSAIP)

Projects and Investments in Water Management:

- **National Program for Water Savings in Irrigation (PNEEI):** Focuses on improving water delivery and management at the farm level, including private groundwater schemes, rainwater harvesting, erosion control, and water catchment improvement
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- **Irrigation Modernization:** Involves replacing canal systems with pressurized pipe systems and renovating existing pressurized systems to improve water efficiency. This includes detailed technical studies and capacity building for farmers to adopt new water-saving technologies and agricultural practices
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- **Khettara Rehabilitation:** In the Draa-Tafilalet Oasis Region, this project aims to improve groundwater availability by rehabilitating traditional khettara systems. Components include aquifer recharge, rehabilitation of water distribution systems, support for water-saving irrigation practices, and capacity building for farmers
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- **Soil and Water Conservation:** Projects like the Massa Basin Soil and Water Conservation Project aim to prevent soil erosion and increase water availability through terrace rehabilitation, agro-forestry, erosion control, and rainwater collection
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- **Water Users' Associations:** These associations play a crucial role in facilitating financial support for farmers, coordinating water management projects, and ensuring the sustainability of irrigation systems
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Investors' Guide in the Agricultural Sector in Morocco

Natural Resources and Irrigation:

- **Water Availability:** Morocco has significant water resources, including perennial rivers and groundwater. However, the hydrological situation is influenced by annual irregularity and spatial variability of rainfall. The country has built several dams and water transfer systems to mobilize resources, with irrigation being the main user of water
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- **Irrigation Types:** Large Hydraulics involves perennial irrigation in major areas using dam water. Small and Medium Hydraulics cover various regions with different irrigation potentials. Investments in irrigation have significantly contributed to agricultural development and water management in Morocco

Farm Management

Objectives of the session:

- Equip farmers to take advantage of improved technologies and market opportunities to increase income.
- Assist farmers in making proper plans and adopting production methods that ensure food security for their families.
- Empower farmers for professional negotiations with buyers, input dealers, and credit institutions.
- Educate farmers to make profitable decisions considering available resources and anticipate risks, including market fluctuations.

What we know at the end of the session:

- Importance of farm management.
- Basic information supporting better farm management decisions.
- Market-driven enterprises.
- Matching resources with the calendar of activities.
- Selection of cropping patterns.
- Understanding of cost-benefit analysis.
- Risk analysis in agriculture.

Basic Functions of Farm Management:

- **Diagnosis:** Analysis of past performance, identifying strengths and weaknesses.

- **Planning:** Planning for future crops and animals, considering opportunities and threats.
- **Implementation:** Efficient implementation with the least cost.
- **Monitoring:** Reducing losses and increasing profits by choosing better technologies based on observed opportunities.
- **Evaluation:** Evaluating actions to repeat successes in the future.

Farm Resources:

- **Land:** Knowledge of available land for cultivation.
- **Irrigation:** Source and availability of irrigation.
- **Labor:** Availability and skill level of labor.
- **Livestock:** Availability and productivity of livestock.
- **Farm Machinery:** Availability of machinery and tools.
- **Inputs:** Availability of seeds, fertilizers, and other inputs.
- **Credit:** Requirements and sources of credit.
- **Market Demand:** Understanding market demand for produce.
- **Infrastructure:** Availability of cold storage, godowns, and other infrastructure.

Planning:

- Plan the production based on the agricultural calendar, considering the main and off-seasons.
- Determine if farm business is profitable by calculating income and expenditure from different produce.

Risk in Agriculture:

- Understand and plan for anticipated risks such as price reduction, drought, lack of capital, and pest problems.
- Make decisions to minimize the impact of risks on revenue.

Financial Management:

- Make a financial calendar to plan expenditures and manage money throughout the year.
- Save money from surplus months to cover expenditures in deficit months.
- Improved techniques can increase revenue and should be incorporated into planning.

Main Lessons:

- Accurate knowledge of income and expenditure is crucial for determining if the farm is making a profit or loss.
- Good farmers calculate and plan well ahead of the season to decide what to produce and which techniques to use.
- Farmers should avoid continuous monocropping to ensure soil fertility through crop diversification and rotation to realize sustained profitability.

Morocco Climate-Smart Agriculture Investment Plan (CSAIP)

Projects and Investments in Farm Management:

- **National Program for Water Savings in Irrigation (PNEEI):** Focuses on improving water delivery and management at the farm level.
- **Irrigation Modernization:** Involves replacing canal systems with pressurized pipe systems to improve water efficiency.
- **Khettara Rehabilitation:** Improves groundwater availability by rehabilitating traditional khettara systems, supporting water-saving irrigation practices, and building farmers' capacity.
- **Soil and Water Conservation:** Projects like the Massa Basin Soil and Water Conservation Project aim to prevent soil erosion and increase water availability through terrace rehabilitation, agro-forestry, erosion control, and rainwater collection.
- **Water Users' Associations:** Play a crucial role in facilitating financial support for farmers and coordinating water management projects to ensure the sustainability of irrigation systems.

Investors' Guide in the Agricultural Sector in Morocco

Natural Resources and Irrigation:

- **Water Availability:** Morocco has significant water resources, but the hydrological situation is influenced by annual irregularity and spatial variability of rainfall. Investments in irrigation have significantly contributed to agricultural development and water management in Morocco.

Market Information

1. Marketing of Agricultural Products in Morocco

The agricultural market in Morocco is fully liberalized. The selling prices of agricultural products can be monitored in real time through the "Asâar" information system set up

by the Ministry of Agriculture, Fisheries, Rural Development, Water and Forests (MAPM). This system helps farmers make necessary arbitrages to get the best price for their products and compiles information on prices to aid economic operators and government in strategic planning. The system tracks prices daily in nine wholesale markets, 25 souks, and 20 retail markets, covering products such as broilers, red meat, table eggs, grains, legumes, animal feed, and vegetables. More details are available on the website: www.prixagriculture.org/asaar

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2. Evolution of Moroccan Agricultural Exports

Between 2012 and 2016, despite the slowdown in demand from main importing markets, Moroccan exports of agricultural products showed a positive dynamic with an average annual growth rate of around 11%, reaching nearly 27 billion Moroccan Dirhams (Dhs). This growth was driven by a strong increase in exports across all sectors, including fruits, vegetables, and processed products. The main export destinations include the European Union, Russia, and the United States. In 2016, agricultural products contributed 12% to the total value of Moroccan exports. Morocco is among the world's leading exporters, ranking as the 3rd largest exporter of canned olives, 4th in clementines and tomatoes, and the 1st in capers

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3. Domestic Market Channels

Products in the internal market are marketed through several main channels:

- **Large and Medium Stores:** These have seen continuous growth since the 1980s, with the number of stores increasing from six in 1997 to over 497 by the end of 2016.
- **Business Networks and Franchises:** Rapid growth since the 1990s, with a growth rate of more than 20% since 2005. By 2010, Morocco had 330 franchise networks with over 2200 points of sale, mainly in major cities like Casablanca and Rabat.
- **Public Trade Spaces:** These include wholesale markets and slaughterhouses, which have a wide regional coverage and significant transaction volumes. They play a crucial role in setting product prices and ensuring product quality through sanitary control systems.
- **Neighborhood Trade:** This mode of trade is significant for the national economy due to its contribution to job creation. It offers proximity to consumers, suitable working hours, personalized services, and established practices of payment facilities

Government Schemes and Support

1. Farmer's Handbook on Basic Agriculture

Centrally Sponsored Micro Irrigation Scheme

The Government of India has implemented the Micro Irrigation Scheme to popularize efficient irrigation methods like drip and sprinkler irrigation. Key details include:

- **Objectives:** Increase area under efficient irrigation methods to use water resources efficiently.
- **Subsidy Pattern:** 40% of the total cost borne by the Central Government, 10% by the State Government, and the remaining 50% by the beneficiary.
- **Beneficiary Coverage:** Assistance for a maximum area of 5 hectares per beneficiary family.
- **Additional Assistance:** 75% of the cost for demonstration purposes on up to 0.5 hectares per beneficiary.
- **Selection and Implementation:** Beneficiaries are selected by Panchayati Raj Institutions, and all categories of farmers are covered, ensuring at least 25% are small and marginal farmers.
- **Support and Awareness:** Precision Farming Development Centres provide research and technical support, and there are extensive campaigns to promote awareness about water conservation
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Kisan Credit Card (KCC) Scheme

The Kisan Credit Card Scheme aims to provide timely credit to farmers for their short-term needs. Benefits include:

- Simplified disbursement procedures, no need for seasonal loan applications.
- Credit facility for three years with flexible withdrawal limits.
- Insurance coverage for KCC holders.
- Support from various nationalized banks implementing KCC
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Agricultural Insurance Schemes

Several insurance schemes are available for farmers, including:

- National Agricultural Insurance Scheme (NAIS)
- Weather Based Crop Insurance Scheme (WBCIS)
- Modified National Agricultural Insurance Scheme (MNAIS)
- Various insurance schemes for specific crops and weather conditions
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2. Investors' Guide in the Agricultural Sector in Morocco

Agricultural Aggregation Projects

State support for agricultural aggregation projects includes:

- **Subsidy with Preferential Rates:** For investments in irrigation systems and agricultural machinery.
- **Lump Sum Subsidy:** Encourages agricultural aggregation by providing financial support for professional organization, supervision, and access to new technologies. Paid in three tranches over the first three years of production
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Financial Aid for Hydro-Agricultural Development

- Subsidies for drip irrigation projects, digging and casing wells, and developing water storage ponds.
- Financial support from the Agricultural Development Fund (FDA) and contributions from Moroccan banks
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Support for Export and Marketing

- **Export Subsidies:** Ranging from 500 to 6,000 DH per ton for plant and animal products.
- **Marketing Channels Improvement:** Financial aid for upgrading marketing channels for meat and other agricultural products
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Agropoles Development

- Development of agropoles to integrate the value chain of the food industry, improve productivity, and ensure better valorization of agricultural production.
- Attractive framework for national and international investments, offering competitive access to land, services, and markets

Region-Specific Information

1. Tadla Region and Gharb Region

Climatic Conditions:

- **Tadla Region:** Characterized by a climate ranging from humid (peaks of the High Atlas range and some peaks of the Middle Atlas) to arid and dominated by a continental type. It experiences intense cold in winter and very hot summers. Average annual rainfall varies significantly, from 291 mm to 460.3 mm, and temperatures range from 2°C to 40°C
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- **Gharb Region:** Characterized by a Mediterranean climate with an alternating wet season from October to April and a dry and hot season from May to September. The coldest month is February, with an average temperature of 9.54°C, and the hottest months are July and August, with higher temperatures of 27.72°C
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Agricultural Challenges:

- Citrus farmers in both regions encounter several problems and constraints related to insect pests and fungal diseases, which significantly impact the yield and market demand for citrus fruits
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- Key pests include the Mediterranean fly (*Ceratitis capitata*), citrus leafminer (*Phyllocnistis citrella*), scale insects, mites, and aphids. Fungal diseases such as *Phytophthora* and *Fusarium* root rot are also prevalent
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2. Chaouia-Ouardigha Region

Agricultural Production:

- Focus on truck farming, camel milk, red meats, and white meats. The region aims to expand truck farming from 450 hectares to 2,450 hectares and increase production from 36,000 tons to 196,000 tons
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Action Plan:

- 22 projects with investments totaling 1.68 billion DH.
- Targeting 54,750 farmers.
- Expected to increase employment from 1.79 million job-days to 7.81 million job-days and added value from 126 million DH to 671 million DH by 2020
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3. Oued Eddahab-Lagouira Region

Agricultural Production:

- Focus on grains, sugar production, truck farming, wine, cactus, local produce like caper and cumin, and animal production including milk, red meats, white meats, and chicken beldi.
- Significant expected increases in production across various crops and animal products by 2020
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4. Meknes-Tafilalet Region

Agricultural Production:

- Focus on citrus fruits, olive trees, wine, almond trees, palm trees, and truck farming.
- Significant increases in production expected by 2020, with substantial investments planned for irrigation and agricultural development
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5. Eastern Region

Agricultural Production:

- Similar focus as Meknes-Tafilalet with additional emphasis on sugar crops and beekeeping.
- Expected increases in production and irrigation redevelopment, with substantial investments planned
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6. Grand Casablanca Region

Agricultural Production:

- Focus on grains, olive trees, truck farming (potatoes), and wine production.

- Planned expansion of irrigated areas and substantial investments to improve productivity and export capabilities
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7. Fez-Boulemane Region

Agricultural Production:

- Focus on grains, olive trees, truck farming, wine, and local produce like saffron and lavender.
- Significant planned investments to improve productivity, employment, and export capabilities by 2020
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8. Doukkala-Abda Region

Agricultural Production:

- Focus on grains, olive trees, truck farming, legumes, and local produce like capers and honey.
- Significant planned increases in production and investments to improve agricultural infrastructure and practices by 2020