# Gist of KURUKSHETRA

#### **VOL.01**

# Agricultural Reforms

Agriculture Reforms: Towards Doubling Farmers' Income

Road Map for Agricultural Reforms

Initiatives in Agriculture Sector

October 2019

Best Farming Techniques in Indian Scenario

Empowering Women Farmers

# **INCREDIBLE RESULTS**



BYJU'S The Learning App

KURUKSHETRA – OCTOBER 2019 ISSUE

# AGRICULTURAL REFORMS

#### TABLE OF CONTENTS:

Sl. No.	CHAPTER
1	Introduction
2	Agriculture Reforms: Towards Doubling Farmers' Income
3	Road Map for Agriculture Reform
4	Initiatives in Agriculture Sector
5	Best Farming Techniques in Indian Scenario
6	Empowering Women Farmers
7	Change in Public Services for Poorer Section
8	Ways to Enhance Agriculture Production
9	e-NAM: Game Changer in Agricultural Marketing
10	Public-Private Partnership in Agriculture Sector
11	Irrigation Technique to Get Per Drop More Crop
12	Non-Farm-Activities to Accelerate Agri Growth

https://byjus.com



#### **Chapter 1: INTRODUCTION**

India is predominantly a rural economy, where the mainstay of people is agriculture. More than 50 per cent of the population is directly dependant on agriculture and allied sector. As an agrarian economy, the country derives 18 per cent of its Gross Domestic Product (GDP) from the agri sector. Over 50 per cent of the national workforce is directly or indirectly employed in this area. The Government has taken several steps to accelerate agricultural growth in the country. The government has also initiated key reforms to boost the agri sector.

- Due to the various initiatives of the Union Government, the country has witnessed record food production in the recent times.
- A large number of schemes to achieve the best results while promoting agricultural growth are in place to bring prosperity in the lives of farming community.
- Women's role in agriculture has been extremely vital in the production, processing and distribution sector.
- The country has made impressive strides on the agricultural front in the recent times. The credit for this success should go to the several million small and marginal farmers that form the backbone of Indian agriculture and economy.
- Policy support, production strategies, public investment in infrastructure, research and extension for crop, livestock and fisheries have significantly helped to increase food production and its availability.
- The Government has also set a goal of doubling farmers' income by 2022 and is making all out efforts to achieve this.
- The government has been constantly emphasising to create a facilitating environment for investments in order to ensure infrastructure development to boost the agri sector.
- With all the agriculture related schemes, the main focus of the government is to benefit the farmers and ensure the overall growth of this key sector which is crucial for country's development.
- More importance has been accorded by the government to the constructive use of water, proper crop selection and use of modern irrigation technologies to ensure a high agricultural productivity.
- Ministry of Agriculture through its various steps and awareness programmes has been constantly encouraging the farmers to adopt new technologies and advancements to get better farm produce.
- Because of the key initiatives and the hard work of the farming community, overall increase can be seen in foodgrain.

Schemes like, Pradhan Mantri Kisan Samman Nidhi, Pradhan Mantri Krishi Sirichayee Yojana and Pradhan Mantri Fasal Bima Yojana are helping the farmers arid agriculture sector in a big way. It is high time that the farming community take advantage of the one of strongest national agricultural research system which the Country has. Undoubtedly, the steps being taken will enhance productivity and ensure overall development of the Agriculture sector.

#### Chapter 2: AGRICULTURE REFORMS: TOWARDS DOUBLING FARMERS' INCOME

The Government has been reorienting the agriculture sector by focusing on an income-centeredness which goes beyond achieving merely the targeted production. It focuses on achieving high productivity, reducing cost of cultivation, remunerative price on the produce, with a view to earn higher profits from farming. At present the Government is implementing various schemes and adopting policy measures to synchronize

https://byjus.com



- 1. For Higher Production through Productivity Gains
  - National Food Security Mission (NFSM) for cereal, pulses, oilseeds, nutria-rich cereals, commercial crops.
  - Mission for Integrated Development of Horticulture crops.
  - National Mission on Oil and Oil Palm (NMOOP) launched in 2014-15 for increasing production of oilseeds and Oil Palm.
- 2. For Reduction in Cost of Cultivation.
  - Soil Health Card.
  - Neem Coated Urea is being promoted to regulate the use of urea, enhance availability of nitrogen to the crop and reduce cost of superfluous fertilizer application.

• Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) micro irrigation component with the motto of 'Har khet ko Paani'.

3. For Providing Assistance to Small and Marginal Farmers.

- Pradhan Mantri Kisan Samman Nidhi (PM KISAN) scheme with an aim to provide assistance to small and marginal farmer families with an amount of Rs. 6000/- per year.
- Now the Union Government has extended the scheme to all farmer families irrespective of land holding size, subject to applicable exclusion.
- Pradhan Mantri Kisan Maan Dhan Yojna (PM-KMY) has been launched which provides for a payment of a minimum pension of Rs. 3000/- per month to eligible small and marginal farmers on attaining the age of 60 years.

4. To Ensure Remunerative returns

- National Agriculture Market Scheme (e-NAM) to get improved remuneration for their produce, moving towards 'One Nation One Market'.
- Farmer Producer Organizations (FPOs) have been on-boarded on e-NAM portal.
- The Model Agricultural Produce and Livestock Marketing Promotion & Facilitation Act, 2017 has been released to promote alternative competitive marketing channels for better pricing and to encourage private investment in developing efficient marketing infrastructure and value chain.
- Existing 22,000 rural haats would be developed & upgraded into Garmin Agricultural Markets (GrAMs).
- Warehousing and post-harvest loans at concessional rate of interest so as to discourage distress sale by farmers.
- Minimum Support Price (MSP) is notified by the Government for certain crops periodically.
- Procurement of oilseeds, pulses and cotton are undertaken by central agencies at Minimum Selling Price (MSP) under Price Support Scheme (PSS).
- 5. For Risk Management and Sustainable Practices



- Pradhan Mantri Fasal Bima Yojana (PMFBY) & Restructured Weather Based Crop Insurance Scheme (RWCIS) provides insurance cover at all stages of the crop cycle.
- Government provides total interest subvention up to 5 per cent (inclusive of 3 per cent prompt repayment incentive) on short-term crop loans up to Rs. 3 lakh.
- Prarmparagat Krishi Viaks Yojana (PKVY) is being implemented with a view to promote organic farming in the country.
- Mission Organic Value Chain Development for North East Region (MOVCD-NER) for realizing the potential of organic farming in the North Eastern Region of the Country.

#### 6. Allied Activities:

- 'Har medh par ped' launched during 2016-17 to encourage tree plantation on form land.
- National Bamboo Mission for value chain based holistic development of the sector as a Supplement to farm income.
- Bee-keeping has been promoted under Mission for integrated Development of Horticulture (MIDH)
- For diary development, there are three important schemes: National Dairy Plan 1(NDP-1), National Program for Dairy Development (NPDD) and Dairy Entrepreneurship Development Scheme.
- Foreseeing high potential in fisheries sector, a Blue Revolution with multi-dimensional activities mainly focusing on fisheries production, both inland and marine is being implemented.
- Rashtriya Gokul Mission was launched in 2014 for gene pool of indigenous cattle and buffaloes.
- National Livestock Mission was launched in 2014-15 to ensure intensive development of livestock.

#### Conclusion:

It is hoped, that the answer to agrarian challenges and realization of the aim of farmers' welfare lies in higher and steady incomes. Notwithstanding many challenges, India's agriculture has demonstrated remarkable progress.

#### **Chapter 3: ROAD MAP FOR AGRICULTURE REFORM**

The agriculture and allied sectors enjoy the centrality in any development planning process in India for its significance in engaging and employing the people, providing food and ensuring food security, raw material for sugar, textile, herbal and food processing industries. A multi-sector and connectivity-based growth is required to ensure food and nutrition, income security, alleviate poverty, increase trade and also enhance the income of those who work in the farm and farm-related activities.

#### **Priority areas for reform:**

- India will be home of 1.6 billion people by 2035. The per capita availability of land, water and other finite unnatural resources will decline. The food grain demand is estimated over 340-356 million tonnes by 2033.
- The policies and investment priorities in and for agriculture must be aligned for income security and inclusiveness.
- Low price realization, excessive intermediation in trade and low private investment in infrastructure development are some of the priority areas of reforms that need concerted efforts of all stakeholders.

https://byjus.com



- The vast gap in infrastructure is also a serious constraint which will require immediate attention.
- The productivity of agricultural commodities in India is lower than any global benchmark.
- Much of the technology developed in public sector labs does not flow to farmers due to weak extension or inadequate delivery mechanism.
- The future of agriculture in India lies in how much investment goes into agri Research and Development (R&D).
- Agriculture R&D has to innovate for precision agriculture, varieties with higher nutritive and processable traits, climate smart technologies, cyber-agro-physical system for generating artificial intelligence based farm and market advisories.
- The frontier areas like gene editing, genomics, artificial intelligence, nano technology that are ushering in 4th Industrial revolution need special attention.

#### Water-Governance:

- As close to 84 per cent of fresh water is used in agriculture, both demand and supply side management through reforms are crucial in India.
- The large gap between potential created and utilized has been a matter of concern. Fortunately, the Government, through Pradhan Mantri Krishi Sinchai Yojana (PMKSY) has been providing overarching governance.
- The Jal Shakti Abhiyan may focus on water conservation.
- A major reform in the micro irrigation scheme is necessary to transform it from individual farmer subsidy driven programme to area based public-private business model covering installation, repair and maintenance of the micro irrigation systems.
- The water governance should focus on micro-irrigation and water budgeting based on a strong traiff regime.

#### **Reforms in Fertiliser Sector:**

- The strong advocacy for Zero-Budget Natural Farming (ZBNF) has been noticed in recent past.
- While consensus on phasing out the fertilizer subsidy is yet to be evolved, the rationalization of the regime is necessary.
- The strategy to introduce Nutrient Based Subsidy (NBS) for all major nutrients should be evolved at the earliest. DBT in fertilisers has been a great success.
- The Soil Health Card (SHC) scheme is one of its kinds with 100 per cent penetration to every farm household.
- Despite launching of Pradhan Mantri Fasal Bima Yojana (PMFBY), the timely and precise estimates and pay outs are the real challenge being faced by the scheme. The precision of record of area insured and the extent and intensity of damage for speedy pay outs is the challenge.
- So far the States identify and accept the Crop cutting Experiments (CCE) data. Hence, conducting adequate number of CCEs though significant is yet the most challenging for the success of PMFBY. States have to reform to accept and include technologies like remote sensing, drones, smart phones etc.



- The Sarangi Committee (2016) recommendations on interest subvention are implemented by the Government.
- The interest subvention on the short-term crop loan up to 3 lakh and Kisan Credit Card Scheme have been made broad-based to include term credit and consumption needs, besides some risk cover against accidental death.
- However, the equitable distribution of credit amongst farmers and regions is the concern. The institutional credit is also not available to tenants or lessee cultivators.
- The States should reform their land leasing laws based on the Model Act on Agricultural Land Leasing, 2016 prepared by NITI Aayog.
- The alternate system of banking in the form of banking correspondence should be strengthened in regions with low density of rural banks.
- The value of farm output can be increased substantially by diversifying from field crops to fruits and vegetables. Diversified farming in A.P. Gujarat could be attributed for rapid decline in rural poverty during last 15 years.
- The directed diversification can only happen if farmers are given the full right to sell their produce to whomsoever they want.
- A well-functioning system of contract farming will go some distance towards providing a guaranteed price as well as necessary technical support to the farmer.
- Reforms in contract farming, tariff and tax regimes, credit is pivotal for achieving commercialization in agriculture. The policies that facilitate the development of food processing industry will go a long way towards creating demand for high value commodities.

#### Manage post-Harvest:

- The annual post-harvest losses are estimated at Rs.92651 crore. Reforms in Essential Commodity Act relating to stock holdings and storage could reduce the losses to great extent. The Agriculture Export Policy is a new beginning which must be strengthened.
- The initiatives of e-NAM and Gramin Agricultural Markets will have far reaching consequences.
- The Government can also evolve two competing agri-market systems-one through Agricultural Produce Market Committee (APMCs) and second through integrated value chain models. The FPOs/Joint Liability groups can be promoted to channelize the small growers into the value chain.

#### Minimize The Price Shocks:

- The Minimum Support Price (MSP) implementation has never been inclusive for produce, producer and geographies. It also induced changes in production pattern favouring for water guzzling crops.
- The Government, in the Budget 2018-19, announced for introducing MSP 1.5 times of production cost. NITI Aayog and Minsitry of Agriculture in consultation with the states suggested Price Deficiency Payment System, and Private Stockiest Procurement System as the alternate mechanism.
- The states should also enact their APMC laws based on the Model Agricultural and Livestock Marketing (APLM) Act, 2017 to facilitate out-of-mind transactions, exemption of market fee on perishables, electronic marketing etc.



#### Make Indian Farmers Competitive:

- Since liberalization, the private sector helped in significant investments in some sectors. The poultry sector is one such example which grew into a well-organised industry. The commercial vegetable production is gradually picking up.
- The revolution in ICT has enabled farmers and producers to learn and adopt better practices and access marker information.
- The private sector may be encouraged to supplement investments in high-risk high-potential project. The 'state of the art' food tasting lab could be established for testing of quality standards.
- A consistent policy regime at least for some specified period will establish India as a good buyer and seller of agri-commodities helping the domestic producers a long way.

#### **Turning Small Into Big:**

- The grouping of small and marginal farmers into FPOs is the game changer for those who own less land. The budget 2019-20 provided push to set up more FPOs.
- The modernization of income tax laws allowing exemption to FPOs income, approving direct marketing by FPOs to buyers and single state-wide license for trading of the inputs are some reforms needed immediately.
- The current legal structure of FPOs does not provide for external equity infusion or commercial borrowing. This may be solved thought a provision for collateral free loans to FPOs up to Rs.25 lakh from the financial institutions.
- The rate of interest to FPOs may be rationalized to the rate of individual farmers for crop loans.
- The FPOs registered under companies Act may also be made eligible for loans from the cooperative banks, etc. Treating FPOs registered as FPCs at par with the cooperatives for all sales tax exemptions could help them immensely.

#### **Conclusion:**

The prime function of the Government agencies is to create an ecosystem for the larger acceptance for the reforms. This requires three things-information, intelligence and interaction. A paradigm shift is required to look agriculture differently.

#### **Chapter 4: INITIATIVES IN AGRICULTURE SECTOR**

Keeping in view, the importance of agriculture in socio-economic fabric of India, the Government has given special emphasis and attention to this sector.

#### Key Challenges Facing the Indian Agriculture Sector:

- Decreasing size of agricultural land holdings
- Poor transport infrastructure
- Poor storage facilities



- Lack of use of modern technology
- Lack of proper irrigation facilities
- Inadequate access to irrigation which result in over dependence on monsoons
- Loss of soil fertility
- Inadequate access to agricultural credit
- Lack of marketing support

#### Government Schemes for Enhancing the Socio-Economic Status of Agriculture:

#### 1. Pradhan Mantri Kisan Samman Nidhi (PM-KISAN):

- PM-KISAN is a Central Sector scheme with full funding from Government of India.
- Under this scheme, an amount of 6000/- under three equal installments is provided to farmer families.
- The amount is being transferred to the beneficiaries directly in their bank accounts.
- However, farmers who do not own land are not eligible for applying through this scheme.
- The scheme was initially launched to augment he income of small and marginal farmers having cultivable land holding up to 2 hectares. However, in its second phase, the scheme has been expanded, by bringing all land holding farmer families under its purview.
- This scheme has been extremely beneficial for small farmers. The amount given to the farmers serves as a source of investment for the farmers and also as a buffer from any unforeseen incident.

#### 2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):

- Earlier programme such as Accelerated Irrigation Benefits Scheme, Har Khet ko Paani, Per Drop More Crop and Watershed Development have been brought under one umbrella scheme, which is Pradhan Mantri Krishi Sinchayee Yojana.
- The major objectives of PMKSY are to increase cultivable area under irrigation, improve on-farm water use efficiency by reducing wastage of water, enhance and encourage the use of precision irrigation and promote various water conservation practices to conserve water.
- 3. Pradhan Mantri Fasal Bima Yojana (PMFBY):
- The scheme was launched in 2016 with the aim to protect farmers from any financial loss due to natural calamities.
- In this scheme, farmers have to pay an annual premium of 2 per cent for Kharif crop, 5 per cent for Rabi and oilseed crops and 5 per cent for commercial/horticulture crops.
- The rest of the premium amount is being borne equally by Central and respective State/UT Governments.
- The scheme also has a very robust claim settlement procedure.
- Owing to nature of Indian agriculture, which is predominantly monsoon dependent, this scheme has been very well received by the agricultural community.

#### 4. Interest Subvention Scheme of Ministry of Agriculture:

• The Government has introduced an interest subvention scheme for short term crop loans up to Rs.3 Lakhs at a reduced interest rate of 7 per cent p.a.



- This scheme provides interest subvention of 2 per cent per annum to Banks on the use of their own resources.
- Additional 3 per cent incentive is also given to the farmers for prompt repayment of the loan, resulting in reduction of the effective rate of interest to 4 per cent.
- Under this scheme, the interest subvention (2 per cent) on crop loan continues to be available to banks for the first year on the restructured amount, to provide temporary relief to the farmers.

#### 5. Kisan Credit Card:

- To encourage digital payments and also to provide adequate credit facility for purchasing necessary inputs for agricultural and other requirements, Kisan Credit Card scheme was launched.
- This Scheme has been further simplified and converted into ATM enabled RuPay debit card.

#### 6. Soil Health Card:

- Fertility of soil is essential for high yield and productivity.
- To ensure crop fertility, soil health card has been introduced which would evaluate the fertility of soil across the country with respect to several parameters.
- The farmers are fully aware of the conditions of the soil they are working on from the soil health card and hence to get the best yields out of it, they can use fertilizers at the recommended dose.
- This scheme has dual benefit. One, yields are higher due to efficient use of ingredients and secondly, the use of fertilizer can also be restricted through this process.

#### 7. e-National Agriculture Market (e-NAM):

- To facilitate better marketing opportunities and expose the farmers to greater number of markets, e-NAM has been launched in 2016.
- This platform provides wider market access to the farmers and also ensures better price for the produce.

#### 8. National Mission for Sustainable Agriculture:

- National Mission for Sustainable Agriculture (NMSA) was launched in 2014-15 with the primary objective of holistic improvement of agriculture by making it more productive, sustainable, remunerative and climate resilient through the process of implementation of location specific integrated/ composite farming systems; soil and moisture conservation measures; comprehensive soil health management; efficient water management practices and mainstreaming rainfed technologies.
- Rainfed Area Development Programme is an important component under National Mission for Sustainable Agriculture and focuses on Integrated Farming System for enhancing productivity and minimizing risks associated with climatic variability by integrating crops with activities like horticulture, livestock, fishery, vermi-organic composing etc.
- This is particularly beneficial from socio-economic point of view, as it allows farmers to maximize their returns for sustained livelihood and also reduce the impacts associated with natural calamities such as drought, flood etc.



#### **Chapter 5: BEST FARMING TECHNIQUES IN INDIAN SCENARIO**

India has made impressive strides on the agricultural front during the last four decades. Much of the credit for this success should go to the several million small and marginal farming families that form the backbone of Indian agriculture and economy. Policy support, production strategies, public investment in infrastructure, research and extension for crop, livestock and fisheries have significantly helped to increase food production and its availability.

- Availability of foodgrains per person in India has increased from 455 g per capita per day to over 518 g, even as the country's population swelled from 683 million to nearly 1300 million.
- Despite the increased availability, best management practices are essential to increase agriculture productivity and livelihood of farmers, especially marginal and small farmers.
- There are many such practices which are able to sustain production and productivity without deteriorating soil health and environment. These are:

#### **Conservation Agriculture (CA)**

- CA has been viewed as an important strategy against food security challenges posed by climate change. In rice-wheat dominated region (western Uttar Pradesh and Haryana) farmers burn the crop residues in-situ to clear the fields and make them ready for the next crop, which cause a very serious atmospheric pollution problem.
- Heat and moisture stress are other serious issues of crop production. Thus, conservation agriculture has a good scope in this geographically important region.
- Conservation Agriculture is defined as a sustainable agriculture production system. It comprises of a set of farming practices adapted to the requirements of crops and local conditions of each regions. The farming and soil management techniques protect the soil from erosion and degradation, improve its quality and biodiversity, and contribute to the preservation of the natural resources, water and air, while optimizing yields.
- CA is shouldered by three major pillaring principles, viz. i) minimum soil disturbance; ii) maintenance of permanent soil covers and iii) cropping system diversity, crop rotations.
- Government of India has made provision of Rs. 1140 crore in the Budget 2019-20 for eco-friendly management of crop residues especially rice and wheat residue in Northern plains.
- CA based crop management practices not only enhance crop productivity but also reduce cost of production and maintain soil health.

#### **Integrated farming systems (IFS)**

- IFS will be more resilient and adaptive to climate variability. Integration of livestock rearing with crop production gives higher economic returns as compared to crop production alone.
- Farm research in different regions of the country has resulted in identification of many sustainable and profitable IFS models for rainfed areas.
- For example, in areas where the rainfall is more than 1,100 mm, IFS module integrating paddy with fisheries is ideal.
- Under irrigated areas the following IFS models are most suitable to maintain soil fertility and productivity:
- Intensification and diversification of crop component of farming system.



• Diversification of other components of farming system for higher income.

#### Precise Nutrient Management And Soil Health Cards

- Site-Specific Nutrient Management relies on principles of '5Rs'.
- The right time, the right amount, the right place, the right source, and the right manner.
- The Site-Specific Nutrient Management (SSNM) approach emphasizes 'feeding' crop with nutrients as and when needed.

#### Efficient Water Management

- Both in-situ and ex-situ rain water management play crucial roles for increasing and sustaining the crop productivity.
- In the union budget of 2018, under the 'Har Khet ko Pani' a component of PMKSY scheme, the ground water irrigation scheme was implemented in 96 districts where less than 30 per cent land is currently getting an assured irrigation facility.
- The pressurized micro irrigation systems not only save water in food grain production but also contributes to higher productivity, cost effectiveness, higher water productivity and energy use efficiency.

#### **Organic Farming**

- Organic food products are considered to be much safer and nutritious than the products produced by conventional farming.
- Organic farming also helps to restore soil health, protect environment, enhance biodiversity, sustain crop productivity and enhance farmer's income.

#### **Crop Diversification**

- It is paramount importance in mitigating the environmental problems arising on account of monoculture.
- Inclusion of legumes in cropping systems has been found to be effective in reducing the nitrate leaching in lower profiles.
- There is need to diversify crop cultivation with pulses, oilseeds, fiber crops along with high value crops like fruits, vegetables, flowers, medicinal etc. as per agro-climatic conditions.

#### **Resource Conservation Technologies (RCTs)**

- RCTs refer to those practices that conserve resources and ensure their optimal utilization and enhance input use efficiency.
- These techniques include zero or minimum tillage (save fuel), laser land leveling that save irrigation water, system of Rice Intensification (SRI) etc.



#### **Integrated Crop Management (ICM)**

- ICM suggests the use of Good Agricultural Practices (GAP) such as Integrated Nutrient Management (INM), Integrated Weed Management (IWM), Integrated Disease Management (IDM) and Integrated Pest Management (IPM), etc., for raising a good crop.
- Thus, ICM is an alternative system of crop production, which conserves and enhances natural resources while producing quality food on an economically viable and sustainable foundation.
- ICM is particularly beneficial for small and marginal farmers because it aims to minimize dependence on purchased inputs while utilizing on-farm resources.

#### **Small-Farm Mechanisation**

- Improved access to the farm machinery for sowing, harvesting and other operations is an important adaptation strategy to deal with climatic variability.
- Many efficient low-cost farm implements were designed for various operations.
- In the recent past, custom-hiring of agricultural machinery became an appropriate institutional arrangement which promotes mechanization of agriculture operations on small farms.
- For the first time, a systematic attempt has been made under the National Innovations on Climate Resilient Agriculture (NICRA) to setup one custom-hiring centre each at the 130 climatically vulnerable villages across the country.

#### **Climate Smart Cropping**

- In the changing climate scenario, developing cultivars resistant to climate change may become important adaptive mechanism. For example, crop varieties those are resistant to lodging (e.g., short rice cultivars), may withstand strong winds during the sensitive stage of crop growth, are viable alternative.
- Adaptive measures like change in crop calendar to reduce the negative effects of increase climatic variability in arid and semi-arid tropics prove advantageous in avoiding extreme weather events.

#### **Protected Cultivation**

- Protected cultivation or greenhouse cultivation is the most contemporary approach to produce horticulture crops.
- It is also known as Controlled Environment Agriculture (CEA) and is highly productive, encourages water and land conservation as well as protects the environment.
- The technology involves cultivation of horticultural crops in a controlled environment wherein factors like the temperature, humidity, light, soil, water, fertilizers etc. are manipulated to attain maximum produce as well as allow a regular supply of such factors even during off-season.
- This becomes relevant to farmers having small land holdings who would be benefitted by a technology, which helps them to produce more crops each year from their land, particularly during off-season when the prices are higher.
- This kind of crop production system could be adopted as a profitable agro-enterprise, especially in peri-urban areas.



#### Chapter 6: EMPOWERING WOMEN FARMERS

#### Women in Agriculture: Statistics

- According to the 2011 Census, the total number of female workers engaged in agriculture activities in India stood at 65 per cent, with 30.3 per cent of the total cultivators and 42.6 per cent of total agriculture labourers being women.
- Furthermore, the Agriculture Census conducted every five years by the Department of Agriculture, Cooperation and Farmers Welfare (DAC&FW), established that the 12.78 per cent of the female operational holdings in agriculture during the year 2010-11 have increased to 13.78 per cent during 2015-16.

#### Steps Taken:

- The DAC&FW dedicatedly implements farmer welfare programmes and schemes.
- The Women Component Plan requires the state governments to allocate 30 percent of the funds for the welfare initiatives catering to the women farmers.
- There have been myriad efforts to bolster women's role in agriculture activities. For instance, the foregrounding, recognizing and mainstreaming of women's role in agriculture as encapsulated within 'The National Policy on Farmers', 2007.
- With a view of creating a women sensitization module encompassing 'pro woman initiatives' the National Gender Resource centre in Agriculture (NGRCA) was setup in the DAC&FW in 2005-06.

The "Women Farmer Friendly Handbook" enumerates the special provisions that empower women in multifarious ways, some of them include-

- 1. Support for Women Food Security Groups (FSGs)
- 2. Procurement of Agriculture Machinery & Equipments (Subsidy Pattern)- Women farmers can avail benefits in tandem with, or over and above the benefits offered to men.
- **3.** Representation of Women Farmers It is imperative for women farmers to be included in the decision making bodies.

#### 4. Promoting Woman Groups

- **5. Integrated Scheme for Agriculture Marketing (ISAM) -** Women are endowed with subsidies for storage infrastructure that includes a 33.33 per cent subsidy (on capital cost) for women as compared to 25 per cent for men.
- **6. Agriculture Insurance-** Safeguarding coverage of women farmers along with a budget allocation and utilization in accordance with the population proportion.
- The Agriculture and Farmers Welfare Ministry established Indian Council of Agriculture Research, ICAR, a Central Institute for Women in Agriculture in Bhubaneswar, Odisha in the year 1996. The Institute has been undertaking numerous studies on gender implications in the agricultural sector and developing women-centred technology.
- With the aim to fortify agriculture research and enhance agricultural productivity to bolster farm income, ICAR has initiated the All India Co-ordinated Research Project (AICRP). Its Krishi Vigyan Kendras (KVKs) have successfully trained about 3.1 lakh women agriculturists.
- There is also a provision under the National Food Security Mission (NFSM) that provides training



based on cropping system to farmers including the SC, ST and women farmers to generate awareness on augmented technology for increasing crop production and yield.

• 15th October of every year was marked as the Women Farmer's Day by the Ministry of Agriculture and Farmers welfare in the year 2016.

#### Conclusion:

- According to the Economic Survey of 2017-18,"with growing rural to urban migration by men, there is 'feminisation' of agriculture sector.
- The survey rightly suggests for adopting "gender specific interventions" in agriculture to "increase productivity" and enhancing "agricultural value chain".
- Women in the agriculture sector have come a long way and an increased participation with wholehearted practical implementation of the training skills received is the way forward for them.

#### **Chapter 7: CHANGE IN PUBLIC SERVICES FOR POORER SECTION**

In a vast country like India, the deliverance of necessary public services to the most deprived families, depends on:

(i) evidence-based selection of beneficiaries

(ii) policy measures based on deep research (which would have the provision for timely necessary reforms),

(iii) reducing human intervention by the availability and maximum utilization of information technology resources, and

(iv) evolving an effective coordination among various agencies working under the federal structure.

Keeping in view the infrastructural deficiencies, vast geographical areas and very few habitations in the interiors and far flung areas nearly inaccessible, this becomes a matter of great urgency.

#### Initiatives:

- During the last few years, programmers like Gram Swaraj Abhiyan conducted in the Rural Development Sector have been completely transparent. In fact, these programmes are excellent examples for preparing a reliable public service system.
- The finalization of Socio-Economic & Caste based Census (SECC) 2011 data analysis in July, 2015 was necessary to authentically identify the families living in scarcity.
- The BPL list prepared in 2002 containing those living below the poverty line had then become a privilege of the Gram Pradhan and it often excluded those who were genuinely poor. It is easier to identify the parameters of scarcity through the SECC.
- Selection of beneficiaries for LPG connection-Saubhagya, housing through Pradhan Mantri Awas Yojana-Gramin (PMAY-G) and medical assistance in hospitals through the Ayushman Bharat was done on the basis of scarcity-related parameters of the SECC. This database does not have any link with religion, caste and class. It is based on the scarcity parameters showing different aspects of poverty.
- The administrative and financial reforms like proper identification of poverty, revision of data and its updation, Adhaar, IT/DBT, geo-tagging of assets, Public Financial Management System (PFMS) etc. could be adopted through the participation of Gram Sabhas. As a consequence, great



improvement is seen in the condition of leakage.

- Owing to schemes like MGNREGA, major reforms including transfer of money into the accounts of the poor, creation of sustainable assets and livelihood security got a big boost.
- Personal Benefit Schemes have been introduced as assistance to the poor to enable them to work for 90-95 days for constructing their own houses.
- Under the rural housing scheme, phase-wise geo-tagged pictures have also been uploaded in the public domain. Best experts have studied designs of traditional houses in different regions in order to promote diversity throughout the country. With the effective use of technology, annual rate of completion of construction of houses has increased almost 5 times.
- Many persons are now beneficiaries of Ayushman Bharat and women are members of Self-Help Groups with bank linkage under DAY-NRLM.
- Due to much emphasis laid on bank linkages, loans amounting to more than rupees two lakh crore has been sanctioned to 3 crore women under the NRLM during the last five years. This has resulted in larger level of diversification in livelihood.
- For promotion of enterprises, the MoRD has ensured more than 67 per cent employment opportunities under Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) and more than two third jobs under Rural Self-Employment Training Institute (RSETI) programme.
- Huge funds have been transferred to Gram Panchayats under the 14th Central Finance Commission. Efforts have been made to make the entire process fully accountable and transparent through geo-tagging, IT/DBT and PFMS under the MGNREGA and PMAY-G.
- The Gram Swaraj Abhiyan was a unique effort of the government for overall coverage of each and every person in 63974 villages of the country through the seven major public welfare schemes. Under this programme, benefits relating to Ujjwala for LPG connection, Saubhagya for electricity, Ujala for free LED bulbs, Mission Indradhanush for vaccination, Jan Dhan for bank accounts and insurance for contingencies as well as life insurance are provided to each and every household at their door steps.
- It has been established through the rural road scheme, how public scheme like PMGSY can provide public service within the stipulated time and at an optimal cost. In order to decrease the carbon footprint and to provide a lasting base for development, more than 30,000 km of roads were constructed through green technology, using waste plastic material.

#### Conclusion:

- Despite remarkable community based unity of women through SHGs under the National Rural Livelihood Mission, much more is yet to be done for bringing diversity in livelihood and providing bank linkage.
- Evolving a reliable public system for MGNREGA and its efficient implementation is much needed.
- It must be understood that in social sector, programmes pertaining to education, health and nutrition for poorer people, among many other public services, still need community-led and community-owned public service delivery system which is result oriented.
- The ultimate goal of such system should be centred on welfare and improvement in the living conditions of the poor. We cannot now retreat from the process of creating a reliable public service system as it is essential to bring in change and improvement in the living conditions of the deprived.



#### **Chapter 8: WAYS TO ENHANCE AGRICULTURE PRODUCTION**

India is facing agrarian crisis due to low and highly fluctuating farm income with so many risk factors. The Government set a goal to double farmers' income by 2022, and took up the challenge in mission mode. In this context, Government constituted an Inter-Ministerial committee to examine the issue and suggest strategies to reach the target in the prescribed time-frame.

The Committee has identified seven sources of income growth. namely, improvement in crop productivity; improvement in livestock productivity; resource use efficiency Or savings in the cost of production; increase in the crop intensity; diversification towards high value crops; improvement in prices.

#### **Efficient Management of Resources:**

Sustainable management of soil health is a key area of concern for raising productivity of farms:

- In 2014-15, the Government launched an ambitious Soil Health Card scheme under which the soil of every operational land holding is being tested for major nutrients and micronutrients.
- Promotion and use of neem-coated urea optimized its consumption and decreased cost of fertilizers. As per Government decision, the entire quantity of the domestic and imported urea is now available in neem-coated form only.
- During 2014-15, the Government launched Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to ensure assured irrigation to every field, that is 'har khet ko pani', and also to realize the vision of 'more crop per drop'.
- Corpus among various technologies, drip irrigation and sprinkler irrigation are the most popular ones due to their suitability for a range of cereal and horticultural crops.
- Besides water use efficiency, micro-irrigation increases productivity in the range of 40 per cent-50 per cent and also adds value to crop quality thereby raising its market value.
- In general, it increases farmers' income to the tune of 40 per cent. Additionally, micro-irrigation cuts farming cost by saving energy, fertilizers and labour.

#### New Crops-New Ways:

- In view of the impeding danger of climate change, new crop varieties are being developed with special features, such as drought/flood tolerance, heat tolerance, etc. These varieties secure livelihood of farmers with higher income and sustainability.
- One such challenge is regular and timely supply of quality seeds to farmers at affordable price.
- It is estimated that quality seeds contribute to around a quarter of the overall increase in productivity. Efficacy and impact of all other agricultural inputs is largely determined by the quality of seeds used.
- Hence, a mission mode approach is underway to supply quality seeds to farmers. Breeder, foundation and certified seeds are being produced jointly by private sector.
- Recently, the initiative of creating seed hubs in villages has shown remarkable success in providing high quality seeds at farmers' doorstep.
- Mechanization and energy management in agriculture is another core sector with excellent potential to increase productivity and farmers' income.
- Over the years, Research and Development efforts have resulted in development of many

https://byjus.com



agricultural machines and implements that ensure timely operations at a lower cost with enhanced efficiency and accuracy.

- But, procurement and use of these machines was financially difficult for farmers.
- Hence, under different sponsored schemes, Government, distributed over 29 lakhs machines to farmers across India during 2014-19. Nearly 14,000 Custom Hiring Centers have also been established during this period to provide machines to farmers at a reasonable hire charges.
- Modern machinery, such as laser land levelers, precision seeders and planters, and practices like precision farming, zero tillage, ridge plantation etc. also have potential to raise production and income of farmers substantially.
- But, these technologies require strong extension system and support for the adoption by farmers.

#### **Crop Diversity-Crop Intensity:**

- Diversification towards high value crops is important way out for doubling farmers' income.
- The aim of crop diversification is to increase crop portfolio so that farmers are not dependent on a single crop to generate their income.
- Diversification also manages price risk appropriately because all products will not suffer low market prices at the same time.
- Scope also exists to raise farmers' income by diversifying towards other allied enterprises like forestry, beekeeping, mushroom cultivation, sericulture etc. Similarly, increasing crop intensity is another area with potential to increase farmers' income.
- Recently, the Government has reviewed its commitment for transforming farmers into energy providers. A specific scheme 'KUSUM' has been launched this year to support establishment of solar power plants on barren lands or agricultural lands.
- Promotion of value chains across crops and livestock products will raise farmers' income by developing direct market linkages with wholesalers, supermarkets or exporters.
- We need to find ways to integrate small producers into modern value chains, both domestic and export oriented.
- FPOs enable farmers to enhance productivity through efficient, cost-effective and sustainable resources use and realize higher returns for their produce.
- Additionally, Electronic National Agricultural Market is ensuring best market prices to farmers by providing on-line and transparent trading of commodities across the country.
- Progressive market reforms, such as revised APMC Act, Model Contract Farming Act, Upgradation of Gramin Haats as Centres of Aggregation are also contributing significantly in raising the income of farmers.
- Recently, the Government has aligned its business-oriented schemes, such as SFURTI and ASPIRE, with agricultural activities to boost business prospects in agriculture sector.

#### Livestock of Livelihood:

- Despite being top milk producer of the world, productivity of milk producing animals and other livestock in India is low compared to world averages.
- Breed improvement, better feed and nutrition, animal health, and better heard composition are some of the important measures that can raise livestock productivity and farmers' income.
- The Government has understood its importance and has launched several schemes for betterment of animal health and improvement in productivity.



- Moving towards fresh waters and seas, Government has launched mission 'Blue Revolution' to make fisheries sector more remunerative and attractive for fish farmers.
- Plans are ready to launch a dynamic Pradhan Mantri Matasya Sampada Yojana to establish a robust fisheries management framework.
- Vigorous efforts with vision and policy support are chasing the goal of doubling farmers' income by 2022.

#### Chapter 9: e-NAM: GAME CHANGER IN AGRICULTURAL MARKETING

e-NAM or Electronic National Agriculture Market is a pan-India trading portal launched in April 2016. It is a trading portal for farm produce which aims to create a unified national market for agricultural commodities by integrating Agriculture Produce Market Committees (APMC).

- The main aim of e-NAM is to improve the marketing aspect of the agriculture sector with one license for the entire state and with single point levy.
- e-NAM facilitates profits through better marketing.
- Real-time information on prices creates healthy competition among buyers and increases farmers negotiation capabilities.

#### Performance of e-NAM since 2016:

- e-NAM is transforming the way India trades in farm produce and has roped in 585 mandis across the 16 states and 2 Union territories.
- e-NAM trades in 150 commodities.
- For faultless operations, it makes three major change in the agricultural marketing laws of states, like providing electronic trading, single trading licences that are valid in all mandis in a state and a single- window levy of transaction fees which makes e-NAM a transparent system for regulated fair trade.

#### e-NAM: A Step Forward:

- e-NAM provides the farmers more options for sell of their produce at nearest mandi or even in interstate.
- For the traders, e-NAM offers the opportunity to access a larger national market.
- One of major issues that hinder seamless transactions on e-NAM is the non-availability of a trading license for traders other than those from the home state.
- The government has been pushing the States to adopt a universal license for uninterrupted trading between states.
- Taking e-NAM a step forward, a farmer from any state can sell their crops to the traders in other state.
- The e-NAM platform has an inter-state dashboard to promote inter-state trade. To increase its adoptability, many initiatives have been undertaken by the government such as:
  - 1. Simplifying registration of farmers on the portal
  - 2. Intensifying payment options
  - 3. Extending e-NAM trading in six languages with availability of portal in 8 languages.



#### e-NAM as a Game Changer:

- No middlemen is involved in buying-selling of agri-products; hence earning a better deal for farmers.
- Lower transaction cost.
- Single license valid across all connected mandis.
- Single point levy of all products.
- Quality testing procedure introduced for buyers and sellers.

#### e-NAM: Scope for improvement

- Niti Ayog's review on e-NAM has found that many mandis are ill-equipped to access the quality of produce. Without quality assaying quality assurance could not be provided to the potential buyers.
- It has also been reported that at some mandis auctions were occurring in the traditional way and data was entered into the e-NAM portal after the complete transaction. This defeats the purpose of an online portal.
- Therefore, a need to improve the assaying bodies for quality assurance to the buyers and also timely interaction is needed for changing the traditional way of auction to e auction on e-NAM.

#### **Chapter 10: PUBLIC-PRIVATE PARTNERSHIP IN AGRICULTURE SECTOR**

The Government of India has been emphasising to create a facilitating environment for investments in infrastructure building following PPP approach. It redefines the role of public sector as a facilitator and enabler and private sector as financier, builder and also the operator of the service or the facility. Innovative technologies, operational efficiency, managerial effectiveness and access to additional finances can be ensured through successful implementation of PPP. A public- private partnership (PPP, 3P or P3) is a long-term cooperative arrangement between two or more public and private sectors.

#### Genesis of PPP:

- The PPP Cell set up in 2006 in Department of Economic Affairs (DEA), Ministry of Finance, acts as the Secretariat for Public PPP appraisal Committee (PPPAC), Empowered Committee (EC) and Empowered Institution (EI) for the projects proposed for financial support through Viability Gap Fund (VGF).
- As per the 2015 Infrascope Report of the Economist Intelligence Unit, India ranks first in the world in operational maturity for PPP projects.
- Maharashtra is the pioneering state in adopting P3 model in case of major infrastructure development projects.

#### **Dimensions of PPP in Indian Agriculture:**

- Annual average growth rate of Indian agriculture has been around 2.7 per cent during the past years, making it the slowest growing sector. The challenges being faced by agriculture sector underlines an urgent need for innovations brought via partnerships between private and public sectors.
- A major game changer for agriculture sector can be the PPP model. PPPs can transform the sector at

https://byjus.com



multiple levels bringing together the collective power of all stakeholders in agricultural ecosystem.

- Maharashtra, the first state to take this innovative path, rolled out its Maharshtra Public- Private Partnership for Integrated Agriculture Development (PPPIAD) project to develop integrated value chains for selected crops through PPP and co-investment.
- Successful partnerships between public and private sectors are challenged by issues like high transaction costs of operationalizing and coordinating the partnerships, different objectives of each sector, negative perceptions and mutual mistrust as well as uncertainty about actual benefit and outcome from.
- PPPs cover a wide range of areas including extension services which could enhance technology adoption for sustainable development.
- It is difficult to get immediate results as PPP in extension will take considerable time for change in the mindset of the farmers in terms for participation, adoption and acceptance.

#### PPPs in Market and Infrastructure Development:

- The Model APMC Act of Government of India encourages direct marketing to enable the farmer get the best price for their produce and create partnerships with banks, finance and logistics companies for lowest cost financing and marketing. This attracts private investment in creation of much needed marketing infrastructure, ensuring competition and better services to the farmers.
- Direct marketing like ITC e- choupal and the National Dairy Development Board model of publicprivate partnership provides a viable alternative for small farmers.
- PPP can facilitate the use of micro-irrigation resulting in enchased irrigation efficiency. Integrated micro-irrigation networks are being developed through PPPs.
- Agricultural Technology Management Agency (ATMA) facilitated commodity- based groups to partner with private agencies in production and marketing of basmati rice and medicinal plants in Bihar, maize in Andhra Pradesh and mango in Maharashtra.

#### **Impact of PPP Models In Agriculture**

The impact of PPP depends on involvement of institutions on collaboration and combining all available public and private skills.

- Knowlegde Management:
  - Knowledge management strategies in the context of PPP could result in increased production and better services delivery.
  - A successful PPP approach in Patna district of Bihar has brought replacement of traditional rice varieties with basmati rice, cultivation of medicinal and aromatic plants and mushroom.
- High-End Technologies Development:
  - PPPs have facilitated the development of high-end technologies, which have improved efficiency in management and institutional intellectual property management skills and information database on available technologies in the public sector.
- Building Farmers' Resilience to Environmental Shocks and Minimizing Risks and Uncertainties:
  - PPPs help the agricultural sector to deal with weather shocks, and enable farmers to de-risk themselves through insurance, etc.
- Farm Mechanisation



- Jone deere, a leading farm implements manufacturing company has established eight Agricultural Implements Resource Center each covering 600 acres of cultivated land in Gujarat.
- This PPP has helped to promote mechanized farming in tribal region.

#### • Social Mobilisation

- Development departments develop partnership to create a better social linkage through SHGs, Farmers' Clubs, farmers' cooperative groups etc.
- Agricultural Technology Management Agencies (ATMA) facilitated creation of large number of Farmer Interest Groups (FIGs) in different states in India which collaborate with private extension players resulting in direct marketing of many farm produce.
- A producer group consisting of tribal men and women farmer was formed in Khurda district of Odhisha in 2011 to produce and sell maize through PPP mode.

#### • Productivity Enhancement

- ICAR and Department of Biotechnology, have initiated the dialogue with Mosanto for transfer of Bt cotton technology in India.
- Subsequently, Mahyco partnered with Monsanto, and introduced Bt cotton in India. It resulted in an increase of area and productivity to cotton and reduction in the real cost of production.

#### • Economic Empowerment of Farm Women

- The PPP between Kerala Agricultural University, DBT and Cadbury India during past 23 years trained 250 women and established 28 cocoa chocolate units in different parts of Kerala.
- PPP has been found to do gender mainstreaming making it possible for farm women to increase the access of technologies, inputs, credits and markets and eradicating gender differences and discriminations in rural area.

#### • Investing in Smarter Value Chains

• Food-processing industry, one of the sunrise sectors within the agricultural domain, supported by investments by the government and the private sector, can provide farm extension services, enhances price realization, cut out intermediaries and improve the supply chain through forward and backward linkages.

#### Limitations of PPP Models in Agriculture:

- Private sector seed companies in India tend to concentrate on hybrids where returns are high and assured.
- The private extension services focus on resourceful areas, resource-endowed farmers and are limited to the profitable crops and areas, thus varying widely.

#### Challenges of PPP Approach and Way Forward:

- It is difficult to standardize a PPP format because of the parameters used in structuring of PPP cannot be the same every time.
- The lack of transparency is one of the most discussed problems related to PPP. The long time taken for creation of PPP arrangement and number of formalities required to follow happens to be another issue in implementation of PPP approach. Undue political favors in many cases are gained by the private party.



• A PPP project has to mainly pass through four main phases viz. Project preparation, project procurement, project development and operations. Each of these stages require a careful handling planning and clear-cut demarcation lines of work.

#### **Conclusion:**

The Government of India has been emphasizing to create a facilitating environment for investments in infrastructure building following PPP approach. Partnerships between public and private sectors combine and draw upon the best features of both sectors to render quality services. There are some successful PPP models in agriculture, however, there is a long way to go to have desired successes in Indian agricultural sector.

#### **Chapter 11: IRRIGATION TECHNIQUE TO GET 'PER DROP MORE CROP'**

Water is the most critical input for crop cultivation and the efficient use of available water resources is vital for sustainable agriculture development. Since more than 80 per cent of available water is used for irrigation, high priority has been given to water conservation and irrigation water management.

- Augmentation of water supply initiatives may be water control measures, bench marking of irrigation projects, reforms in water harvesting norms, refocusing on tanks and ponds.
- Demand management initiatives may be Micro irrigation techniques such as drip and sprinkler, improving soil health, weather based crop insurance, market improvement and capacity building.

#### India's Agricultural Area:

- The Government classifies agricultural areas as rainfed areas and irrigated areas.
- Areas where irrigation is less than or equal to 30 per cent of the net sown area are called rainfed and more than 30 per cent of the net sown are known as irrigated areas.
- India's irrigated agriculture has two parts:
- (i) Surface (canal) irrigation development due to high public investment by the states and

(ii) Over development of groundwater resources due to private tube well development

• Ground water sources are over – exploited in many regions and are chronically water stressed in some regions.

#### Micro irrigation Technologies:

- Micro irrigation technologies mainly sprinkler irrigation and drip irrigation not only helps in water saving but also in reduction in fertilizer usage, labour expenses and other inputs and input costs.
- It enhances crop productivity and improves soil health.
- The saved water can be used for extended coverage of area under irrigation for a longer duration.
- All the advantages will ultimately lead to environmental sustainability.
- Many research studies have shown that Micro irrigation systems can save water up to 40 per cent— 50 per cent over conventional flood irrigation methods along with enhanced agricultural productivity.



#### **Improved Irrigation Methods:**

- Since 8th plan, Department of Agriculture, has been promoting Micro Irrigation (MI) methods like drip irrigation and sprinkler irrigation.
- Later MI was launched as centrally sponsored scheme (CSS) in 2005 -06.
- It was up-scaled to National Mission on Micro Irrigation (NMMI) in 2010.
- National Mission for Sustainable Agriculture (NMSA) was formed in the year 2014-15 and micro irrigation was considered as on –farm water management component of NMSA.

#### Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):

- PMKSY has been launched with the motto of providing Har Khet Ko Paani. The main objective of PMKSY is to achieve convergence of investments in irrigation sector at field level.
- A Micro Irrigation Fund (MIF) with an initial corpus of Rs. 5000 crore was allocated in the union budget 2017-18.
- This was to help the States to mobilize additional resources for increasing the coverage under Micro irrigation through special and innovative initiatives by state Governments.

#### **Impact of Micro Irrigation:**

- Micro irrigation methods reduce conveyance losses, evaporation, runoff, deep percolation losses.
- Another advantage of this technology is that it will be functional with small water wells also.
- Due to focused water application, the overall efficiency of water in drip irrigation and sprinkler irrigation are 80-90 per cent and 50-70 per cent respectively. This is much higher than that of surface flooding (30-40 per cent).
- Micro irrigation is suitable for any farmable land slopes and generally for all kind of soils.
- It is widely used for vegetables and horticultural crops.
- It has many advantages if managed properly :

(i) High water application efficiency.

- (ii) Can be easily implemented, even if the fields are in irregular shapes.
- (iii) Uniform application of fertilizers.
- (iv) Reduction in weed growth and cost of cultivation.
- (v) Reduction in energy consumption

#### **Conclusion:**

Micro irrigation is a proven water conservation technology practiced all over the world. Economic returns are very important for the adoption of any new technology. Micro irrigation technology qualifies this aspect and is highly recommended.

#### **Chapter 12: NON-FARM-ACTIVITIES TO ACCELERATE AGRI GROWTH**

The importance of agriculture in the economy of the country is brought out by the fact that out of the total 33 million main workers, 166 million (53 per cent) are engaged in agriculture and allied sector. Rural



Entrepreneurship is one of the key instruments for ameliorating the economic lot of vast majority of people living in poverty in rural India. Rural areas provide abundant raw material from agricultural, horticultural and animal produce to start entrepreneurship in the field of food processing.

- India agriculture is characterized with the presence of excess manpower in the form of large scale under- employment, disguised unemployment as well as high seasonal unemployment.
- The sector wise trends in the growth of real Gross Value Added (GAV) reveal that in the last decade, primary sector witnessed a meager growth rate as compared to secondary and tertiary sectors.
- This has led to wide inter- sectoral, inter-regional and inter- personal variations in the distribution of income and wealth.
- The NSSO survey on Household consumption expenditure for the year 2011- 12 also brings into light that more than one fifth (22.4per cent) of rural households with agriculture as their principal occupation were having income below poverty line. Not only this, farmers' income in relation to non- farm works, also stood very low. In 2011-12 income per farmer was just 32 percent of the income of non –agriculture worker.
- Realizing the need to boost income of rural households, the GOI, in the union budget 2016-17 had announced its resolution to double the farmers' income by the year 2022.
- For this, it is imperative to give impetus to farm as well as non farm activities.
- It is necessary to adopt modern integrated farming with large involvement in the ancillary activities like animal husbandry, horticulture & forestry, vegetable growing bee keeping, sericulture poultry etc.

#### **Food Processing:**

- Processing of agricultural produce is an important aspect of commercialization of agriculture in India.
- Presently, processing of fruits and vegetables is only 2 percent in India in comparison to 80 per cent in USA, 40 per cent in China.
- There are vast opportunities to the rural entrepreneurs in the field of food processing.
- The most important point in food processing is that a sizeable portion of raw material being local and rural based is comparatively cheap and fresh.
- It has a very high employment potential with significantly low investment.

#### **Conclusion**:

- In order to double farmers' income, by 2022; there is an urgent need to increase farm productivity, improve market access, develop industrial and service in rural areas
- To attract unemployed educated youth into agribusiness and agri-preneurship special impetus on creating scientific temper and fostering innovative spirit among the rural youth is required.
- An appropriate policy coupled with a strong strategy to promote and strengthen the rural non-farm sector deserves to be at the top priority of Government and Policy makers.

## Why choose the BYJU'S IAS Learning Program?



Classroom sessions Prepare for Prelims and Mains with India's leading IAS trainers



Mentor Support Personalised feedback from our mentors



#### **Student Portal**

Get access to recorded sessions of the Weekly Webinar, Issues in News, Current Affairs Magazine, Gist of Yojana and Practice Sets



#### **Study Material**

In-depth coverage of syllabus which includes the following guides: Indian Polity by M Laxmikanth, India's Ancient Past by R S Sharma, History Of Modern India by Bipan Chandra, Ethics, Integrity and Aptitude by P N Roy Chowdhury and G Subba Rao +16 more titles



#### Stay Up-to-date Regular and in-depth current affairs updates



#### Test Your Knowledge

Perfect your exam writing skills and knowledge with - modular tests (MCO and descriptive), question paper discussions, personalised analysis of answers and answer writing strategies



#### **Current Affairs Webinar**

Twice a week live webinar classes to discuss current affairs followed by revision notes



#### Ease of Accessibility Prepare at your own convenience, anywhere and anytime with the BYJU'S IAS tablet

### **Course Highlights**

Daily news analysis based on The Hindu

Practice to perfection with Prelims and Mains Test Series

Post Mains Interview Guidance Program

#### Delhi

B-1/8, Lower Ground Floor, Apsara Arcade, Sadhu Vasvani Marg, Pusa Road, Karol Bagh, Rajinder Nagar, Delhi 110005

Shop No. 19, Vardhaman Central Mall, Nehru Vihar, Delhi. nearest metro- Vishwa Vidyalaya metro station

#### Hyderabad

Srishti Tower, Hitech City Rd, VIP Hills, Silicon Valley, Madhapur, Hyderabad, Telangana 500081

3-6-196/197, 2nd Floor, Prime Plaza, Himayatnagar Main Road, Himayatnagar, Hyderabad, Telangana 500029

#### Bangalore

BYJU'S Classes, Tavarekere Main Rd, Opp: Forum back gate, Venkateshwara Layout, S.G. Palya, Bengaluru, Karnataka 560029

#### Chennai

St Patricks School, Kasturba Nagar 3rd Cross St, Gandhi Nagar, Adyar, Chennai, Tamil Nadu 600020

To know more about our courses contact: +91 92435 00460