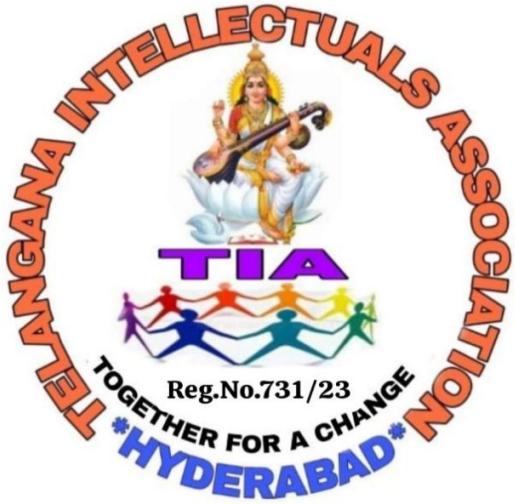

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TELANGANA STATE

FOCUS PAPER ON AGRICULTURE,

TELANGANA STATE - 2023-2024

Prepared by

Telangana Intellectuals Association (TIA)

Hyderabad, Telangana State

Agriculture plays important role in the economy of Telangana state and better performance in this sector is vital for inclusive growth. Telangana state is endowed with bountiful of resources having good soils, diversified cropping pattern and main irrigation system fed by the rivers like Godavari and Krishna. Agriculture is the way of life and a tradition that has shaped the culture and economic life of the people of Telangana.

Telangana witnessed highest production of food crops mainly due to rise in productivity and increased area under cultivation on account of major irrigation projects such as kaleshwaram project and increased rainfall. Agriculture requires appropriate policies to guide its development and protecting agricultural land from conversion to other uses. Need for creating a "farm friendly" policy framework to sustain an economically viable agriculture sector and to conserve and protect farmland. The policies need to aim at enhancing the total output of agriculture and boost the economic growth of the country through reclamation and development of wastelands, increasing the productivity of dry land areas with soil and rain water harvesting and irrigation development.

In the background of increasing population pressure and stagnating agricultural production, it is imperative to adopt solutions to increase the yield of Agricultural produce. Doubling of farmers' income calls for multipronged strategies viz natural resources management, strengthening value chain, improving market access etc. various suggestions and interventions required are summarized as under.

FOCUS POINTS: Tweaking Agriculture policy of Telangana State

1. Cultivation

- Increasing crop intensity, change in cropping pattern, proper crop rotation and growing high yielding cultivars to increase production and improve income of the farmer besides improving soil and moisture conservation.
- Conversion of waste and barren land into cultivation by providing incentives to the farmers in the form of subsidy and providing hassle free term loans from banks by formulating an innovative scheme to help farmers in consultation with NABARD.
- Identifying clusters for intensively growing pulses, millets and oilseed crops under dry land farming by providing subsidy on procuring quality seeds, 2% interest subvention on short term and term loans availed by the farmers for the period of 2-3 years in the identified cluster districts/ areas.

- Village wise, farmer wise soil fertility mapping for better input utilization

- Establishment of model farms in village clusters managed by Agri. University , research centers, Pvt. Sector, public sector, institutions to prove efficacy of new technology for better adoption by the farmers in that area.

2. Markets and Minimum support price

- Announcement of MSP well in advance for millets, pulses and oilseed crops, cotton etc.
- Strengthening market linkages, assured procurement and additional creation of procurement centres in production zone, market aggregators and e-NAM (markets) etc for better price realization for farm produce.

3. Strengthening of FPOs

- Formation of FPO and linking farmers, SHGs with FPOs, for easy conducting of business
- Creating awareness and supporting (financially aid -soft loans and technical) FPOs in establishing rural entrepreneurship in Agri commodities, input and output marketing.

4. Agro-based Rural Industries

- Assist progressive farmers and unemployed rural youth for establishment of mini oil mills, dal mills and rice mills, millet processing center, in major production areas by formulating suitable banking scheme with assistance from state government under various subsidy and margin money schemes to all entrepreneurs.

5. Crop diversification

- Special focus on cultivation of oil palm crops by extending by extending 2% interest subvention scheme for 2-3 years in respect loans extended by banks including cooperative banks.
- Encouraging cultivation of minor millets in waste lands and in rain fed areas with suitable crop development funds as special incentives with suitable MSP announcement to encourage farmers to take up nutrition rich crops

6. Organic farming

- Providing subsidy for procurement of organic waste convertor machine/ equipments to encourage farmers to recycle the crop wastes within the village and use organic manure for cultivation of crops under organic farming methods.

7. Vegetable cultivation

- Identification of cluster areas for growing vegetables, fruit crops, flower crops nearby cities/ urban centres and providing necessary infrastructure like proper roads/

electricity and encourage progressive farmers to set up cold storage units in the production centres by providing subsidy /margin money/technical backstopping.

8. Rural Agri business centers

- Govt. Agriculture department should support promotion and institutionalization of FPOs. Capacitating FPOs in handling Agri business ventures and marketing capabilities to improve their financial conditions and increase rural employment

- Developing rural Agri parks in rural areas on par with industrial parks, pharmaceutical parks, any other parks to encourage rural youth to take up agriculture value addition enterprise to stop migration of rural youth to urban areas in search of employment.

- Encourage rural unemployed youth and progressive farmers to set up custom hiring centres in districts/ blocks to facilitate the farmers for timely cultivation and harvest of crops. A suitable bankable scheme with the element of subsidy shall be formulated by the government to provide hassle free loans by banks.
- **Support innovative technologies like drones for spraying pesticides is safe way of handling dangerous agri chemicals such innovation should be supported by Agro industries by offering subsidies for procurement of equipment**
- Providing interest subvention to farmers' producers' organization (FPOs) besides providing adequate infrastructure support in procurement and marketing of farm produces.
- Thrust will be given for by encouraging progressive farmers to set up units in the areas of food processing, marketing, contract farming techniques etc.
- Encouraging farmers to take hi-tech agri projects by providing subsidy in establishment of green houses, poly houses and modern technology based equipments and machinery.
- Supporting infrastructure for post-harvest handling, warehousing, marketing, etc. through PPP mode or private sector investments.
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9. Food Parks:

- Development of new food parks, and processing clusters for key commodities in the state such as turmeric, spices, fruit crops, dairy, poultry products etc and focus on creation of infrastructure including supply chain infrastructure for produce distribution and food logistics support.
- Identifying areas and developing Agri produce processing centers and value addition to Agri commodities at rural areas will help in attracting rural youth and employment

generation. Necessary financial support, subsidies, infrastructure, cold storage and connectivity should be developed by the government.

- Capacity building of progressive farmers, FPOs, Pvt. sector and corporate companies to set up units in the Food parks/ Mega Food parks being developed in the state. This will encourage farmers to produce raw material for food parks.

- Encourage SHG groups, FPOs, to take up establishment of food processing units (Value addition) such as Turmeric and Mango processing, banana chips, Oil extraction, Rice and Corn flakes, millet cookies and Dairy , and poultry processing etc. necessary subsidies and bank loans at low interest rates has to be made available for individual farmers entrepreneurs or associations.

- Promotion of food processing industries and value addition export of agri processed foods/ product sand facilitating Incubators for Agro-based industries and ensuring collaboration between the producer cooperatives and the corporate sector for their promotion.
- Mega food parks should be focused around capital city in identified centers in Nalgonda, Rangareddy, Sanga Reddy and Mahbubnagar districts
- Focus on Clusters, Promoting Value added exports, Marketing and promotion of "Brand India", Attract private investments into production and processing, Establishment of Strong Quality Regiment Research & Development

10. Farming Methods

- There are many types of modern farming methods like precession farming, hydroponics, greenhouse, genetically modified crops, organic farming, regenerative farming use of advanced technologies, machinery, equipment's, and practices to increase productivity and efficiency to reduce environmental impact on agriculture. Govt. should develop schemes/subsidies to support farmers in implementing such modern farming methods.

- The present status of landholding by small and marginal farmers in the state is 82% cannot afford to procure machinery and modern farming methods. hence, govt. should take imitative to promote "Collective Farming" or cooperative farming by pooling lands of small and marginal farmers to derive benefits of large-scale farming and to increase production and productivity
- Forming new cooperatives of farmers to more formalization of the agriculture and dairy sector and thus better milk quality and quantity produce in the market.
- Policy frame work on contract farming and review o f co-operative act and revenue act acts will be looked into

11. Seed Systems

- Seed is an important component in crop production and is the cheapest and very crucial input in determining production. There is no dearth in production and distribution of improved seeds (Hybrids) of commercial crops grown under irrigation. Emphasis should be given for production and distribution of seeds for rainfed crops constitutes 60 % of area and 40% of food bowl. Govt. should constitute a separated board for rainfed crops development with farmers, NGOs, FPOs, ICAR and State Agri. University scientist as members of the board. There should be separate budget for crop development includes seed production and distribution.
- Constitute a Seed Committee to advice on all matters related to seeds and assess seed failures, pay compensation and set up a strict liability framework for accountability.
- Recommendations to centre for establishment of National seed grid to provide farmers with access to quality seed for enhanced crop production and food security.

12. Farm Tenancy /Tenant farming

- Absent landlordism is growing very fast and more than 50% of lands are under farm tenancy. The govt. should enact farm tenancy act to legalize tenancy to protect the interest of landlord and tenant through this act.

- Tenant farmers who does not own land also to be extended the benefit of investment subsidy (Rythu Bandhu) who are cultivating up to 5 acres of land. Higher investment subsidy at least (Rs 10000 per acre) to small and marginal farmers to be provided who are cultivating fallow and cultivable waste lands for the first time.
- Tenant farmers also will be covered under Rythu Bima group life insurance scheme for up to Rs 5 lacs.
- Tenancy reforms to recognize the rights of the tenants and croppers. Development of lease markets for increasing the size of holdings by making legal provisions for giving private lands on lease for cultivation and agri-business.

13. Land survey and registration issues

- Empanelment of land digital surveyors and rectification of problems in Dharani portal will be addressed suitably.

- Technical issues in Dharani portal should be rectified to safe guard and secure the land owners interest.

14. Crop insurance

- Crop insurance scheme(PMFBY)) should be implemented to mitigate the hardship of the insured farmers against the likelihood of financial loss on account of anticipated crop loss resulting from adverse weather conditions relating to rainfall, temperature, wind, humidity and ant other natural calamities etc,.

15. Rythu Bandhu

- Investment support to agriculture and horticulture farmers is being provided by govt @ 10 thousands per year (two seasons) for all farmers irrespective of famers' landholding status. This incentive of Rythu Bandhu needs to be revised. 1) Rythu Bandhu should be given to small and marginal farmers. 2) the incentive should be awarded only to the farmer who is cultivating the land but not to all farmers who are just owning the land without cultivation

16. Others points

- Reclamation of wastelands and promotion of social forestry/commercial forestry, integration of bund plantation, silvi-pasture etc Taking up forest plantation at a large scale
- Redistribution of ceiling surplus lands and waste lands among the landless farmers, unemployed youth with initial start– up capital,
- Creating Assets for small farmers by raising teak nurseries/ cultivation of teak tress in bunds and backyards in the houses.
- Creation of infrastructure for chilling plants, milk collection centres, bulk coolers to prevent contamination and spoilage.
- To facilitate and promote use of soil amendments for reclamation of alkaline soils for improving their fertility and crop productivity. To promote use of micro nutrients for improving efficiency of fertilizer use.
- Majority of the seasonal tanks are silted-up. De silting of tanks is essential to increase the capacity of tanks as is being done through Mission Kakatiya
- Providing better community storage facilities and easy access to exports to other countries

17. Marketing

The state government should rope in new agriculture marketing reforms to provide farmers with an environment where they can sell their agricultural produce in any part of the country. So far, farmers have relied on their respective state mandates to sell their produce; however, the new agriculture policy establishes infrastructure that will ultimately reduce the reliance of farmers on selective mandis or market yards. Also, the new legislation ensures that the minimum support price mechanism and land tenure security will remain in place to protect the interests of farmers. The new reforms would allow farmers to escape the plight of restrictive trading practices and cartel operations, placing their welfare at the heart of the development agenda. The clear aim of these new reforms is to ensure freedom of choice for farmers in the agribusiness marketplace. Similar to what industrial delicensing did in 1991; the future marketing reforms will also prove to be a game-changer in the Indian agriculture. There is now an anticipation that the incomes of farmers will be on a trajectory of higher growth.

Background

Agriculture plays important role in the economy of Telangana state and better performance in this sector is vital for inclusive growth. Telangana state is endowed with bountiful of resources having good soils, diversified cropping pattern and main irrigation system fed by the rivers like Godavari and Krishna. Agriculture is the way of life and a tradition that has shaped the culture and economic life of the people of Telangana.

In Telangana state, there are different varieties of soils ranging from fertile alluvial to very poor sandy soils. Soils types exist in the state include red sandy soils, deep red loamy soils and block cotton soils. Red soils are prominent accounting for about 58% of total area. Telangana state is divided into 3 agro-climatic zones.

a. Northern Telangana Zone (NTZ): covers Adilabad, Nizamabad, and Karimnagar Districts. There are 16 types of soils in NTZ. The predominant soil is shallow black soils (18.4%) followed by deep calcareous soils (16.6%) and red clayey soils (15.2%). Annual rainfall ranges between 867 and 1189 mm, Max Temperatures range from 31 to 39°C and Min. temperatures ranges from 14 to 25°C.

b. **Central Telangana Zone (CTZ):** covers Medak, Warangal and Khammam districts There are 19 types of soils in CTZ. Red type of soils cover 54% of this zone followed by calcareous soils (13%), colluvial soils (8%) and black soils (6%). Annual rainfall ranges between 779 and 1213 mm, Max. Temperatures range from 29 to 39°C and Min. temperatures ranges from 16 to 25°C.

c. Southern Telangana Zone (STZ): covers Ranga Reddy, Hyderabad, and Nalgonda and Mahabubnagar districts. There are 19 types of soils in this zone. As a whole, the zone is dominated by different textured red soils with varied depths to an extent of 54.8%, followed by alluvio-colluvial soils and calcareous soils (11.2%). Annual rainfall ranges between 606 and 853 mm, Max. Temperatures range from 28 to 38°C and Min. temperatures ranges from 16 to 25°C.

An appropriate State Agriculture policy is required to actualize the vast untapped growth potential of agriculture, strengthen rural infrastructure to support faster agricultural development, promote value addition, accelerate the growth of agro business, create employment in rural areas, secure a fair standard of living for the farmers and agricultural workers. The policy is to aim at growth rate in excess of 6 per annum in the agriculture sector, growth that is based on efficient use of natural resources, growth widespread across regions and farmers, growth that is demand driven and growth that is sustainable technologically, environmentally and economically.

Economic perspective- Telangana state (agriculture and allied sector)

The Government of Telangana has undertaken several initiatives to boost the sector's growth, increase farmers' incomes, and improve farmers' welfare. To achieve these objectives, the Government has implemented policy initiatives such as the flagship Kaleshwaram Project and Mission Kakatiya to improve the irrigation infrastructure, the supply of 24x7 free power to farmers, investment support to farmers under the Rythu Bandhu scheme, access to inputs, markets and credit, and provisioning of life insurance to farmers under the Rythu Bima scheme. These initiatives have led to an increase in the share of Agriculture and Allied sectors in the total current-price GSVA of the state from 16.3% in 2014-15 to 18.8% in 2022-23. During the period 2014-15 to 2022-23, the sector grew at an average rate of 12.8% in Telangana, whereas the average growth rate of the sector in the country as a whole during this period was only 10.0%

Agriculture, Forestry, Livestock and Fisheries sectors' Gross Value Added (Current Prices) to the state economy has seen a CAGR of 14.1% from Rs. 76,123 crores in 2014-15 to Rs. 2,17,983 crores in 2022-23 (AE) and during the same period, the sector CAGR at all India level is 10.1%. A significant portion of this growth was driven by the crops sub-sector, currently crops accounts for 49.7% of the overall sector GSVA at Current Prices, followed by livestock at 43.6%, fishing and aquaculture at 3.4%, forestry and logging sector stood at 3.3% in 2022-23 (AE).

Primary Sector (Crops, Livestock, Forestry and Logging, Fishing and Aquaculture) contribution to Telangana's GSVA improved from 19.5% in 2014-15 to 21.1% in 2022-23 at current prices and 17.9% in 2014-15 to 18.0% at constant prices. The growth rate of primary sector in 2022-23 is approximately 7 times of its growth rate in 2014-15 at current prices. At constant prices, it has improved substantially from -5.8% in 2014-15 to 4.4% in 2022-23. From 2014-15 to 2022-23, the AAGR of the agriculture and allied sector at current prices and at constant prices was 12.8% and 5.3% respectively

Telangana has witnessed almost 40% increase in agri exports between 2020 and2022. The agri exports stood at 6337 crore in 20-21, it rose substantially to about Rs 10000 crore in 21-22. As per the latest data, released by Govt of India, Telangana and Maharashtra shown marked growth in agriculture. Telangana top exports include cotton (3055crore), spices, coffee tea (1936crore,) cereals (1480crore and meat (268 crore). The agri exports from the state increased due to innovative methods adopted and increased use of technology and cold storage facilities.

The FDI inflows in the agriculture sector in the country have a high share from Telangana. The state attracted FDI with Rs 3000 crore between 2019 and 2021.

Pattern of land classification in Telangana state (2019-2020)

sn	category	acres	% to total area
1	Forest	66,67,005	24.1
2	Barren and Uncultivable	15,01,055	5.4
3	Land Put to Non-Agricultural Uses	20,65,780	7.5
4	Cultivable Waste Land	4,01,320	1.5
5	Permanent Pastures and Other Grazing Lands	6,95,636	2.5
6	Land under Miscellaneous Tree crops and Groves not included in Net Area Sown	2,76,926	1.0
7	Current Follow Land	10,99,112	4.0
8	Other Fallow Land	13,98,111	5.1
9	Net Area Sown (including fish ponds)	1,35,89,842	49.2
10	**Total Geographical Area**	**2,76,94,7872**	
11	**Net irrigated area**	**5461197**	
12	**Gross irrigated area**	**7737279**	

- As per the pattern of land utilization in Telangana, 49.1% of the total geographical area falls under Net Area Sown (including fish ponds)

Land holdings by size holdings

Size/class/acres	No of holdings in (000)	% of holdings	Area operated (In 000acres)	%of area
Marginal (Below 2.47)	3840	64.6	4216	28.6
Small (2.48 –	1409	23.7	4885	33.1

4.94)				
Semi-Medium (4.95 - 9.88)	564	9.5	3625	24.6
Medium (9.89 - 24.77)	126	2.1	1700	11.5
Large (24.78 and Above)	9	0.2	334	2.3
total	5948	100	14757	100

Land holdings by social groups

Size/class/acres	**No of holdings(in000)**	**% of holdings**	**Area operated(in 000 acres)**	**% of the area**
Scheduled castes	700	11.8	1315	8.9
Scheduled tribe	712	12.0	1830	12.4
institutions	1	0	13	1.0
others	4535	76.2	11599	78.6
total	5948	100	14757	100

- According to the Census of Landholdings (2015- 16), there are 59.48lakh landholdings in Telangana covering a total area of 147.57 lakh acres.
- Marginal farmers (2.47 acres) hold 64.6% of total landholdings, accounting for 28.6% of the area operated.
- Small farmers (2.48-4.92) hold 23.7% holdings accounting for 33.1% of area operated.
- Scheduled Tribes (STs) own 12% of landholdings, covering 12.4% of the area operated
- Scheduled Castes (SCs) own 11.8% of landholdings covering 8.9% of the area operated.
- 76.2% of the landholdings belonged to the 'Others' category and covers 78.60% of the area operated

Agriculture

Agriculture requires appropriate policies to guide its development and protecting agricultural land from conversion to other uses. Need for creating a "farm friendly" policy framework to sustain an economically viable agriculture sector and to conserve and protect farmland. A sound agricultural policy with aim to achieve growth rate of more than 6% should be able to reconcile three basic needs: the production of food and agricultural products, the protection of the environment and the maintenance of the socio-economic structure of rural India

Telangana witnessed highest production of food crops mainly due to rise in productivity and increased area under cultivation on account of major irrigation projects such as kaleshwaram

project and increased rainfall. The agriculture production in Telangana state as per 2020-21 is as under.

- The total production of rice in Telangana was 145.68 lakh tonnes in 2020-21. The districts of Nalgonda and Nizamabad were the highest contributors to the production of cereals accounting for 8.4% and 8.3% of the total production respectively.

- The total production of millets (jowar, bajra, maize, ragi, and korra) in Telangana was 19.22 lakh tonnes in 2020-21. The district of Warangal Rural and Khammam were the highest contributors to the production of millets accounting for 15.9% and 15% of the total production respectively.

- The total production of pulses was 6.69 lakh tonnes in 2020-21 in Telangana. Kamareddy and Vikarabad districts were the highest contributors to the production of pulses accounting for 13.8% and 12.7% of the total state production respectively.

- The total production of food grains (cereals, millets, and pulses) in Telangana was 171.76 lakh tonnes in 2020-21. Nizamabad and Nalgonda districts were the highest contributors to the production of pulses accounting for 7.6% and 7.1% of the total state production respectively.

- The two major spices produced in Telangana are chillies and turmeric. The total production of chillies in 2020- 21 was 5.37 lakh tonnes. Nearly one-third of the total production came from the Khammam district (32.4%).

- The total production of turmeric in 2020- 21 was 2.26 lakh tonnes. Major contributors to the production of turmeric were the districts of Nizamabad (38.05%) and JagItyal (18.71%).

- Onion is the major vegetable produced in Telangana. The total production of onion in the state was 1.80 lakh tonnes in the year 2020-21. Jogulamba Gadwal district alone accounted for 26.96% of the total onion production.

- The dominant fibre crop produced in Telangana is cotton. The total production of cotton kapas in the state in the year 2020-21 was 30.4 lakh tonnes, and that of cotton lint was 57.99 lakh bales.

- The total production of oilseeds in Telangana, including Groundnut, Sesame, Safflower, Sunflower, Rape Mustard, Soybean, Palm oil and Castor, was 9.89 lakh tonnes in 2020-21. A significant share of oilseed production came from the Bhadradri district, which

contributed 33.6% to the total production, followed by Nagarkurnool, at 14.8% of the total production.

- The Government of Telangana recently launched the Oil Palm Mission to promote the cultivation of oil palm in the state. The total production of oil palm in 2020-21 was 4.12 lakh tonnes. Bhadradri district accounted for 80% of the production of oil palm.

- The total production of tobacco, which is predominantly produced in 5 districts of Telangana, was 2,731 tonnes in 2020-21. 37.5% of the total tobacco production came from Jogulamba district, followed by Jangaon district, which accounted for 21.5% of the total production.

- As per the livestock census 2019, the total population of livestock in Telangana was 3.26 crore. Sheep accounted for 58.4% of the total livestock population. Goat, cattle and buffalos account for 15.1%, 13% and 12.9% of the population respectively.

- The production of milk in the state was 57.65 lakh tonnes, meat was 5.10 lakh tonnes, chicken was 4.10 lakh tonnes, and eggs were 1,58,470.33 lakhs in the year 2020-21

- The total production of inland fish and prawns in the year 2020-21 was 3.37 lakh tonnes and 11,734 tonnes respectively. The highest contributing districts were Nalgonda (7.5%), and Nirmal (6.7%) for inland fish, and Karimnagar (10.7%), and Nizamabad (9.5%) for prawns

The policies need to aim at enhancing the total output of agriculture and boost the economic growth of the country through reclamation and development of wastelands, increasing the productivity of dry land areas with soil and rain water harvesting and irrigation development. Need more emphasis on improvement in production and productivity with reduction in cost of production and value additions to farm produce with aim to increase farmer net income. Indian farmer is passing through a crisis of confidence and measures are thus required to keep up the morale of the farmer. Need suitable agricultural price policy providing price support and incentives to grower. Adequate provision to rural credit need to be made.

Need for separate budget for agriculture with increased allocation for R&D as it results in high social return. Refocus on land reforms issues and more so on conversion of agricultural lands. Diversion to high value outputs ensuring food security and bridging knowledge gap Tax exemptions to farmer on net income from farming and long term gains from land acquired or land sale. Mapping and characterization of resources, soil, water, climate, market, food consumption pattern, need to be documented at village levels using RS & GI tools.

Agriculture potential in Telangana

- Soils are well drained to moderately drained and give favourable environment for soil fertility.
- Soils are suitable for wide range of crops including food grains, oilseeds, pulses and fruit crops etc.
- There are several agriculture related institutions in Telangana including ICAR institutes, MANAGE, NIRD, NFDB etc.
- Food production recorded a growth rate of 3.97 (CAGR) as against 2.43% at all India level.

Constraints in Agriculture - Telangana.

- Low and erratic rainfall leaves many areas under unprecedented drought and some areas are subject to floods.
- Semiarid climate restricts growth of natural vegetation due to which the scope of organic matter deposition in soils limited and most of the soils are inherently poor in absorption of nitrogen.
- Among the farming community almost about 85% of farmers are small and marginal farmers with poor socio economic conditions.
- Agriculture extension is devoid of enough strength and mobility to address every farmer

Crops grown in different agro climatic zones

Telangana grows 27 crops in kharif and Rabi seasons put together. The important crops grown in Telangana are rice, maize, pulses, G nut, cotton, chilli and sugar cane.

sn	zone	Kharif crops	Rabi crops
1	Northen region	Rice,cotton,maize,soyabean,redgram,greengram,turmeric	Rice,maize,Bengalgram,greengram,sunflower,sesame,G nut
2	Central region	Rice,cotton,maize,soyabean,redgram,greengram,sesame	Rice,Maize,bengalgram,greengram,black gram,Gnut,sunflower
3	Southern region	Rice,cotton,maize,redgram,greegram,Gnut,sesame,castor	Rice,maize,Bengal gram,Gnut,sunflower, safflower

Cereals:

The cereals or grain crops are the most important sources of food for human and provide the basic or staple diet. They contain carbohydrates, proteins, fats, minerals and vitamins. They

have a good nutritive value. The cereals have been considered as the first plants to be cultivated or domesticated. Major cereal crops cultivated in telangana state is paddy and maize.

Paddy was cultivated in 104.23 lac acres with an average yield of 20.96 quintals/acre. Maize is cultivated in 6, 39 lac acres with an average yield of 27.4 M in the state of telangana state. Major paddy growing districts in Telangana are Nalgonda 1.89 lakh ha (4.68 lakh acres), Suryapet 1.74 lakh ha (4.31 lakh acres), Yadadri 0.99 lakh ha (2.46 lakh acres), Karimnagar 1.07 lakh ha (2.64 lakh acres), Nizamabad 1.56 lakh ha (3.87 acres), Jangoan 0.64 lakh ha (1.59 lakh acres), Rajanna Siricilla 0.67 lakh ha.

Most of the paddy cultivated in the state is processed into raw rice. In Rabi season (November-April), however, the paddy is processed as parboiled, partially boiled, soaked and dried rather than raw rice. This is because the high temperatures in summers lead to the breakage of rice.

The importance of maize lies in its wide variety of applications besides serving as human food and animal feed. It is a source for a large number of industrial products - maize corn, corn starch, corn oil, baby corn, popcorn, dairy feed, poultry feed, piggery, agro-industries etc.

Suggestions:

- The mono cropping of paddy and cotton in the state is leading to problems in procurement as well as excessive exposure to price and yield risk and sudden potential outbreaks of pests and diseases.

- The cultivation of some alternative irrigated dry crops or commercial crops like cotton and chillis or oil palm cultivation and lesser water requiring crops should be encouraged by various measures like incentives and minimum support price for the regions of light-textured soils and rain fed condition.
- Set up more advanced Rice mills in addition to the existing mills to increase the milling capacity.
- Presently state government is procuring paddy only. It is suggested that procurement of maize and other coarse millets should also be procured by state government.
- Payment to be made immediately to farmers after procurement of paddy by the civil supplies corporation without any delay.

Millets

Millets are termed as the ‘miracle grains’ or ‘crops of the future’ as they can not only grow under harsh circumstances but are drought-resistant crops that require fewer external inputs. Millets are dual-purpose crops. It is cultivated both as food & fodder, thus providing food/livelihood security to millions of households and contributing to the economic efficiency

of farming. Production of millets does not depend on the use of chemical fertilizers. The millet crops do not attract pests and are not affected by storage. Millets are remarkable in their nutritive value be it vitamins, minerals, dietary fiber or other nutrients. It is nearly 3 to 5 times nutritionally superior to wheat and rice.

A variety of coarse cereals are grown throughout the country in different ecology, agro climatic condition, but mostly as rain fed crop. Sorghum, pearl millet, maize, barley, finger millet and several small millets such as kodo millet, little millet, foxtail millet, proso millet and barnyard millet together called coarse cereals. Sorghum, pearl millet, finger millet, maize and small millets (barnyard millet, proso millet, kodo millet and foxtail millet) are also called nutria-cereals.

Suggestions:

- Identify millet clusters and incentivize the farmers to go for millet cultivation.
- Development of high yielding single cross hybrids for different maturity groups resistant/ tolerant to biotic and abiotic stresses
- Encourages the production of value-added millet-based products to increase the demand and consumption of millets.
- The perception of millets as a poor man's food needs to be changed through marketing and promotion.
- These crops also offer a good potential in food processing industry and as a promising exportable commodity.

Pulses

Pulse crops are the most important food crops after cereals; refer to “grain legumes.” They are rich source of proteins containing about 20-30%. In India, pulses form is an integral part of diet as a source of protein and also rich in Calcium and Phosphorous. Pulses can fix atmospheric nitrogen and their deep penetrating root system enables the plants to utilize limited available moisture more efficiently. It improve the physical condition of the soil like soil aeration, water holding capacity, improving microbial population, breaking of hard pans and moisture retention. Pulses can be use as catch crop, cover crop, intercrop and crop rotation.

Major crops grown in Telangana state: Red gram, Bengal gram, Green gram and Black gram

Suggestions:

- Cultivation of early maturing varieties under rain fed conditions.
- Announcement of MSP well in advance; assured procurement and creation of procurement centres in production zones; development of organized markets for pulses; linking farmers with FPOs, aggregations and e-NAM (markets); promotion of export of pulses.

- Increase in area of cultivation and also improving the productivity by growing high yielding cultivars.
- Special cluster districts to be identified for intensive cultivation of pulses with latest packages of practices.

Oil seeds

Oilseed crops are the second most important determinant of agricultural economy, next only to cereals within the segment of field crops. The self-sufficiency in oilseeds attained through "Yellow Revolution" during early 1990's, could not be sustained beyond a short period. Despite being the fifth largest oilseed crop producing country in the world, India is also one of the largest importers of vegetable oils today. There is a spurt in the vegetable oil consumption in recent years in respect of both edible as well as industrial usages.

Major crops grown: Ground nut, sesame, sunflower, castor, soya bean, Lin seed, mustard etc

Suggestions:

- Oil seed cluster to be identified for ground nut, sunflower, sesame, castor etc and focus to be made towards increasing in area under oil seeds crops and increasing the productivity by adopting latest packages of practices.
- Supply of quality seeds of improved varieties and hybrids which are capable of boosting the productivity to a significant extent
- Farmers have to be ensured remunerative price by procuring oilseeds from the farmers
- need to promote efficiency in water use through protective irrigation and increase its area under irrigation of oilseeds grown in rain fed areas
- Focusing cultivation of oil palm trees and formulation of a bankable scheme with the element of subsidy.
- Financing for mini oil mills in the command area to create employment opportunities.

Commercial crops

a. Turmeric

Telangana is the largest producer of turmeric in the country. In Telangana, the four districts (erstwhile) viz. Nizamabad, Karimnagar, Warangal and Adilabad account for around 90% of the production of turmeric in the State and this area houses the important turmeric markets in the country. Turmeric crop plays a very important role in the livelihood of the farmers of these areas. However, the wide price fluctuation of the crop over the years lead to losses and affected the very existence of the farmers. This situation can be improved if the cost of

production of turmeric is brought down through improvement in productivity with the introduction of new production technologies, better seed availability and improved varieties. Enhancement of quality of the produce through adoption of improved post-harvest technology may create better marketability for the crop.

Government Support for Turmeric Cultivation under Micro Irrigation Project, government has given priority to drip irrigation by providing more than 80% subsidy on unit cost. Under MIDH, the state Horticulture Department is providing support to Bed Raisers to encourage raised bed method. Initiatives of Govt. of Telangana for Promotion of Turmeric Spice Park to encourage turmeric growers of Nizamabad belt to make export oriented value added products and to withstand the fluctuations in prices, Govt of Telangana proposed a spice park in Nizamabad district. The basic objective of the spice park is to provide common infrastructure facilities for both post-harvest and processing operations of turmeric, which also aims at backward integration by providing rural employment. Turmeric Spice Park at Nizamabad is expected to have processing facilities at par with international standards in which the produces could undergo cleaning, grading, sorting, grinding, packing, warehousing etc. Apart from the above facilities, common infrastructure facilities like Roads, Water supply system, Power stations, Firefighting & Control systems, Weighing bridges, effluent Treatment Plants, Quality Lab for checking basic parameters, Bank & Post office counters, Restaurant, Business centers, Guest house etc. are to be developed for value addition close to production centres and enable farmers realize better price.

b. Cotton

Cotton will be the major crop with sowing area of nearly 58.27 lakh acres with total production of 57.99 lakh tones. The Telangana government is likely to encourage the cultivation of cotton crop on large scale this kharif in the state in general and erstwhile Adilabad district in particular following huge demand for Telangana's cotton in the international market and good price for cotton.

The involvement of the state government in commercial operations of cotton production is minimal unlike paddy, pulses and maize and jowar. Cotton cultivation is generally taken up in Nalgonda, Nagar Kurnool, Komaram Bheem, Sanga Reddy Asifabad and Adilabad districts.

The Central government announced MSP for cotton and the price will be decided based on the price being offered for the cotton in the international market. Even the Cotton Corporation of India (CCI) does not involve in operations if the private traders offer more than MSP to the cotton.

Issues with the Cotton crop

- Pest Infestation:
- Low Productivity:
- Lack of Irrigation:
- High Input Costs:
- Dependence on Monsoon:
- Lack of Market Access:

Way Forward

Changing Cropping System:

- The cropping system of cotton must gradually undergo a systematic change to High Density Planting System (HDPS).
- The new cropping system requires an entirely new plant type, shifting from hybrid to varietal seeds coupled with new age technologies for machine sowing, weed management, defoliation and mechanical picking.
- Farmers currently sow bushy, long duration hybrid cotton seeds in dibbling patterns at a large spacing accommodating fewer plants per acre and harvest seed cotton three to four times in a season spanning 180 to 280 days.

Strengthening Market Linkages:

- Strengthening market linkages can help farmers get a better price for their cotton. The government can set up a robust procurement system for cotton, create price stabilization funds, and establish cotton grading and standardization mechanisms.

Increasing Value Addition:

- Encouraging value addition in the cotton sector can help increase income and create employment opportunities. This can be done by promoting the production of cotton-based products such as textiles, clothing, and home furnishings.

Enhancing Research and Development:

- Investing in research and development can help develop new cotton varieties, improve pest management practices, and develop innovative technologies to improve cotton farming.

Improving Infrastructure:

- The government can improve the infrastructure in cotton-growing areas by building roads, irrigation facilities, and storage facilities. This can help farmers access markets, transport their produce, and store their cotton until prices are favorable.

c. Sugarcane

Sugarcane is a most important cash crop of India. It involves less risk and farmers are assured up to some extent about return even in adverse condition. Sugarcane provides raw material for the second largest agro-based industry after textile. The sugar industry is an instrumental in generating the sizable employment in the rural sector directly and through its ancillary units. It is estimated that about 50 million farmers and their dependents are engaged in the cultivation of sugarcane and about 0.5 million skilled and unskilled workers are engaged in sugar factories and its allied industries. The sugar industry in India has been a focal point for socio-economic development in the rural areas by mobilizing rural resources, generating employment and enhancing farm income. The major source of ethanol production in the country is via sugarcane-sugar-molasses route. This provides better economy by sale of sugar and molasses becomes the by-product of the sugar. In Telangana sugarcane crop is grown in 53982 acres and annual production is 18.92 lakh tones.

The main strategies for increasing production and productivity of sugarcane in the country are as under:

- Popularization of inter-cropping of sugarcane with wheat, oilseeds, vegetables, pulses
- Strengthening of seed production programme through tissue culture, single eye bud and poly bag technology, chip bud method, etc
- Propagation of micro irrigation system like drip irrigation/rain-gun sprinkler and adoption of improved method of irrigation i.e. furrow and skip furrow irrigation instead of flood irrigation in crops including sugarcane

Medicinal plants:

Medicinal plants are a source of bimolecular with therapeutic potential and as a lead to develop new drugs. Herbal medicines are considered as safer, better physiological compatibility and cost-effective. India is a gold mine of medicinal plants and a rich repository of traditional medicinal knowledge. Demand for the medicinal plant is increasing with expansion in human needs, numbers and trade purpose. Plants are mostly collected from wild sources that may pose a serious situation, along with this loss of biodiversity and forest is another major concern for sustainable supply of medicinal plants in the future. With the increased realization that many species are collected from wild sources and being over-exploited, agencies

(private/public) are recommending bringing the important medicinal plants into cultivation systems.

The National Medicinal Plants Board(NMPB) recommended cultivation of the species that included 'Tulasi', 'Sugandhi pala', 'Pippalla', 'Ashwagandhi', 'Nelavemu', 'Maredu', 'Kalabanda', 'Sunamukhi', and 'Vasa' on a large scale to tap their market potential in the wake of growing demand for Ayurveda.

Suggestions

- Promoted in areas where commercial crops are not grown.
- Standards and grades may be developed for medicinal plants and arrange for buyback from the growers at prevailing market price.
- To create awareness amongst the general public on the importance of medicinal plants.
- Identification of clusters and focusing for growing of medicinal plants in the state.
- Setting of processing industries and export of value added products

Farm mechanization

Indian agriculture is undergoing a gradual shift from dependence on human power and animal power to mechanical power because increasing cost for upkeep of animal and growing scarcity of human labour. Further, use of mechanical power has a direct bearing on the productivity of crops apart from reducing the drudgery and facilitating timeliness of agricultural operations. Thus there is a strong need for taking farm mechanization.

Mechanical power is largely consumed in big land holdings and is still beyond the reach of small/marginal holdings which constitute around 80% of the total land holdings. This is due to the fact that the small/marginal farmers, by virtue of their economic condition are unable to own farm machinery on their own or through institutional credit. Therefore in order to bring farm machinery available within the reach of small/marginal holdings, collective ownership or Custom Hiring Centres needs to promote in a big way.

Suggestions

- Eligibility criteria for availing tractor loans to be reduced to 5 acres.
- Subsidy to be extended to small and marginal farmers for availing tractors, power tiller and combine harvesters, purchase of agriculture implements etc.
- Formulate a bankable scheme with state government subsidy for financing custom hiring centres in mandal/district head quarters.

- Providing of industrial land for setting up custom hiring centres.

Vegetables

Modern vegetable farming ranges from small-scale production for local sale to vast commercial operations utilizing the latest advances in automation and technology. In addition, vegetables can be grown conventionally or using organic farming methods. Most vegetables are planted by seeding in the fields where they are to be grown, but occasionally they are germinated in a nursery or greenhouse and transplanted as seedlings to the field. During the growing season synthetic or organic herbicides, pesticides and fungicides are commonly used to inhibit damage by weeds, insects and diseases, respectively. Depending on the crop, harvesting operations are usually mechanized in well-developed countries, but the practice of harvesting by hand is still employed in some areas or is used in conjunction with machine operations. Another concern of the vegetable farmer is postharvest storage, which may require refrigerated facilities

About 20+ vegetables are being consumed in Telangana state. Out of which, top 10 vegetables being consumed are Tomato, Onion, Greenchilli, Bhendi, Potato, Leafy vegetables, Ridge Gourd, Brinjal, Bitter Gourd & Beans. Telangana State is Surplus in production of vegetables like Tomato, Brinjal, Cabbage, Cauliflower, Cucumber, and Carrot & Radish. Surplus production is being converted in to value added products like pickles, sauce, ketchup etc. Similarly, Telangana State is Deficit in production of Vegetables like Bhendi, Greenchilli, Gourds, Beans, Capsicum, Potato, Colacasia, Yam, Leafy vegetables & Onion.

Suggestions:

- Encouraging for staggered sowing of vegetables in the season to avoid market glut, so that they can get better prices for their vegetable produce.
- Popularize the concept of crop colonies. The concept of crop colonies is computation of vegetable demand for a municipality/ city/town based on local consumption and promotion of vegetable production in cluster mode.
- Vegetable cluster zones to be identified in 5 major municipal corporations (Hyderabad, karimnagar, khammam, Warangal and nizamabad).
- Plan for feeder zone of vegetables to Hyderabad from Medak, Medchal, Yadadri, Sangareddy, Vikarabad and Ranga reddy district
- Pandal system to support vegetable crops like bitter guard, snake guard ,ridge guard, beans etc.
- High yielding hybrid varieties to be recommended for cultivation to improve income of the farmers.

- Encourage organic farming, hydroponics, vertical farming, and roof top farming in urban areas.
- Subsidy /margin money scheme for cultivation of crops in green houses/ poly houses.
- Financing for construction of warehouses and cold storage units and processing industries to be encouraged. As the cost is huge, government to extend subsidy for these units.

Fruit crops

Fruit growing is one of the important and age old practices, practiced in India since ancient times. Cultivation of fruit crops plays an important role in overall status of the mankind and the nation. The standard of living of the people of a country is depending upon the production and per capita consumption of fruits. Fruit growing have following economic and nutritional advantages. Fruits are good sources of vitamins and minerals without which human body cannot maintain proper health and develop resistance to disease they also contain pectin, cellulose, fats, proteins etc.

Out of 14 types of fruits produced in the State, eight fruits (mango, guava, papaya, muskmelon, watermelon, and sapota, sweet orange & acid lime) were in surplus quantities, whereas in about six fruits – grapes, apple, jamun, banana, pineapple there is deficit in production. Telangana is witnessing a boom in farming of figs, anjeer and the exotic dragon fruit.

Suggestions

- improve the productivity by rejuvenation of senile orchards, adoption of advance technologies both pre &post harvest stages
- Establishment of integrated pack house where in fruits are washed, waxed, graded and packed for marketing in domestic and international markets. Pack house facility should be utilized for mango, sweet orange, pomegranate etc. Private players to be identified for establishment of pack house in fruit growing areas.
- Production of disease-free, quality materials of only released and recommended varieties/hybrids both in the public and private sectors
- Develop techniques of organic farming for export oriented fruit crops
- Finance to be extended for construction of Cold Storage Facilities and Pre cooling Centers with subsidy oriented schemes. Develop techniques for bulk preservation of fruit pulps.
- Encourage exports of fruits and value added products.

Floriculture

The Government of India has identified floriculture as a sunrise industry and accorded it 100% export-oriented status. Owing to the steady increase in demand for flowers, floriculture has become one of the important Commercial trades in Agriculture. Hence commercial floriculture has emerged as a hi-tech activity-taking place under controlled climatic conditions inside a greenhouse. The floriculture industry is an important source of livelihood for farmers, aggregators, traders, processors and distributors engaged at different stages of the flower value chain.

Indian floriculture industry comprises flowers such as Rose, Tuberose, Gladiolus, Anthurium, Carnations, Marigold, etc. Cultivation is undertaken in open farm conditions as well as state-of-the-art poly and greenhouses. The Indian floriculture market was valued at INR 231.7 billion in 2022. Based on flower type, Indian floriculture market has been divided into cut flowers and loose flowers, where loose flowers currently exhibit a clear dominance in the market

Suggestions:

- Develop integrated Flori-Malls at major markets with dedicated cold chains and plants to extract essential oils, pigments, dyes and other flower products
- Floriculture should go hand in hand with beekeeping
- Green house technology for flower production to be advocated. A bankable scheme with subsidy component to be formulated. On the basis of basic material used, building cost and technology used, green houses can be of three types- Low cost green houses ,medium cost green house and high tech green house
- Modern techniques/technology like drip irrigation, hydroponics precision farming, use of automated systems can enhance productivity and reduce costs.
- Organic flower cultivation to be encouraged.
- Production Technology Development of suitable low-cost pre and post-harvest technologies for longer shelf life and quality for domestic and export markets

Agri food processing industry

A well-developed food processing sector with higher level of processing helps in reduction of wastage, improves value addition, promotes crop diversification, ensures better return to the farmers, promotes employment as well as increases export earnings. This sector is also capable of addressing critical issues of food security, food inflation and providing wholesome, nutritious food to masses

Food processing has been identified as one of the 14 thrust sectors for the state in the industrial policy framework of 2014. The sector forms a key linkage between agriculture and industry. Food processing contributes both to agriculture and manufacturing. Apart from its

high contribution in Gross Value Addition (GVA), the sector is highly employment intensive and helps generate jobs in the rural areas close to the agricultural produce.

Telangana is ranked first across the country for production of turmeric and sweet orange. Our state is the second largest producer of maize and chilies, third largest producer of egg, fourth largest producer of lemon, grapes, mango and soybean and fifth largest producer of meat in the country. Further, Telangana is a well accepted leader in poultry and seed business

Suggestions:

1. Development of processing clusters for key commodities in the state such as turmeric, spices, fruit crops, dairy, poultry products etc and focus on development of infrastructure such as developed land, approach roads, electricity and water availability.
2. Development of logistics and supply chain infrastructure for food produce distribution Food logistics support.
3. Development of market yards, increasing ware houses and cold storage facilities. More mandis/ markets should be made live on e NAM platform.
4. All government subsidy programmes under SC/ST/BC/ Minority corporations should be dovetailed to some extent for encouraging the beneficiaries to set up food processing units in the state.
5. Encourage SHG groups to take up establishment of food processing units.
6. Development of new food parks and promotion of food parks in the state.
7. Encourage big corporate to set up food processing units in the state which not only create employment opportunities in the state but also to export the processed food from the state.

Agri business ventures.

If there is one sector that is always thriving, regardless of the economic environment of the country, it is Agriculture. After all, food is one of the basic necessities of human beings for survival. So the agricultural sector is considered to be the prime sector for any nation. More so in a country like India which is known as an agricultural country because farming is the backbone of the Indian economy.

The agriculture business can be predominantly categorized into three main sectors mentioned below:

- **Production resources**, which include seed, feed, fertilizer, energy, equipment, machinery and the likes
- **Agricultural commodities** like raw or processed items of food and fibre
- **Facilitative services** like insurance, marketing, credit, processing, storage, packaging, transportation, etc.

Suggestions

1. Encouraging the progressive farmers and unemployed youth to take up construction of rural godowns and cold storage units in districts / mandals.
2. Govt /NABARD to provide subsidy for construction of warehouses and cold storage units.
3. Activities relating to food processing and marketing etc to be encouraged.
4. Focus more on activities like custom hiring services, fertilizer and seed distribution dealerships, cooperative/ contract farming etc.

NEW INNOVATIVE WAYS OF DOING AGRICULTURE BUSINESS

1	**HYDROPHONIC FARMING**
	Hydroponic farming is a soilless agricultural practice that involves growing plants in nutrient-rich water solutions, providing an alternative to traditional soil-based farming methods. This innovative approach utilizes water, nutrients, and a controlled environment to cultivate crops efficiently and sustainably. Hydroponic Farming serves multiple benefits such as Water Efficiency, Increased Crop Yields, Space Utilization, and Year Round Production. If done with great skill and determination hydroponic farming can catapult your earnings to incredible heights. **Recommended crops:** Tomato, Cucumber, Spinach, Okra ,Green Leaf vegetable, Strawberries, Beans, Coriander, Grapes, Mint, Bell pepper,
2	**ORGANIC FARMING**
	Organic farming can be defined as an agricultural process that uses biological fertilizers and pest control acquired from animal or plant waste. Organic farming was actually initiated as an answer to the environmental sufferings caused by the use of chemical pesticides and synthetic fertilizers. Organic farming is a new system of farming or agriculture that repairs, maintains, and improves the ecological balance. The demand for organic produce continues to rise as consumers become more health-conscious and environmentally aware. Starting an organic farm can be a profitable venture, especially when focusing on high-demand crops such as fruits, vegetables, and herbs. Additionally, organic livestock farming, including poultry and dairy, presents lucrative opportunities.
3	**VERTICAL FARMING**

	Vertical farming is the practice of producing crops on vertically inclined surfaces. As urbanization increases, vertical farming offers a solution to maximize limited space and optimize crop production. By utilizing vertical structures with controlled environments, such as indoor hydroponic systems or stacked containers, entrepreneurs can grow crops throughout the year without being limited by seasonal changes. This innovative approach reduces transportation costs and brings fresh produce closer to urban consumers. Crops suitable: cucumber, tomato, cabbage, peas, coriander, green leaf vegetables, strawberry, spinach, musk melon etc
4	**ACQUAPONICS**
	Aquaponics is cooperation between plants and fish and the term originates from the two words aquaculture (the growing of fish in a closed environment) and hydroponics (the growing of plants usually in a soil-less environment). Aquaponic systems come in various sizes from small indoor units to large commercial units
5	**SEED PRODUCTION AND MARKETING**
	Certified seed production is a profitable business. Generally, a certified seed production business comprises many different steps. These range from procuring good quality foundation seed, duplication, and seed processing.
6	**HERBS AND MEDICINAL PLANTS CULTIVATION: GREEN PHARMACY**
	The demand for medicinal plants and herbs continues to grow as people seek alternative and natural remedies for various ailments. Cultivating medicinal plants can be a rewarding and profitable Endeavour. There are numerous herbs with high market demand, from lavender and chamomile for relaxation to aloe Vera and turmeric for their healing properties.
7	**MUSH ROOM CULTIVATION**
	Mushroom cultivation is a specialized form of farming that involves growing various edible mushrooms for culinary and medicinal purposes. Mushrooms are popular for their unique flavours, nutritional benefits, and potential medicinal properties. Oyster mushrooms, shiitake, and Portobello are commonly grown varieties. Mushroom farming can be done in controlled environments, making it accessible to farmers with limited space.
8	**VERMI COMPOSTING**
	Vermi composting is the process of using earthworms to convert organic waste into nutrient-rich compost. This natural and eco-friendly composting method enhances soil fertility, making it invaluable for organic farming. Vermi compost is highly sought by gardeners and farmers, creating a potential revenue stream for those seeking sustainable

	agriculture
9	**WAREHOUSING BUSINESS**
	Cold storage warehousing involves the storing of perishable or other sensitive goods like food, medicines, and artwork at a specific temperature range to maintain their integrity, shelf-life, and quality. There are 2 main types of cold storage: • **Refrigerated cold storage** • **Frozen cold storage**
10	**MULCHING**
	Mulching is the process or practice of covering the soil/ground to make more favorable conditions for plant growth, development and efficient crop production. Mulch technical term means 'covering of soil.
	ALGE FARMING
	Algae farming involve cultivating different types of algae for various applications. Algae can be used for food, biofuel, pharmaceuticals, and wastewater treatment. Algae are highly efficient at photosynthesis, making them a promising source of sustainable biomass. Algae farming has immense potential, especially as industries seek eco-friendly and renewable resources.
11	**PLANT NURSERY BUSINESS**
	A nursery is a place, where seedlings, saplings, trees, shrubs and other plant materials are grown and maintained until they are placed in a permanent place. Mostly the plants concerned are for gardening, forestry or conservation biology, rather than agriculture. They include retail nurseries, which sell to the general public, wholesale nurseries, which sell only to businesses such as other nurseries and to commercial gardeners, and private nurseries, which supply the needs of institutions or private estates. *Categories of plant nurseries:* *1. Flower and Foliage Nurseries* *2. Vegetable Nurseries* *3. Fruit Nurseries* *4. Medicinal Nurseries* *5. Forest Nurseries*
12	**SOLAR POWERED FARMS – HARNESSING THE SUN FOR ENERGY AND PROFITS**
	Solar-powered farms are an innovative approach to sustainable agriculture. By installing solar panels on agricultural land, farmers can generate renewable energy while continuing regular farming practices. This energy can power farm operations and even be sold back to

	the grid, providing an additional revenue stream. Solar-powered farms contribute to reducing carbon emissions and help combat climate change. The solar tree is much like that of a real tree, where solar panels (act like leaves) connected through metal branches using sunlight to make energy. Solar trees need nearly 100 times less space to produce the same amount of electricity as horizontal solar plant.

Farmers' producers' organization (FPO)

Farmers Producer Organization (FPO) is one type of PO where the members are farmers. Small Farmers' Agribusiness Consortium (SFAC) is providing support for promotion of FPOs. PO is a generic name for an organization of producers of any produce, e.g., agricultural, non-farm products, artisan products, etc. Essential features of FPO are as under.

- It is formed by a group of producers for either farm or non-farm activities.
- It is a registered body and a legal entity.
- Producers are shareholders in the organization.
- It deals with business activities related to the primary produce/product.
- It works for the benefit of the member producers.
- A part of the profit is shared amongst the producers.
- Rest of the surplus is added to its owned funds for business expansion.

Suggestions:

- Periodic training/awareness programmes to be conducted.
- Provide long term loans to FPOs.
- Support of NGOs and voluntary organization to be taken for formation of FPOs.
- Encourage small farmers to form produce organizations.
- Government to provide infrastructure in marketing and granting subsidy / interest subvention etc to FPOs

AGRI STARTUPS

Agri tech startups, also called agricultural technology startup, refers to the technological developments in agriculture to increase productivity and yield efficiently and profitably

Agri-tech startups are developing innovative solutions for various aspects of agriculture, including precision farming, supply chain management, and market linkages. These technologies can help improve productivity, reduce costs, and increase the income of farmers.

As the sector continues to grow, it has the potential to not only transform India's agriculture sector but also create new employment opportunities and contribute towards the growth of the country's economy. As we move forward, it is important for agriculture startups to stay focused on their mission of self-reliance and sustainability, building on the successes of the past. The vision of a self-reliant India is deeply embedded in the startup ecosystem and will remain a guiding force for the years to come.

Among all the recognized agri-startups, currently, there are 1485 agri tech startups— 474 for organic agriculture, 1774 for food processing, 48 for horticulture, 130 for animal husbandry and dairying, 22 for fisheries, and 74 have a combination of such activities

New business ideas for startup in agriculture sector

- Production of organic fertilizers.
- Hydroponic equipment distribution.
- Certified seed production and dealership
- Agriculture consultancy centres
- Green house and poly house cultivation
- Allied activities – dairy, poultry
- Tissue culture
- Plant nursery raising and distribution
- Fertilizer dealer ship agency
- Cultivation of medicinal plants and flower plants
- Soil testing labs
- Agro processing units
- Cold storage units and ware housing facilities
- Marketing of agriculture produce

Doubling of agriculture income

The Government of India has focused its attention on doubling the farmers' income during the seven-year period from 2015–16 to 2022–23, marking a significant departure from past policies when the emphasis had been only on production rather than the marketability of the produce

On 13th April 2016, the G.o.I constituted the Committee on Doubling Farmers' Income under the Chairmanship of Dr. Ashok Dalwai. The main recommendations of the committee are as under

- Increase in crop productivity

- Increase in livestock productivity
- Resource use efficiency – reduction in cost of production
- Increase in cropping intensity
- Diversification to high value agriculture
- Remunerative prices on farm produce
- Shift of surplus manpower from farm to non-farm occupations
- Use of high yielding variety seeds for successful crop production and thus increasing the yield by 15-20%.
- Integrated farming system approach involving synergic blending of crops, horticulture, dairy, fisheries, poultry etc.
- Efficient management of resources or inputs and reducing wastages.

Suggestions

- Formation of clusters for cereals, oilseeds, pulses, fruits and vegetable crops for intensive farming using modern hi tech farming practices with suitable incentives to the farmers for increasing the cropping intensity and growing of high yielding varieties of crops.
- Creation of national farm market to empower farmers. Government already launched e NAM mainly to bring the existing agriculture produce market committees on a common nationwide platform to facilitate trading in agriculture commodities. More markets to be linked to e-NAM platform. Procurement of produce for all crops instead of confining only to paddy by the state government agencies.
- Substantive investment in irrigation, seeds and fertilizers and new technology coupled with a shift into high-value commodities such as horticulture, poultry and dairying to double income and also for Establishment of food processing industries.
- Cultivation of horticulture crops in poly houses/ green houses and adoption of new methods of farming like hydroponics, vertical farming, organic farming and urban farming etc.
- Alternate land use systems like agro forestry, agri horti systems
- Facilitating and promoting agri exports.
- Special focus on rain fed agriculture and Soil moisture conservation and soil fertility improvement.
- Formulation of new agriculture policy and announcing of minimum support prices for all crops.
- Modernization of farms and adoption of new technologies like adopting GM crops and using new farm equipment (develop a rental market for farm equipments) could be the new thinking.

HI TECH AGRICULTURE

The Government has been reorienting the agriculture sector by focusing on an income centeredness which goes beyond achieving merely the targeted production. The income approach focuses on achieving high productivity, reduced cost of cultivation and remunerative price on the produce, with a view to earn higher profits from farming.

High-tech farming mainly refers to agricultural operations involving the latest technologies. It is normally a capital intensive agriculture since large capital outlay is required towards purchase of specialized equipment, maintenance of assets, training of labour, etc. Hi-tech agriculture mainly relates to commercial farming system aimed at catering to the needs of both, domestic as well as export markets. It uses farming technology to increase yields, ensures high quality (usually pesticide-free) and realizes increased market value.

Hi-tech horticulture like poly house cultivation of vegetables, flowers, medicinal plants and fruits constitutes one of the most technology and skill intensive agricultural practices. Being remunerative and skill oriented it can also attract youth. However, being capital intensive, it requires access to credit and participation of business entrepreneurs

Potential areas for Hi-tech Agriculture:

- Urban and peri-urban areas to meet requirements of fresh produce like vegetables, fruits and flowers round the year.
- Areas with limited land and water resources
- Areas where availability of land for cultivation is restricted and where low temperature is prevalent restricting cultivation of crops under open field conditions.
- Small and marginal land holdings for adopting intensive production technologies with financial support

Strategies for promotion of Hi-tech agriculture in India

Greater participation of farmers particularly small and marginal farmers in hi-tech agriculture may be encouraged keeping in view the opportunities for improving farm income. The core strategy involves adopting a compact area and activity specific development approach to enable input, technology and extension support, creation of critical common infrastructure and

aggregation of production for marketing and value addition. Some of the suggested strategies include:

- Study of successful models for replication (i.e. Precision farming programme in Tamil Nadu)
- Identifying activity/crop specific locations and potential mapping. Development with Group approach such as Farmers' Societies, Producer Companies, JLGs /SHGs, etc.
- Assessment of infrastructure needs including post-harvest handling and transport logistics v. Preparation of Sector/ activity specific credit linked Development Plans (Area Development Plans / Banking Plans).
- Supporting infrastructure for post-harvest handling, warehousing, marketing, etc. through PPP mode or private sector investments.
- ICT enabled services such as market information, technology inputs and credit access.
- User Industry tie-up for contract farming ensuring clean, equitable and farmer centric agreements with well-defined clauses dealing with quality standard, withdrawal conditions, credit linking with financing institutions, enabling provision for arbitration mechanism, inclusion of appropriate risk mitigation measures, etc.

SEED

Seed is the most critical of all agricultural inputs and determines the performance and efficiency of other inputs for enhancing productivity and production and thereby income of the farmers. It is therefore, essential that quality seeds with good genetic potential appropriate to the agro-climatic conditions are produced in sufficient quantities at affordable price and timely made available to the farmers for achieving higher agricultural production. Supply of quality seed is not a one-time affair. Three seasons are required for production of certified seed from the Breeder seed. Lot of planning is required to ensure that right crop variety is available to the farmers at the right time. There is a need to replace the existing seed replacement rate of 33% for self-pollinated crops, 50% for cross pollinated crops and 100% for hybrids to achieve the food production target of the future. Seed Production and distribution is a continuous process.

To produce quality/certified seed and to develop State as Seed Bowl, a long term Seed Production Plan is required by involving various Research Institutions, Government Department/ Agencies and Private Seed Producing Companies. There are three stages of seed

production i.e., Breeder Seed, Foundation Seed and Certified Seed which are to be strengthened to produce required quantity of certified seed and to develop each village as a Seed Village in Telangana State.

There are 10 State Seed Production Farms, functioning in the state of Telangana with the main objective of production of Foundation Seed to meet the seed requirement under Seed Village Programme in turn supply to the farmers. The seed productions farms are located at Boppaspally Kamareddy , Cherkupally Nalgonda,Dindi Nalgonda, Julekal J.Gadwal, Kothapally Karimnagar ,Kaddam Nirmal, Kurivipadu J.Gadwal ,Malthummeda Kamareddy, Sadashivpet Sangareddy and Palampeta Mulugu The State Seed Farms have been identified by the Government as Source of Foundation seed production by making use of Breeder seed supplied by Research institutions of the Agricultural University.

The Government sectors are mainly concentrating on production of high volume of crop seeds of notified varieties of Paddy, Jowar, Red gram, Green gram, Black gram, and Bengal gram, Groundnut, Castor and Sesame to meet the needs of farming community at lower seed rates. The Private Companies are involved in the production of low volume and high value Hybrid crops seeds such as Cotton, Maize, and Sunflower, Jowar, Bajra and also Paddy. The main objectives of seed policy should focus on the following aspects.

- Seed is a critical determinant in increasing the agricultural production.
- The performance and efficiency of other inputs depends on the quality of seed. Certified/quality seed plays an important role in achieving higher yields.
- Hence supply of quality seed to the farmers is one of the most important interventions to increase the production and productivity of any crop.
- To bring more area under cultivation certified or quality seed must be supplied at affordable prices and in adequate quantities to the farmers.
- The area under cultivation is not going to increase significantly; the thrust will have to be on rising productivity per unit of cultivated land.
- To promote new varieties of different crops under different schemes

Telangana the Seed production chain is being strengthened by producing various classes of seed i.e. Breeder seed, Foundation seed and certified seed by different Government and Private Institutions. The certified/quality and improved seed thus produced is being distributed to the farmers through the various Central and State schemes. This is one of the most effective way of increasing the production and productivity at the field level. Supply of seed on subsidy means the average farmers are able to purchase the most critical input in agriculture i.e. seed at affordable price which will help in achieving desirable increase in production and productivity. The main thrust while supplying the seed on subsidy is for varietal replacement and promotion of Pulses and Oilseed crops. In order to achieve the food production target of the future, a

major effort will be required to enhance the seed replacement rate of various crops. It would require a major increase in the production of certified/quality seed. The following points to be kept in mind while planning for seed policy in the state.

Suggestions:

- As good quality seeds and disease-free planting material are essential for higher crop productivity, foundation seeds are provided to grass root level seed growers, cooperative societies and FPOs. Community managed seed villages and farmer seed cooperatives are established and strengthened.
- Increase in Government investments in seed infrastructure, research and production to enable the public institutions to develop new seed technologies.
- Government need to have control on price of seeds, particularly in the event of an emergency, monopolization or profiteering.
- Legislation need to brought in to ensure the supply of modern, high quality, cutting edge seed technologies to the farmers which will help them in enhancing their productivity and profitability.
- Need to Constitute a Seed Committee to advice on all matters related to seeds and assess seed failures, pay compensation and set up a strict liability framework for accountability.
- Arrangements need to be made to preserve seeds of traditional crop varieties as they possess distinguished qualities.
- Seed producers and seed processing units to be registered and producer or his sponsor be allowed to grow or organize the production of seed after registering.
- An empowered committee be formed to evaluate the infrastructure facilities of the seed companies to accredit them and also to evaluate all the data generated from nationwide trails to accord fast track registration.
- Constitution of committee to review the complaints related to spurious seeds, non-performing varieties and recommend compensation to farmers, to penalize the offences and prescribe punishments to seed producers.
- The varietal evaluation systems of seed companies can be subject to regular audit by the technical auditors to ensure genuineness.
- The producer, distributor or vendor need to disclose the expected performance of variety to the farmer under given conditions, and if, such registered seed fails to provide the expected performance under such given conditions, the farmer may claim compensation from the producer.
- Review the weakening of public seed system and strengthening it since Seed Sovereignty is the foundation of national sovereignty and national security.

- A seed regulatory commission be formed for protection of farmers rights on seeds and seed biotech industry to make it transparent, science-based, predictable and fair.
- Government to prepare and monitor seed production and formulate a supply plan as the problem with seeds is not about lack of good seeds, but lack of access to good seeds.
- Need to create National Seed Export Council, as just 1% of international trade is done from India, though good potential exists for seed export Policymakers, national seed agencies and public and private sectors take holders, including national seed associations and farmer organizations involved in the seed sector need to be integrated within one national seed system.
- National seed grid to be established to strengthen to provide farmers with access to quality seed for enhanced crop production and food security.

SOIL FERTILITY

Soil, being one of the most complicated biological materials, is the bedrock for our sustainable food system for healthy lives. As soil has been a non renewable resource, need to focus on soil governance, strategies and the processes for its proper use. Indian agriculture is facing major challenge of pressure of producing more food to the growing population from limited cultivable land with overuse of chemical fertilizers, excessive tillage, jettisoning of age-old organic soil revival practices and lack of appropriate crop rotation has resulted in soil degradation and loss of fertility with increase in soil Stalinization.

Indian agriculture needs renewed focus on soil health to address declining soil fertility Need to hasten up different strategies to maintain soil health and prevent soiled gradation in order to avert yet another agrarian crisis. Indiscriminate use of fertilizers is creating problems to soil health, quality of farm produce. Need to strengthen soil testing laboratories with provision of adequate quality infrastructure, skill sets in laboratories and building confidence amongst farmers on importance of soil analysis with field demonstrations which facilitates for efficient use of fertilizers. Strengthen soil health card scheme which enable policymakers, scientists, and other stakeholders to take corrective steps towards soil fortification.

Farmers should also be trained on reading the analysis results and change their practices accordingly. Initiate action for promotion of organic farming practices that can potentially increase soil health and prevent soil degradation Need to focus on soil conservation with watershed approach and improving oil productivity with conservation agriculture, integrated farming systems and turning the focus on biological products and recycling of crop residues. Develop Detailed Land Resource Inventory for site- specific database on land resources and soil

quality for all the villages for prescribing viable and sustainable land use options suitable for each and every land holding. Use geographic information system [GIS], remote sensing and emerging science and technologies to display, analyze and collate soil data creating digital soil maps.

Soil Health Management (SHM) and Soil Health Card schemes are implemented under National Mission for Sustainable Agriculture by INM Division of Department of Agriculture & Cooperation, Government of India as Centrally sponsored schemes and the main components of the scheme are as under.

- Setting up new Soil Testing Laboratories (STLs) and Mobile Soil Testing Laboratories (MSTLs) for macro nutrients and micro nutrients analysis.
- Strengthening of existing State STLs for micronutrient analysis.
- Capacity building through training of STL staff/extension officers/farmers and field demonstration/workshop etc.
- Preparation of digital district soil maps (using Global Positioning System) and soil fertility monitoring system by ICAR/ State Agriculture Universities (SAUs).
- Providing portable soil testing kits to field level officers of State Govt.
- Promotion and distribution of micronutrients strengthening of Fertilizer Quality Control Laboratories.
- Setting up of New Fertilizer Quality Control Laboratories by State Governments.

Main objectives:

- To strengthen soil testing facilities and provide soil test based recommendations to farmers for improving soil fertility and economic return to farmers.
- To facilitate and promote use of soil amendments for reclamation of alkaline soils for improving their fertility and crop productivity.
- To promote use of micro nutrients for improving efficiency of fertilizer use.
- To ensure quality control of fertilizers through strengthening of existing fertilizer quality control facility in FCO laboratories as well as Bio Pesticide Laboratories of the State for effective implementation of "Fertilizer Control Order".

Benefits:

- Correction of micronutrient deficiencies in the soils.
- Judicious use of fertilizers based on Soil test results.
- Reduction in indiscriminate use of fertilizers resulting in reduced ill effects on soil.
- Reduction in cost on fertilizers decreases the total cost of cultivation and improves income.
- Subsidy pattern: Sharing Pattern is 60:40 (Central & State Share)

Fertilizers

Soils in India suffer from varying degrees of degradation, low in organic carbon and nitrogen and their fertility depletion is a cause of concern for agriculture. Nutrient gap exists between

the removal by crops and their addition through fertilizers. Increasing deficiency of micronutrients is becoming additional concern. Chemical fertilizers played a vital role in India's Green revolution and they continue to play a predominant role in India's agriculture economy. Acceleration in fertilizer consumption has occurred in irrigated situation in crops like rice, wheat as a result of development of fertilizer responsive seeds. Though different sources are available for supply of nutrients to plants, excess focus is given to chemical fertilizers neglecting many of organic sources. In recent times the use of organic sources has declined while that of chemical fertilizers increased much. Studies indicate that yield of many crops which remained stagnant with only chemical fertilizer use could be increased with integrating inorganic and organic sources.

While organic manures, bio-fertilizers, crop residues, make a significant contribution to the supply of plant nutrient and soil health, increased use of chemical fertilizer is adversely impacting the environment, soil health and contaminating water bodies. Production, storage and supply mechanisms for bio-fertilizers, organic manures are put in place to promote their use. Incentivize and create awareness for use of these organics. India imports phosphorous and potash fertilizers and is not self sufficient in urea production as well.

To meet the food requirements of growing population government encouraged use of chemical fertilizers and extended subsidies. Such subsidy was given to manufacturers as difference between the retention price and the price at which fertilizers are made available to farmers. As urea was not decontrolled and available at low price it is used in excess in agriculture and also diverted to non-agriculture use, smuggling. Deregulate fertilizer prices (including urea), with open imports at zero duty, for balanced use. Provide gas to urea plants at uniform price keeping in view the cost of production .Need to change from price policy to income policy. Extend subsidy on fertilizers directly to farmers.

Pesticides

Use of pesticides increased substantially in India after the success of Green revolution. Although the use of pesticides protected the crops from insects and diseases and contribute do increased crop production and food security in India, it simultaneously caused environment degradation and danger to the human being and animals as well .Consumption of inorganic pesticides in India significantly increased over years as a result of trade interest and more research focus on inorganic chemicals overlooking the natural and traditional knowledge in plant protection. Unregulated and indiscriminate use of inorganic pesticides have resulted in contamination of soil, surface and ground water and food, bioaccumulation, decline in predators and pollinators ,and genetic resistance in pests.

Strengthen regulations and enforcements on import, manufacture, sale, transport, distribution for protecting farmers from sub standard products. There is now overwhelming evidence that these inorganic chemicals do pose a potential risk to humans and other life forms but collection of data on these effects is scanty and delayed. Valuable information can be collected by monitoring the end product of human exposure in the form of residue levels in body. Ensure uniformity in testing procedures and deregistration of outdated, hazardous pesticides for avoiding the adverse impacts. The point-of-sale quality assurance and farmers protection mechanisms in case of spurious products must be strengthened. Adopt competition promoting policies to monitor product price exploitation in view of potential effects of strengthened patent regime.

Formulate procedures to regulate sale and quality test of products sold in name of bios as most of them contain known and unknown pesticides. Pesticides are misused in agriculture where the farmer has limited knowledge on the detrimental effects of the pesticides. There is need to strengthen education and training of farmers and workers for safe use of pesticides. Need to curtail inorganic pesticide use as technologically feasible alternate methods of pest control are available to sustain crop production. Bio and botanical pesticides, bio-agents can play an important role in shifting the focus from chemical pesticides to reliable, sustainable and environment friendly options. But the pace of development of market for bio-pesticides is not impressive. Production and storage of bio-pesticides and bio-agents requires special facilities and skills, which need to be developed at all levels in the supply chain. Strengthen production centres and extend fiscal incentives for production and use of bio-pesticides and ensure quality of these bio products through standard protocols.

ORGANIC FARMING

Green Revolution technologies fuelled by agrochemicals are known to have helped to address the food security. But adoption of these inorganic chemical intensive farming practices over the past four decades have also resulted in loss of soil health, pollution and reduced food quality and health issues. Alternative farm techniques and strategies for growing crops with a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity ought to be found in the larger interest. Non-governmental organizations and individuals have started experimenting with organic methods of food production in the recent past. The demand for organic food is increasing steadily. Considering the potential environmental benefits of organic production and its compatibility with integrated agricultural approaches to rural development, organic agriculture is a development vehicle.

Conditions in dry lands make them particularly well suited to organic agriculture. A strong organizational support is a pre-requisite for further penetration of organic agriculture into India. Farmers still face institutional and economic constraints to reach the stage of being certified organic producers, and participate in market to get premium for the produce. Need for support for integration of livestock and crop production as livestock is an integral part of agriculture and has profound influence on its sustainability, the livestock component of the farming system is crucial to help maintain soil fertility, supply of draught power and food for the family. Need for policy support for recycling crop residues and to prevent wastage through burning. Alternatives to pesticides are to be found viable in the long-run and hence, a concerted effort needs to be put in. Support for establishment of sufficient laboratories for production of bio-fertilizers, bio-agents and bio pesticides and creating awareness among farmer on their use.

Encourage planting of neem trees in large number in social forest schemes as its seed is known to best botanical pesticide. Fix quality standards for bio-manures, bio-fertilizers, and bio and botanical pesticides and ensure quality control .Need for institutional support for a low-cost, hassle-free certification process. Farming community needs to be jointly sensitized and mobilized to take organic farming forward. Domestic marketing need to be developed through cooperatives and strengthen small farmer organizations and provide them with technical assistance to increase productivity for the cost-competitive market and to provide help in improving the quality of produce in order to capture value addition in the supply chain. Constitute an apex body for providing centralized services and expertise for the increasing organic food production and consumption.

Multidisciplinary effort is made for enhancing scientific inputs, through research and validation of field results of practicing farmers in organic farming. Need for identification of crops for cultivation in organic method and products which have export potential. Address the inadequacies in certifying agencies, trade channels and the infrastructure facilities for verification leading to certification of the farms. Encourage producer organizations to get accredited for inspection and certification in accordance with the NSOP for simplification of the process.

A vigorous campaign to highlight the benefits of organic farming against the conventional system is essential to increase awareness of both farmers and consumers. Initiate p-p-p mode to assist in production, procurement, processing and marketing with all other logistics with a brand name to make consumer confident on quality. strengthen research and validate the ongoing field experiences of farmers India has the potential to become a major organic producing country given the international demand for our farm products, different agro-

climatic regions for the cultivation of a number of crops, the size of the domestic market and above all the long tradition of environment friendly farming and living. An appropriate national agriculture policy, giving a prominent place to organic farming addressing the issues related to its coverage, financial support, creation of linkages among the farmers, processors, traders and consumers, inspection and certification of organic products and increasing the public awareness of the benefits of organic agriculture.

RYTHU BANDHU

Investment is the surest way to enhance agriculture productivity and also income to the farmers, besides breaking the vicious cycle of rural indebtedness. In order to ensure that the farmers do not fall again in to the debt trap, a new scheme called "Agriculture Investment Support Scheme" ("Rythu Bandhu") is proposed to be implemented from the year 2018-19 Kharif season onwards to take care of initial investment needs of every farmer. A budget of Rs.15075 Crores has been provided for the financial year 2023-24 by the Government of Telangana.

Relieving the Farmers from debt burden and not allowing them to fall in the debt trap again, Rythu Bandhu Scheme is proposed by Government of Telangana for providing Investment Support Agriculture and Horticulture crops by way of grant of Rs. 5,000/- per acre per farmer each season for purchase of inputs like Seeds, Fertilizers, Pesticides, Labour and other investments in the field operations of Farmer's choice for the crop season.

Suggestions.

- The investment subsidy under the scheme is restricted to small and marginal owner cultivators up to 5 acres of land.
- Tenant farmers who does not own land also to be extended the benefit of investment subsidy who are cultivating upto 5 acres of land.
- Higher investment subsidy(Rs 10000 per acre) to small and marginal farmers to be provided who are cultivating fallow and cultivable waste lands for the first time.

RYTHU BIMA

Agriculture in Telangana State is characterized by poor productivity and production owing to frequent occurrence of droughts, lesser technological penetration and poor investment

capacity of the famers, resulting in lower levels of income and social security to the farmers. The majority of the farmers are small, marginal and resource poor, dependent solely on farming for their livelihood.

Keeping this in view, in order to ensure the economic and social security to the farmers, the Government of Telangana has conceptualized and implementing an innovative scheme named as Farmers Group Life Insurance Scheme (Rythu Bima) in addition to other initiatives in agriculture sector. This scheme is first of its kind and unique in the country as it is implemented based on farmer-wise online land data base through Information Technology and Online Portals and MIS that are being used by all the outreach officers for effective and efficient implementation.

The main objective of the Farmers Group Life Insurance Scheme (Rythu Bima), is to provide financial relief and social security to the family members/ dependents, in case of loss of farmer's life due to any reason. In the event of the loss of the farmer life, their families are facing severe financial problems even for their day-to-day needs. The farmers Group Life Insurance Scheme ensures financial security and relief to the bereaved members of the farmer's family. Farmers in the age group of 18 to 59 years are eligible for enroll under the scheme. The entire premium is paid by the government to the Life Insurance Corporation of India (Largest public sector PSU for Insurance in India).In the event of the death of the enrolled farmer due to any cause including natural death, the insured amount of 5.00 Lakhs INR (Approx. USD 6928) is deposited into the designated nominee account within (10) days. This scheme has a tremendous impact on the lives of the bereaved families and helping their livelihoods, since most of them are resource poor small farmers and belong to weaker sections of the society.

This scheme has been implemented through the Information Technology with development of Online Portals and MIS developed by National Informatics Centre (NIC). The uniqueness of this scheme is that, the nominee is not required to approach any office for the settlement of claim amount. The outreach officers at village level collects data from revenue department in the event of loss of life of any farmer and submitted to the LIC on behalf of designated nominee of the farmer. The claimed amount would be transferred through RTGS into nominees account.

Suggestions

- Tenant farmers also to be covered

Dharani

Dharani is an integrated land records management system introduced by the Revenue Department of Telangana. This online portal combines land registration and administration services, acting as a single source for land parcels and discharge land-related functions in an effective and efficient manner. Users can also view the land status online on the Dharani Portal.

Expected outcomes of the Dharani system:

- Efficient land administration via workflow automation, backend digitization, integration of different applications of various departments and adoption of innovative modern technology interventions
- Combining registration and land records functions pertaining to the agricultural land
- Single window to manage land records, which includes maintenance and updating of textual records, survey, maps, etc.
- Single source of truth for all data relating to land records
- Automatic trigger for mutation after registration or on the basis of a request from the citizens or the department
- Real time update of textual data.

About Revenue Department: The Revenue Department of Telangana plays a crucial role in the overall administration in the state, right from the village level up to the district level. The primary objective of the department is to maintain village revenue records, update the revenue records and collect different cesses, such as NALA and water tax. It also administers a number of acts and rules in the state with regards to land and civil administration. The Revenue Department plays an active role in the execution of different schemes in the state.

Major issues:

- Missing survey numbers in certain villages observed even though farmers own lands as per previous passbooks.
- Several pattedars lands were placed in prohibited list even though a small portion of land belongs to government or temple lands
- No previous histories of land records are available in the portal. In the absence of link documents or records, it is very difficult to trace out the title of property.
- Many complaints lodged in this regard for rectification were not properly addressed by the government.

- Services of government digital surveyors are not available and fixation of boundaries for survey numbers is a big problem
- Many agriculture lands in villages/ towns were reshaped as residential land. No such information is available in the portal. Presently it is being captured as agriculture land and owners are getting Rythu bandhu amount even though the area is under residential status in reality.
- Consistent loopholes/ failures still continue to affect land transactions in rural areas even 2-3 years after implementation of dharani portal.

ANIMAL HUSBANDRY

As the Livestock is the important sources of livelihood and engage women in much larger proportion the issues, breed, fodder, feed and health care, be addressed to enhance the income of livestock owners .Need more focus on development of animal husbandry, poultry, dairying and aqua-culture and receive priority for diversifying agriculture A national livestock breeding strategy be evolved with thrust on genetic up gradation of indigenous cattle and buffaloes for special biological and economic traits using proven high quality pedigreed bulls. Such strategies also need to meet the requirements of milk, egg and livestock products and to enhance the role of draught animals as a source of energy for farming operations.

Crop livestock mixed farming systems are promoted for encouraging production of organic manures. Livestock insurance also be revamped and made accessible to all farmers .Major thrust be on genetic up gradation of indigenous/native cattle and buffaloes using high quality pedigreed bulls. Newer breeding and reproductive technologies be adopted for faster implementation of various breed improvement programs. Restructure and strengthen the already created facilities for effective utilization and for ensuring optimal services.

Endemic diseases in livestock and poultry be identified and preventive vaccination be made mandatory with initiation of bio security protocols for prevention of diseases having zoonotic transmission. Generation and dissemination of appropriate technologies in the field of animal production as also health care to enhance production and productivity levels be given greater attention.

Cultivation of fodder crops and fodder trees is encouraged to meet the feed and fodder requirements and to improve animal nutrition and welfare. A relook must be done on the viability of pastoralism considering the shrinking and degradation of grazing lands and planning for rehabilitation of rearers and pastoralists into related professions. Animal health system is strengthened and disease-free zones created.

Mobile veterinary clinic with provision for vaccination and facilities to generate awareness of farmers regarding various livestock management issues be promoted to improve outreach. All private laboratories and industries involved in animal related research and production are regularly supervised for ethical, environmental and animal cum farmer welfare issues. The involvement of cooperatives and private sector is encouraged for development of dairy. Milk supply chain needs to be shifted from unorganized sector to an organized sector based on cooperatives to ensure fair pricing, insulate producers from market fluctuations, exploitation by middlemen and quality improvement.

Need to shift from fat content-based milk to somatic cell count based collection of milk in order to make it export worthy. Poultry rearing would be recognized as an agricultural activity and appropriate support be provided to backyard poultry farmers to promote clusters or small holders' poultry estates. Quarantine and testing facilities for imported birds and vaccines at all ports of entry be established and strengthened.

A system of rewards and incentives is introduced to enable and motivate people to conserve local breeds under the Biological Diversity Act. Documentation of indigenous knowledge on animal maintenance and breeding special biological and economic traits and community-based conservation and development of indigenous livestock breeds and species be encouraged.

An integrated approach to marine and inland fisheries is adopted. Deep sea fishing industry is developed to take advantage of the vast potential of country's coastal line .Strengthen capacity building centres to impart training to fisher families on capture /culture / consumption chain, quality.

Need to provide centralized services to support the decentralized capture and culture Fisheries sectors. Raise bio-shields to safeguard the lives and livelihoods of coastal fisher families in the event of cyclonic storms and seawater inundation during calamities. Need to evolve policy for the management and economic use of the Exclusive Economic Zone (EEZ) for a variety of economic activities, including fisheries. Contingency plans are prepared to maintain the productivity and welfare of livestock and poultry sector during various types of natural calamities and drought conditions.

Dairy:

The following support is available by way of programmes of Government of India for dairy related activities:

- Dairy Entrepreneurship Development Scheme (DEDS) wherein subsidy ranging between 25%-33% is available for different activities under dairy sector, viz., rearing of dairy animals, heifer cattle, chilling plants, milking machines, etc.

- Dairy Infrastructure Development Fund set up under NABARD for supporting activities like milk processing facility and other infrastructure to benefit the farmers through value addition.

- National Action Plan for Dairy Development envisaging doubling the income of dairy farmers through increasing organized milk handling from 20% at present to 50% by 2022- 23. The action plan includes creation of milk chilling facilities including bulk milk cooling, processing infrastructure, and value addition, organization of milk collection centres/dairy cooperative societies, milk transportation facility and marketing infrastructure to meet the requirement of increased milk handling.

- Implementing National Dairy Plan (NDP) which is a scientifically planned multistate initiative to increase productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk through scientific breeding and feeding and to provide rural milk producers with greater access to the organized milk processing sector

- Improving fodder production by way of incentives to farmers, scientific cultivation, etc.

- Implementing National Mission on Bovine Productivity NMBP in order to improve productivity and enhance milk production, thereby making dairying more remunerative to the farmers

- Implementing Rashtriya Gokul Mission with the aim to conserve and develop indigenous breeds in a scientific and holistic

- Establishment of E-Pashu Haat portal under Rashtriya Gokul Mission. The portal would play a vital role in making available quality bovine germ plasm by linking farmers with livestock rearers

The four major Milk producers Co-operative societies are Telangana State Dairy Development Cooperative Federation Limited (Vijaya Dairy), The Nalgonda- Ranga Reddy Milk Producers Mutually Aided Coop.Union Ltd. (NARMUL), Nalgonda-Ranga Reddy, Karimnagar dairy, Karimnagar and Mulukanoor Women's Mutually Aided Milk Producers Cooperative Union Limited, Mulkanoor.

The state government has also announced that the government through Dairy Development Societies would provide 50 percent subsidy for buying a Buffalo by the farmer and the subsidy would be 75 percent if the Dairy farmers happen to be from the SC/ST community. In Telangana, about 105.68 lakh litres of milk is produced every day where about 48 per cent is procured by milk producers for manufacturing various products ranging from processed milk, curd and buttermilk to butter, ghee, paneer and sweets. The remaining 52 per cent milk is consumed by people with about 60 per cent distributed through milk vendors and the remaining 40 per cent distributed through dairies. The process of commercialization has made a beginning in Dairy Sector in the State. However, there has not been necessary up scaling of household level dairying activities.

Large scale investments are required in converting the homestead to commercially viable dairy units run on commercial scale. Further the major challenge faced by Dairy Sector in the State is integration of Small and Marginal farmers in dairy value chain i.e milk procurement/processing & marketing.

POULTRY

Telangana, a market leader in the poultry and seed business, has identified these as a thrust area and core sector for the processing and nutrition products including diary, poultry, meat and fisheries. Broiler farming is concentrated in and around Hyderabad and an output of around 66,000 MT per month is generated here making it the Poultry Bowl of India. Telangana stands second in egg production and fifth in broilers. The State produces 3.2 crore eggs per day. The poultry industry contributes about `12,000 crore to the State GDP and provides employment to about six lakh people.

The State has about 2,000 layer farms, 6,000 broiler farmers. There are also about 1,000 feed mixing plants. The layer bird population is about 4.25 crore out of the total 25 crore birds in the country. About 1.8 crore eggs are consumed in the State per day taking the per capita consumption in the State to 178 eggs against 69 eggs across the country. About 1.4 crore eggs are sent to neighbouring States. The chicken consumption in the State is at 8.21 kg, higher than the 3.75 kg national average. Telangana stood first in egg consumption and broiler breeding, second in commercial layers, third in layers breeding and fifth in commercial broilers.

SHEEP AND GOAT

Among livestock, Small Ruminants play a major role in the enhancement of rural economy mainly of poor and backward communities. The nutritional security provided by livestock rearing is enormous. Nearly 29 lakh families in the state are getting direct livelihood opportunities through this sector. Sheep breeding and rearing has the potential to offer

employment to the landless labour, small and marginal farmers etc. The flagship programmes implemented by the State Government are – Small Ruminant Development Programme, Sheep Rearing Development Scheme (SRDS).

FISHERIES

Fisheries are one of the fast growing sectors generating income and employment in the country. It is contributing about 2.8 per cent in gross value added of agriculture and allied sectors during 2017-18. The Telangana state is ranked 3rd in terms of inland fishery resources after Karnataka and Tamil Nadu and ranked 7th in terms of fish production.

Fisheries sector also plays an important role in the overall socio-economic development of fishermen families by providing nutrition, food and livelihood security. The state has vast and diverse resources in the form of tanks and ponds (both seasonal and perennial), reservoirs, rivers and canals. Fisheries are one of the fastest growing sectors generating income and employment. It plays an important role in the overall socio-economic development of fishermen families in Telangana by providing nutrition, food security and livelihood security and contributing to 0.5% to the State GDP during 2018-19.

There are 3.04 lakh active fishermen. The state is the third largest in inland water resources in the country. There are 24,189 water bodies which are suitable for fish farming with 5.72 lakh hectare of water spread area. In addition to the above irrigation sources, there are 661 aquaculture ponds covering 830 hectare and 4,818 km, long canals and rivers.

Government of Telangana has undertaken various initiatives for the development of fisheries sector viz.,

Implementation of Integrated Fisheries Development Scheme through Telangana State Fishermen Cooperative Societies Federation Ltd., Hyderabad with 1000 crore outlay for enhancing fish seed & fish production by providing harvesting & marketing support, infrastructure development, innovative projects and capacity building of fishers, etc

Installation of cages in various Reservoirs of Telangana. Stocking of Fish Seed and Prawn Juveniles in Reservoirs & Tanks on 100% grant which are resulting in increased production and productivity of fish. Due to the above proactive initiatives of the state government, the fish & prawn production increased substantially.

Infrastructure Available in the State.

There are 19 Fish Seed Farms functioning in the State out of which 6 farms are fish seed production and rearing farms having hatcheries for spawn production & remaining farms are

fish seed rearing farms. There are 11 fish seed production and rearing farms in private sector in the State besides several small hatcheries coming up on their own or as part of Blue Revolution Scheme activity. So far, 261.59 lakh advance Fry 35-40 mm has been produced in the Departmental fish seed farm. There are around 3732 fishermen cooperative societies with a membership of more than 2.39 lakh fishermen. Besides there are 9 district level fishermen cooperative societies operating in the state.

The state is blessed with 78 reservoirs (under small, medium and large categories) with a cumulative water spread of 1.85 lakh ha. Besides there are more than 35000 seasonal tank with a cumulative water spread area of 4.01 lakh, For promotion of fish sale in hygienic condition, construction of fish markets is taken up by the Department. 84 Fish Markets are sanctioned with a total financial outlay of `760.89 lakh till now. Out of which 29 markets have been completed the remaining are at different stages.

The NFDB, Hyderabad has sanctioned 5 wholesale markets, one at Karimnagar and four in Hyderabad at Begumbazar, Kukatpally, Nacharam (Now shifted to Mallaram) and Domalguda State Focus Paper 2020-21 Telangana State 58 (Now shifted to Chilkalguda) with a total cost of `997.20 lakh and released an amount of `498.60 lakh to the concerned Municipalities. Out of 5 markets sanctioned, one at Karimnagar was completed and other are in various stages of development. The State Government is developing the fisheries infrastructure with support available under centrally sponsored schemes such as Blue revolution / RKVY. The Government has brought out state policy for promotion of cage culture. Under this initiative, 72 demo cages, 510 cages by fishermen Cooperative Societies & 160 cages by Private Entrepreneurs were installed

Construction of Storage Warehouses, Market Yards including cold storage units/ cold storage chains

Storage and marketing infrastructure plays critical role in retaining quality of agriculture produce and ensuring remunerative price to the farmers. The Agricultural Marketing Infrastructure (AMI) sub-scheme of Integrated Scheme for Agricultural marketing (ISAM) is under implementation from 22 October 2018 to 31 March 2020. The AMI sub-scheme lays special focus on developing and upgrading of Gramin Haats as GrAMs through strengthening of infrastructure. To support the farmers from input availability to market their produce, post harvest handling, the State Government has established a Farmers Development Corporation in the name of Telangana Rastra Rythu Samanvaya Samithi with a corpus fund of `500 crore. The samithi would plan for the welfare of the farming community in the state by increasing production &productivity of various crops and ensuring better prices to the farmers. The main objective of the corporation is to procure, market, process the produce whenever the

market prices are ruling below MSP. All the 44 agri market committees of Telangana have been registered under eNAM. It is high time that integrated market yards are developed with facility for storing, sorting and quality test labs plus facilitate digital payment for farmers through T Wallet. Further, there is a need for assessing and creation of additional storage capacity (covering both non-perishable and perishable agri products) and other infrastructure support over the next five years. This would include Godowns of varying storage capacity, Cold stores, Onion storage structures, Drying yards, Ripening chambers, Silos, Negotiable Warehouse Receipt (NWR) financing to farmers, etc. The estimated potential for the year 2020-21 for the sector works out to `1481.95.

Land Development, Soil Conservation, Watershed Development

Rainfall patterns in the State are highly variable both in terms of the amount and its distribution, which lead to moisture stress during critical stages of crop production and makes agriculture vulnerable. Performance of agri and allied sectors would depend on how efficiently and effectively private and public sector investments are flown into agriculture infrastructure, especially on soil and water conservation and development. Under the revised priority sector lending guidelines, RBI has envisaged for more flow of private sector funds in soil conservation and watershed development activities. Following are the major activities under the sector.

1) On-farm Development (OFD) Works in RIDF Commands and developed Commands of 'Mission Kakatiya'

Under Rural Infrastructure Development Fund (RIDF), NABARD is assisting State Government for irrigation projects. The 'Mission Kakatiya' programme envisages enhancing income for small and marginal farmers through minor irrigation infrastructure, community based irrigation management and restoration of tanks (46531 in 5 years; 9,300 every year), wherein large command areas are being developed. These offer good scope for investments under OFD works and other LD activities so as to make efficient use of irrigation water/ soil moisture. These activities require credit support from banks

2) Soil improvement by tank silt application

Red soil areas constitute about 53% of the cultivated area. These soils in many places are light textured with low water and nutrient holding capacity. Productivity of these soils can be improved by application of tank silt. The tank silt excavated under Mission Kakatiya can be transported and applied in the field, for which bank credit can be extended.

3) Reclamation of Problem soils

Problem soils (saline/alkaline soil) occur in some of the erstwhile districts, viz. Mahabubnagar, Nalgonda, Warangal, Karimnagar, Medak and Khammam. These soils can be reclaimed by application of Gypsum (sodic soils), Pyrites (alkaline soils) and providing drainage in the field.

4) Farm Ponds as Water Harvesting Structures

Erratic behaviour of monsoon entails that rainwater be harvested and stored during rainy periods for use for supplementary irrigation during dry spells. Over-exploitation of ground water resources is resulting in black and grey blocks; conservation of rain water particularly in these blocks has assumed greater importance.

5) Watershed Development

Conservation of natural resources and promotion of sustainable climate-resilient livelihoods are better promoted through watershed approach that focuses upon a drainage basin or catchment area with reference to a common drainage point. The estimated potential for the sector comprising of land development, soil conservation and watershed development activities, etc. works out `553.36 crore for the year 2020-21. Government of Telangana is implementing watershed development projects in various districts under Integrated Watershed Management Programme (IWMP). In addition, NABARD is implementing watershed programmes, mainly through NGOs, under WDF. One Integrated Water Management Scheme through watershed approach is being implemented out of WDF, covering 5 villages in Bhadradri-Kothagudem district, over a period of 2 years (2o18-19 & 2o19-2o).

Dry land farming and Watershed development

Integrated agriculture has probably reached its limit and further sustainable increase in food production need to come from dry lands farming with watershed development and management approach. These rain-fed regions are characterized by fragile ecosystems, increasing rate of land degradation, recurrent droughts, poverty, malnutrition, low investments in development of technologies, and poor institutional infrastructure. In these dry lands judicious use of land, water, vegetation in an area for providing an answer to alleviate drought, prevent soil erosion, improve water availability and increase food, fodder, fuel and fibre on sustained basis is utmost important and these resources are managed on the watershed basis.

Dry land areas were bypassed by the Green Revolution and have experienced little growth in agricultural production for several decades. Negligence in addressing these areas leads to permanent damage to biodiversity and degradation of natural resources. Watershed development is an effective tool for addressing many of these problems and has the potential to create conditions conducive to higher agricultural productivity, while conserving natural

resources. In recent years India has looked to watershed development as a way to realize its hopes for agricultural development in rain-fed, semi-arid areas.

Adopt holistic participatory consortium approach for integrated development of rain-fed areas for conservation of rain water, augmentation of biomass production through agro and farm forestry, crop diversification and intensification .Initiate micro-enterprises and integrate on-farm and off-farm activities for generating consistent source of income and support for livelihoods.

Need to review the scale of watershed as most of the successful watershed programmes in India have been implemented on a small scale in a few villages and through the collaborative and concerted efforts. Internalize the comparative strengths of different organizations involved in development of watersheds in order to complement the overall development process by minimizing conflicts. Ensure universal but flexible guidelines at higher levels of governance and the necessary flexibility and adaptability at the grassroots level to manage inherent contradiction sand conflicts through adequately designed resolution mechanisms.

Develop explicitly spelled out priorities for livestock management in watershed programmes as livestock is important for resource poor farmers. Incentivize farmers on recycling of crop residues and organics, fertilizers and pesticides. Though India has experience of more than three decades in the area of publicly financed soil and water conservation and natural resources based rural development, the impact of such interventions was slow, inequitable and short-lived.

Serious thought need to be given to streamline the policy and implementation guidelines on:(i) recognizing reputed NGOs/ registered institutions as equal partners diffusing monopoly,(ii) replacing the sectoral approach with formation of multidisciplinary watershed development teams and user groups to ensure wider participation, (iii) Making financial systems more transparent, (iv) Developing suitable exit protocols, (v) skill enhancing activities of the local communities and service providers, (vi) Prioritizing the landless for micro-enterprise activities to minimize inequalities.

Agriculture biotechnology

Agriculture biotechnology often referred to as 'bio-agriculture/ agri biotechnology applies a range of scientific tools including genetic engineering, to different aspects of agriculture in order to create, improve/modify plants, animals and microorganisms. It has emerged as a new source of genetic diversity for crop improvement and has led to the development of drought tolerant crop varieties.

Various products developed using bio technology are GM crops like Bt Cotton, Bt Brinjal, production of vaccines for animal disease control, Bio fertilizers, Bio pesticides, Bio control agents etc. Introduction of Bt Cotton and its ready adoption by farming community has resulted in spread of biotech seed industry in the country. BT cotton, with insecticidal protein Cry1Ac, was introduced in India in 200 In Kharif 2017-18, cotton was grown over a total area of 12.25 million hectares. Of this, 89 per cent of the area was covered with Bt cotton. The large-scale cultivation of BT cotton also favours evolution of resistance in target pests. BT cotton is extensively grown in Telangana

Indian organic market has been progressing steadily with 25% CAGR as compared to 16% global growth rates. Organic farming activities are increasing in the State with large areas being brought under organic cultivation. The entire value chain under organic farming including production of inputs need credit support from banks. Orchards, sugar mills, fruit market areas and farmer aggregates like PACS, Producer Societies, offer potential for setting up of Commercial Production units of Organic Inputs, viz. Biofertilizer, Vermi compost/ vermi hatcheries and Compost from vegetables and fruits, etc. The estimated potential for the sector comprising of credit to Agriculture Infrastructure others works out `449.66 crore for the year 2020-21

AGRI CLINICS & AGRIBUSINESS CENTRES

Agri-Clinics are envisaged to provide expert advice and services to farmers on various aspects to enhance productivity of crops/animals and increase the incomes of farmers. Agri-Clinics provide support to Soil health, Cropping practices, Plant protection, Crop insurance, Post-harvest technology, Clinical services for animals, feed and fodder management, Prices of various crops in the market, etc.

Agri-Business Centres are commercial units of agri-ventures established by trained agriculture professionals. Such ventures can include maintenance and custom hiring of farm equipment, sale of inputs and other services in agriculture and allied areas, including post harvest management and market linkages for income generation and entrepreneurship development.

The agri clinics and agribusiness centres scheme has empowered rural and urban youth by offering them professional and technical expertise for establishing their own agri-venture and by assisting the farming community by timely supplying inputs. The ACABCs scheme has gained popularity among agricultural graduates, due to specialized training, credit availability, subsidies, and handholding support for the agri-venture startup.

SELF HELP GROUPS (SHG)

Women play a pivotal role in agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and working for wages in agricultural or other rural enterprises etc.

The process of economic empowerment among women can be institutionalized through Self Help Groups. The role played by Self Help Groups in the field of women empowerment is being recognized these days. The Self Help Groups are voluntary association of people formed to attain a collective goal. The members of SHGs are common in respect to social background, heritage, caste or traditional occupation come together for a common cause to raise and manage resources for the benefit of the group members. These Self Help Group is a registered or unregistered group of micro entrepreneurs having homogeneous social and economic backgrounds; voluntarily coming together to save regular small sums of money, mutually agreeing to contribute to a common fund and meet their emergency needs on the basis of mutual help.

Stree Nidhi being a cooperative institution was successful in providing low cost and timely credit on the strength of cooperative institutions at lower level. Women SHGs (self-help groups) in Telangana will be receiving Rs 2710 crore in the financial year23-24 from Stree Nidhi Credit Cooperative Federation

The Society for Elimination of Rural Poverty (SERP) Government of Telangana is a sensitive supportive structure to facilitate social mobilization of rural poor women in 30 rural districts. It works by building and nurturing Self Help Groups (SHGs) of women and their federations. SERP works on a comprehensive multi dimensional poverty alleviation strategy by focusing on

- Building strong / sustainable institutions for the poor,
- Financial Access - Leveraging resources through commercial banks,
- Livelihood value chain - sustainable and diversified livelihoods,
- Human Development value chain - and
- Accessing social safety nets and entitlements.

Suggestions:

- Income generating activities to be promoted.

- Marketing and other infrastructure facilities to be provided.
- Interest subsidy on income generating projects to be extended.

Weather forecasting

Weather plays an important role in agricultural production. It has a profound influence on crop growth, incidence of pests and diseases and yield. The quality of crop produce during movement from field to storage and transport to market also depends on weather. Generic information about weather need to be translated into location- specific land-use advice, based on cropping patterns and water availability .Deviations from normal weather occur with higher frequencies in almost all years, areas and seasons. Occurrences of erratic weather are beyond human control. It is possible, however, to mitigate the effects of adverse weather if a forecast of the expected weather can be obtained in time.

The rapid advances in information technology and its spread to rural areas provide better opportunities to meet the rising demand among farmers for timely and accurate weather forecasts. Strengthen weather forecast based advisories and warning systems establishing meteorological observatories at block level and disseminated accurately and in time with smart extension methods. Panel of specialists in a topic of agricultural and animal science need to be constituted for the preparation of agro-meteorological advisory services under IMD and to actively monitor the state of crops, the occurrence of pests, and extreme weather events.

Need to explore advances in technologies, such as monitoring tools that use satellites, networks of automatic weather stations, radars and forecasting tools like NWP techniques. Explore mobile based interactive communication systems for the dissemination of advisories for farmers on their farm-specific problems. Web-based and Internet system also be used in a non-interactive mode for the dissemination of agro meteorological services .As weather information is instrumental for precision agriculture, use of satellite and aerial imagery, GPS guidance, sensors, drones is necessary under information technology systems. While focusing on use of new systems, need to update and upgrade the traditional methods adopted in weather forecasting

Farm machinery.

Indian agriculture landscape is complex and unique in many ways. This sector is undergoing a shift and transforming gradually from animal power dominant situation into fuel dependent mechanized system. Decline in drought animal population and intervention of government policy for labour and investment into infrastructure sector have pushed the mechanization as

these programs have diverted labour from agriculture. Shortage of skilled labor for agricultural activities has further led to the growing demand for agricultural equipment.

Farm mechanization has the potential to play a critical role in increasing farm productivity and improving rural employment generation. It started with improvement of hand tools and improved bullock-drawn implements and gradually leading to development of many larger machinery and implements. Support to farmers on all agricultural machinery and local made bullock drawn implements be increased.

Need for investment in the supply chain of machinery as increasing food production requires resource-friendly methods and development of new mechanization technology. Encourage establishment of Farmer's Cooperatives and Farm Machinery Utilization Centers to extend the benefits of farm machinery utilization through custom hiring and multi-farm use as average size of operational holdings is shrinking making individual ownership of agriculture machinery economically unviable. Develop a legislative and structural framework that encourages custom hiring (renting) services so as to facilitate better capacity utilization of farm equipment.

Arrange training, financial incentives, subsidized loans and low interest credit to encourage procurement of high capacity equipment by custom operators to ensure sufficient turnover and income. Mechanization need innovative solutions for scaling up as skewed and seasonal usage is resulting in low economic viability. Need to focus public research efforts towards design development and commercialization of farm machinery suitable for different types of soils, farm sizes and diverse crops. Focus on standardization and quality control for farm equipment to protect the interest of farmer and increase usage. Need to focus on improvement of indigenous implements to increase their efficiency. The implements and machinery be simple in construction, easy to operate and be manufactured or repaired locally. Though mechanization has improved the state of agriculture in certain parts of the country, it is still a bottom of the pyramid story and it will remain so unless concrete measures are initiated.

IRRIGATION

Irrigation is one of the most important backward linkages to Agriculture. Assured irrigation is critical for crop cultivation and farmer incomes, because it boosts productivity and protects farmers from poor monsoons. In addition, assured irrigation can improve water usage efficiency and help maintain groundwater levels. The Government of Telangana has adopted a comprehensive irrigation development strategy to provide irrigation facilities to about125 lakh acres of land across the state. The government has also taken up several measures and adopted six pronged strategy for the completion of pending irrigation projects, on a fast-track. Irrigation in Telangana is dependent on two major rivers, Godavari and Krishna having an allocation of

1266.94 TMC (967.94 TMC & 299 TMC in Godavari River and Krishna River respectively) of assured water besides 500 TMC of surplus waters in both the rivers. Government of Telangana has undertaken the following measures.

- Speedy completion of ongoing projects which had earlier been neglected for years, in the erstwhile combined state of Andhra Pradesh.
- Modernization of old Projects like Nagarjuna Sagar, Nizam Sagar and Sri Ram Sagar Projects etc step by step.
- Restoration of all Minor Irrigation Tanks and water Bodies in the state under 'Mission Kakatiya'.
- Linking of MI tanks with major and medium projects by construction of sluices and check dams for rejuvenation of streams and rivers flowing through the project command areas.
- Taking up Irrigation Projects which were in the pipeline before Telangana state formation, like Palmuru Ranga Reddy LIS and Sita Rama Lift Irrigation Projects.
- Effective operation and maintenance of irrigation systems for achieving better water use efficiency and crop productivity.

An irrigation potential of 21.32 lakh acres has been created in the state through 9 completed Major Irrigation Projects. Sri Ramasagar Stage I project with an IP of 9.68 lakh acres is the largest Existing Major irrigation projects, followed by the Nagarjuna Sagar Project with an irrigation potential of 6.40 lakh acres. There are 24 ongoing major irrigation projects in the state with contemplated ayacut of 69.02lakh acres and so far, an IP of 17.85 lakh acres stands created.

The Kaleshwaram Irrigation Project Corporation Limited (KIPCL) is a Special Purpose Vehicle launched by the Government of Telangana in 2015 for implementing the Kaleshwaram Lift Irrigation Project in Telangana. The Kaleshwaram Project is a multipurpose project envisaging construction of barrages across river Godavari at Medigadda, Annaram & Sundilla and conveying water to a command area spread over 13 districts of Telangana through components such as canals, tunnels, lift systems (involving surge pools, draft tubes, pump houses, EM&HM, associated civil works, delivery mains/pressure mains, delivery cisterns), reservoirs and distributory network. The Project proposes to bring under irrigation, a new ayacut of 18, 25,700 acres (7,38,851 ha) and stabilize existing ayacut of about 18,82,970 acres (7,62,028ha) . Bhaktha Ramadasu Lift Irrigation Scheme is commissioned to provide irrigation facilities to

58,958 acres upland and drought prone areas which were not covered by the NSP Left canal in Khammam and Palair constituencies of Khammam District but localized at tail end of DBM 60 of SRSP Stage–II.

Palamuru – Rangareddy Lift irrigation scheme envisages to irrigate an ayacut of 12,30,000 acres in upland areas of Nagar Kurnool, Mahabubnagar, Rangareddy, Vikarabad and Nalgonda districts and drinking water requirement to en route villages, with an estimated cost of the project is `35,200 crore. The Government has prioritized restoration of minor irrigation tanks so that they can again store water to the extent of their original capacity and in order to effectively utilize 255 TMC of water allocated for the minor irrigation sector under the Godavari and Krishna River basins. The minimum ayacut that can be irrigated with the allocated water could be about 20 lakh acre. However, the ayacut now being irrigated under minor irrigation tanks is only about 9-10 lakh acre. Mission Kakatiya aims at bridging the gap ayacut of about 10 lakh acres. So far, total Ayacut including stabilization for the completed works is 14.15 lakh acres.

The total contemplated ayacut for 663Small LI Schemes is 5.05 lakh acres and so far an IP of 4.59 Lakh Acres has been created under 640 L.I. Schemes and 23 LI Schemes are contemplated a total IP of 0.46 Lakh acres which are in progress.

Scheme wise, Khammam district has highest number of LI Schemes (139 schemes, i.e.20.96% of the total schemes) with an IP of 0.506 lakh acres. Khammam, Bhadradri Kothagudem, Suryapet, Nizamabad, and Nirmal –Districts together account for more than 59% of the total LI schemes in the state.

Based on Irrigation potential, Nizamabad district with an IP of 0.64 lakh acres (12.68% of the total Contemplated IP) with 44 schemes has the highest Irrigation potential. Nizamabad, Suryapet, Khammam, Nirmal, and Wanaparthy -- Districts together account for more than 51% of the total irrigation potential in the state

Despite large-scale investment and expansion of irrigation facilities it is a matter of serious concern that about 60 per cent of the total cropped area is still dependent on rain. The gap between the potential tapped and the potential possible is not only large, but widening. The major causes for these gaps are poor maintenance of the canal system, lack of participatory management, changing land use pattern, deviation from the designated cropping pattern and delay in the development of the command area .Groundwater has become the main source of growth in irrigated area and majority of farmers depend on this source. This has also encouraged farmers to overdraw water from deep aquifers, causing substantial depletion of the water table. Therefore, rainwater harvesting and aquifer recharge would be accorded priority.

There has been unprecedented crop diversification, due to unregulated groundwater development. The preference for water-intensive crops like rice, sugarcane, is high in regions known only for groundwater availability, which is heading towards irrigation water crisis.

Necessary legislative measures to regulate and control of ground water be taken up simultaneously. Emphasis is given for Groundwater pollution and understanding of interrelationship of hydro-geological, agro-climatic, socioeconomic and policy factors for sustainable development and equitable distribution of this precious natural resource.

A water literacy movement is launched and regulations be put in place for the sustainable use of ground water. Integrated and coordinated development of surface and ground water resources and there conjunctive use be envisaged Need to create awareness among all stakeholders that water is finite, scarce, costly and precious and, therefore, should be efficiently managed for sustainable development .Strategic actions need to be initiated to complete identified projects and improve the productivity and efficiency of irrigation systems as most of the irrigation projects are operating at an overall efficiency of 35 per cent against the achievable efficiency of more than 50 per cent.

Need focus on proper operation and maintenance, distribution systems, completion of CAD works, cropping pattern and diversion of irrigable land for other purpose. Need initiation of water reforms, enactment of laws and establishing institutions to enforce them, through consultations with the farmers. Policy interventionists and planners of water resource development and management need to seek participation of farmers as ultimate water users who can be organized into legal bodies, Water Users Associations, and making them responsible to manage irrigation system. Focus attention to promote improved water management practices in irrigation projects suffering from operational deficiencies and integrated water resources development and management approach .Considering declining per capita availability and threat of river basins turning water scarce' well- coordinated and planned measures need to be explored and adopted for storing run-off water during the rainy season.

Strengthen existing irrigation infrastructure, increase water use efficiency and productivity, raise crops requiring less-water, make rainwater harvesting mandatory. Need attention to water legislation, water conservation, water use efficiency, water harvesting and recycling and infrastructure. Proper on-farm management of water resources for the optimum use of irrigation potential is promoted Strengthen coordination between the departments of agriculture and irrigation and farmers at the project formulation stage to formulate appropriate cropping patterns based on water availability and soil characteristics.

Need for non-judiciary conflict resolution organizations to resolve many conflicts and have win-win situations for all parties in the conflict without relying on long-delayed judicial processes. Wastewater recycling is an important source not only for raising fodder and other crops but for breeding fish. Industries can be made to give back the water by proper methods of recycling. With very large shore line using seawater productively requires more consideration for agro forestry and aqua farming .Linking of rivers, particularly the peninsular links, could be one option for easing the water stress in some locations where the links are economically viable and environmentally sustainable.

Though there is debate on social costs and benefits, pros and cons it is essential to consider river linking to meet water needs. Need medium term measures like providing targeted subsidies for micro-irrigation systems , investing in rainwater harvesting for supplementary irrigation in rain-fed areas for enhanced crop yields and water productivity It is important to develop water-use efficient easy-to-adopt technologies, which enhances productivity per drop of water and ensures water and food security for coming generations Need to consider non-water factors of production understanding virtual water trade as it can ease the stress in water-scarce regions, with policy and institutional framework to change cropping patterns in different regions.

Bridging the gap between irrigation potential created and utilized, completion of all on-going projects, restoration and modernization of irrigation infrastructure, evolving and implementing an integrated plan of augmentation and management of national water resources need to receive special attention for augmenting the availability and use of irrigation water. Considering the concern for the environment, ecology, social/human, and rights relating to water, shift the subject of water to the concurrent list of the Constitution and formulate appropriate policies.

CREDIT

Institutional credit played a very important role in the development of agricultural sector as it has been on the philosophy of “growth with equity'. The banking systems Endeavour to meet the large credit potential needed to raise agriculture to higher thresholds and for the growth of rural and agri-business enterprises and employment. It acted as a means to provide control over resources to enable the farmers to acquire the required capital for increasing agricultural production. Over a period of time, impressive spread has been accomplished in terms of the scale and outreach of institutional framework for agricultural credit.

Despite the significant strides the quantum of flow of financial resources to agriculture continues to be inadequate. Share of marginal and small farmers in the total credit has been shrinking. Incentivized short-term production credit over long-term credit delivery to the agriculture sector continues to be inadequate. Need for concerted efforts to augment the flow of credit to agriculture, particularly lower strata, alongside exploring new innovations in product design and methods of delivery, through better use of technology and related processes.

Central and state governments need to increase their capital expenditure to stimulate the demand for investment credit in agriculture and undertake a holistic review of agricultural policies and input subsidies in order to improve the overall viability and sustainability of agriculture. State governments need to reconsider loan waiver as it did not address the underlying causes of farm distress and destroyed credit culture, potentially harming farmers' interest in the medium to long term.

Separate lending targets be set for allied activities and banks should not insist on land records for credit as allied activities (livestock, fisheries) receive only 10% of the total agricultural credit while they contribute 40% of the agricultural output. Need a proper definition for farmers doing allied activities, as the Census defines a farmer based on his landholding.

Need to evolve mechanism to extend institutional credit to Tenant farmers, sharecroppers and landless labour that rely on non-institutional sources due to lack of collateral security, poor credit rating, and involvement in unviable subsistence agriculture. Need for a proper land leasing frame work and land records. State governments to timely complete the process of digitization and updating of land records and adopt reforms based on the Model Land Leasing Act. Central government need set up a federal institution, on the lines of the GST Council, for building consensus, suggest and implement reforms in agriculture. Share of small and marginal farmers in total crop credit is less than their share in land operated. Lending target for small and marginal farmers should be revised. Priority sector lending norms be reviewed and suitable measures be introduced for improving the credit off-take in regions with low credit to GDP ratio as some states getting higher credit as a proportion of their agricultural GDP are likely to divert credit for non-agricultural purposes.

Steps are taken for extensive coverage of farmers under the Kisan Credit Card Scheme and banks to provide crop loans through Kisan Credit Cards for increasing availability, flexibility and security in the flow of credit to the farmers. A personal insurance package be proposed and extended to card holders covering them against risk to life and injury. Micro Credit is promoted as an effective tool for encouraging production and to reforms and revamping of cooperative credit institutions. Awareness on credit issues among farmers is promoted and

credit counseling centers be established to provide a debt rescue packages/ rescheduling to save them from a debt track. Need to replace existing collateral requirements and assessments of credit worthiness with systems that measure repayment capacity on the basis of optimum utilization of disbursed credit. Encourage start-ups in this context which can collaborate with banking system. Cooperative credit societies are organized to make it efficient and purposeful for delivering the best in terms of rural credit and be transformed into a multi-purpose society with sufficient funding capacity. The credit institutions need to adopt procedural simplification for credit delivery through rationalization of its working pattern.

STORAGE AND MARKETING

Agricultural marketing plays an important role in stimulating production, consumption and in accelerating the pace of economic development. While the market orientation of Indian farmers has increased manifold, the improvement in the marketing system has not kept pace. There is considerable gap in the facilities available and desired in the market yards resulting in distress sales. Therefore the issue of reforms in agricultural marketing requires an immediate inquiry to safeguard the interests of Indian agriculture and small and marginal farmers.

Need for institutional innovation in agricultural marketing by way of redefining the roles of different stakeholders, use of information technologies, dismantling the trade-off and expanding the approach of APMCs to make it economically viable to the farmers.

Over the years, major changes have come into effect to improve the agricultural marketing system establishing the regulated market, marketing board, co- operative marketing institution, warehousing co-operative. However, various marketing function like grading, standardization, storage, market intelligence need to be improved to meet the present day requirement of the farmers. Strengthen information system in market for agricultural products to enable farmers get competitive price. Encourage establishment of processing plants near areas of production and make provision of capital subsidies.

Agricultural marketing and international trade in agricultural commodities are assuming importance in the background of growth of agricultural productivity and free trade. The major bottlenecks in the implementation of e-NAM, poor back-end infrastructure, lack of orientation of states to adopt and amend their APMC Acts and low awareness of the farmers about the e-NAM, need to be addressed. Private entities are attracted to invest in market infrastructure and market development process while studying the reasons for their limited participation.

More efforts need to be given to strengthen the scientific storage and warehousing facilities, development of rural roads and logistic network for transportation of agricultural produce. Assaying and certification infrastructure in the enrolled mandies be upgraded as quality certification plays an important role in online trading.

Fragmented agricultural markets make a perfect case for a unified platform like National Agricultural Market (NAM). Although facing initial hiccups for successful implementation and lesser density of e-NAM across the existing wholesale regulated markets, there is tremendous scope for its further expansion and modernization. Efforts are channelized towards development and up gradation of scientific warehouses, cold storage, refrigerated vans for perishables, awareness and training to the participants in the marketing process, high speed internet connectivity to the markets. Initiate reforms, provide more options to farmers for selling their produce, allowing the private sector, including the cooperatives, to develop markets, promote direct sales to consumers, processors and retail change suppliers/ exporters.

The Market Intervention Scheme (MIS) be strengthened to respond speedily to exigencies especially in the case of sensitive crops in the rain fed areas. The establishment of community food grains banks be promoted to help in the marketing of underutilized crops and their by generate an economic stake in the conservation of Agro-bio diversity. The food security basket is enlarged by storing and selling nutritious through the network of Public Distribution System (PDS). Terminal market for agriculture is developed in public-private partnership mode to provide better market access price realization.

The role of the Agriculture produce Market Committees and State Agriculture Marketing Boards is transformed from mere regulatory focus to promotion of grading, branding, packaging and development of markets for local produce. Infrastructure support is put in place to minimize post-harvest losses and enable agro-processing and value-edition at the village level. Farm Producer Organizations and cooperatives be encouraged for integration of farm production and retail chain, provided technical and infrastructure support and given licenses to participate in various marketing activities and agro processing.

Promote of food processing industries and value addition in agriculture through the excise exemptions and other interventions to be examined. The terms of reference and status of commission for Agricultural Costs and Prices (CACP) be reviewed to make MSP more effective. The cost of production of agricultural produces needs to be calculated taking in to account the interest on investment, including land and farmer managerial costs.

Commodity-wise strategies and arrangements for protecting the grower from adverse impact of undue price fluctuations and for promoting exports be formulated. Strategy of

diversification of agricultural produce and value addition enabling the production system to respond to external environment and creating export demand for the commodities produced in the country is evolved with a view to providing the farmers incremental income from export earnings. Form unified body to handle all sanitary phytosanitory issues of agricultural products removing control of multiple departments dealing with issues of market access in exports. Introduce scheme for provision of capital subsidy and other logistics for modernization and expansion of storages structures. Launch of Market Information Network with the objective to provide farmers latest information on price movements of agricultural commodities. Need to amend forest act for easy marketing of medicinal plants and wood trees.

CROP INSURANCE

PRADHAN MANTRI FASAL BIMA YOJANA (PMFBY)

The PMFBY was launched in 2016 and replaces all the prevailing yield insurance schemes in India. The scheme has been launched with an impetus on crop sector. The scheme has extended coverage under localized risks, post-harvest losses etc. The objective of the scheme aims at supporting sustainable production in agriculture sector by way of -

- Providing financial support to farmers suffering crop loss/damage arising out of unforeseen events
- Stabilizing the income of farmers to ensure their continuance in farming
- Encouraging farmers to adopt innovative and modern agricultural practices
- Ensuring flow of credit to the agriculture sector; which will contribute to food security, crop diversification and enhancing growth and competitiveness of agriculture sector besides protecting farmers from production risks

All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for coverage. However, farmers should have insurable interest for the notified/insured crops. The non-loanee farmers are required to submit necessary documentary evidence of land records prevailing in the State (Records of Right (RoR), Land possession Certificate (LPC) etc.) and/ or applicable contract/ agreement details/ other documents notified/ permitted by concerned State Govt. In case of sharecroppers/tenant farmers and the same should be defined by the respective States in the notification itself.

All farmers availing Seasonal Agricultural Operations (SAO) loans from Financial Institutions (i.e. loanee farmers) for the crop(s) notified are covered on compulsory basis. The Scheme is optional for the non-loanee farmers. The following risks leading to crop loss are to be covered under the scheme

YIELD LOSSES (standing crops, on notified area basis): Comprehensive risk insurance is provided to cover yield losses due to non-preventable risks, such as (i) Natural Fire and Lightning (ii)

Storm, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane, Tornado etc. (iii) Flood, Inundation and Landslide (iv) Drought, Dry spells (v) Pests/ Diseases etc..

PREVENTED SOWING (on notified area basis):- In cases where majority of the insured farmers of a notified area, having intent to sow/plant and incurred expenditure for the purpose, are prevented from sowing/planting the insured crop due to adverse weather conditions, shall be eligible for indemnity claims up to a maximum of 25% of the sum-insured.

POST-HARVEST LOSSES (individual farm basis): Coverage is available upto a maximum period of 14 days from harvesting for those crops which are kept in "cut & spread" condition to dry in the field after harvesting, against specific perils of cyclone / cyclonic rains, unseasonal rains throughout the country.

LOCALISED CALAMITIES (individual farm basis): Loss / damage resulting from occurrence of identified localized risks i.e. hailstorm, landslide, and Inundation affecting isolated farms in the notified area.

Restructured Weather Based Crop Insurance Scheme (RWBCIS)

The RWBCIS was launched on 18th February 2016 by Hon'ble Prime Minister 12 states implemented the scheme in Kharif 2016 whereas 9 states have implemented the scheme in Rabi 2016-17. Weather Based Crop Insurance Scheme (WBCIS) aims to mitigate the hardship of the insured farmers against the likelihood of financial loss on account of anticipated crop loss resulting from adverse weather conditions relating to rainfall, temperature, wind, humidity etc. WBCIS uses weather parameters as "proxy" for crop yields in compensating the cultivators for deemed crop losses. Pay-out structures are developed to the extent of losses deemed to have been suffered using the weather triggers.

Weather Station (RWS) or Backup Weather Station (BWS) as the case may be, and the claims process shall commence once the weather data is received. Claims processing are strictly as per the insurance term sheets, payout structure and the Scheme provisions. All standard Claims are processed and paid within 45 days from the end of the risk period. The scheme is being administered by Ministry of Agriculture.

Farmers can choose between WBCIS and PMFBY, and also the insurance company. PMFBY is not being implemented in Telangana presently.

Agro based industries

Agro based industries play a pivotal role in strengthening industrial and agricultural linkages, opens up new vistas of employment and increases rural incomes, prevent migration of people, help to develop backward areas , avoid wastage of perishable agricultural products. Although, agro-industrial sector has been dormant for several years in rural areas, there are places where the agro-industries are coming up in a big way. This industry is facing challenges under globalization and therefore essential to address institutional, technological and marketing constraints to improve the productivity and competitiveness of agro industries. Initiate investment reforms and complete deregulation of the food processing industry for attracting the domestic as well as foreign direct investments higher impetus be given on setting up of clusters of agro-processing units in the producing areas to reduce wastage, increased value addition and creation of off-farm employment in rural areas. Incubators for agro-based industries are established and collaboration between the producer cooperatives and the corporate sector be established for their promotion.

An interactive coupling between technology, economy, environment and society is promoted for speedy development of food and agro-processing industries and building up a substantial base for production of value added agro –products for domestic and export markets with a strong emphasis on food safety and quality. The Small Farmers Agro business Consortium (SFAC) is energized to cater the needs of farmer entrepreneurs and promote public and private investments. Promote food processing industries and value addition in agriculture to be encouraged. An institutional mechanism is established to document information on opportunities, knowledge about technologies, improve the skills among rural population, and consolidate production systems, initial hand holding in marketing and also to mediate between producers and processors to solve issues on price and supplies. The issue of small land holdings, which makes economies of scale hard to operate and creates variability in quantity and quality, be addressed in forming strong Farmer Producer Organizations and Crop Colonies. The problem with perishable produces is addressed through building cold storage structure, good road connectivity and improving both forward and backward linkages. The related groups of agro-based industries are setup in a coordinated manner for efficient utilization of by-products.

BIODIVERSITY

Access to food is the birth right of every individual. The food we eat comes from agriculture and biodiversity is the basis of agriculture and our food systems. Biodiversity contributes directly to food and nutrition security, serve as a safety-net to vulnerable households during times of crisis, provide income opportunity to the rural poor and sustain productive agricultural

ecosystems. There is need to use biodiversity in a sustainable way, to respond better to rising climate change challenges and produce food in a way that doesn't harm environment.

There is mounting and worrying evidence that the biodiversity is disappearing, putting the future of our food, livelihoods, health and environment under severe threat Many species that are vital to food and agriculture, including pollinators, soil organisms and natural enemies of pests, are rapidly disappearing. . The species that support our food systems and sustain the people cannot be recovered, once lost. Major threat for biodiversity is production intensification and wider use of external inputs and deforestation. Sustainable agriculture, therefore, is key to reversing trends that lead to biodiversity is essential for ecosystem health, sustainable food production and resilient livelihoods.

Approaches such as: multiple cropping, organic agriculture, integrated pest management, conservation agriculture, sustainable soil management, sustainable forest management, are essential for restoration of biodiversity. While the rise in these biodiversity-friendly practices is encouraging, more needs to be done to stop the loss of biodiversity as levels of coverage and protection are inadequate adoption of organic practices in farming is essential for bio-safety as indiscriminate use of inorganic chemicals in farming is causing damage to beneficial insects and soil microorganisms. Appropriate cropping plans, including millets, are essential for efficient use of natural resources and contribute for nutritional security.

Need to explore opportunities to develop more markets for biodiversity-friendly products and include millets in public distribution system creating awareness among consumers. Strengthen enabling frameworks, create incentives and benefit-sharing measures, and promote pro-biodiversity initiatives to address the core drivers of biodiversity loss. Legal, policy and institutional frameworks for the sustainable use and conservation of biodiversity though are in place they are inadequate or insufficient.

There is a need to improve collaboration among policy-makers, producer organizations, consumers, the private sector and civil-society organizations across food and agriculture and environment sectors A system of rewards and incentives be introduced to enable and motivate people to conserve local breeds and conserve indigenous knowledge on maintenance under the Biological Diversity Act. Efforts are made to catalogue conserve and use in crop improvement the abundant wealth of flora and fauna and crop landraces. For implementation of two major legislations, the protection of Plant Varieties and Farmers' Rights and the Biological Diversity Act, detailed guidelines is developed to recognize the rights of farming community.

Launch of literacy movement and training of rural and tribal families on legal aspects and prevention of gene erosion in areas rich in agro-biodiversity. Organize and support herbal bio-valleys for the conservation and sustainable use of medical plants. A nationwide program be formulated for the ex situ and in situ conservation of plant genetic resource at farmer level and farmer-level seed banks be set up in areas where traditional varieties are in danger of extinction.

National Agricultural Bio-security system (NABS) covering crops, animal husbandry, fisheries, forestry and agriculturally relevant micro-organisms be established to safe guard the income and livelihood security of farmer families, as well as the food, health and trade security of the nation.

Social and Agro forestry

Forests are our life line and lungs of environment and play an important part in the water cycle. They provide a wide range of benefits at local, national and global levels. There is need to maintain forest in one third of total land area. India is known for its rich natural resources, but the excessive anthropogenic interference has led to a tremendous pressure on forest which leads to depletion of forest. The growing requirement of rapidly increasing human population has put tremendous pressure on forest. Clearing of forest for agriculture, encroachment of people, shifting cultivation, unmanaged grazing, forest fires and fuel-wood removal are leading to reduction in forest cover. It is essential for protecting, restoring and enhancing the diminishing forest cover and responding to climate change by a combination of adaptation and mitigation measures. It is an important way of sequestering atmospheric carbon, thereby mitigating greenhouse effect and climate change.

Number of schemes, including the latest **Green** India Mission**,** are initiated through aforestation, social and agro forestry in the country have made some difference in overall forest cover. But the improvement of area under forest is nominal, with area lying around 22% only. Agro-forestry and social forestry, being the prime requisites for maintenance of ecological balance and augmentation of bio-mass production in agricultural systems, is receiving major thrust. Apart from protecting and developing the forests on barren lands, promotion of the planting of trees on non-forest land through social forestry and agro forestry programmes is important to improve the green cover of the country.

Rain-fed agro-forestry can play an important role in managing forest fringes while meeting sustainable development goals of poverty reduction, climate action, biodiversity conservation and sustainable land management. Need to hasten up extension forestry through planting of trees of multiple uses on the sides of roads, canals, railways and wastelands with participation of rural communities to create economic capital to rural people. Need to expand the concept of village forestry through afforestation of degraded government forests in close proximity to villages and on urban forestry utilizing vacant spaces and building rooftops. Need to involve community participation, including Panchayat and NGOs, in social forestry activities as it is also an effective way to offer job opportunities in the rural areas. The investment in this sector is routed through NAREGA and individuals or group be given incentives and entitlements to usufructs of trees.

Devastan lands are used for evaluating Agro forestry models and creating awareness among farmers for adoption. Need to adopt an integrated approach for the number of schemes operating under various ministries dealing with agro forestry as it has not gained the desired importance as a resource development tool due to various factors. It has not yet incentivized farmers to plan for greater tree crop interface on their farmlands due to a mix of policy, legal, market and technical barriers.

Establish institutional mechanism to provide the platform for the multi-stakeholders to jointly plan and identify the priorities and strategies, for inter-ministerial coordination, programmatic convergence, financial resources mobilization and leveraging, capacity building facilitation, and technical and management support. Need to create simple procedures to regulate the harvesting and transit of agro forestry produce within various States forming an ecological region.

Need to address the issues arising due to regulations imposed by multiple departments on felling and transit of trees apart from providing institutional credit and insurance cover for agro forestry. Easing Pan India trade restrictions and allowing free transportation of Agro forestry produce. Integrate wood/agri-based livelihood support options including value addition and income generation for self-reliance amongst farmers to be formulated. Standardization of suitable models for estimating carbon sequestration potential of agro forestry systems and scope of C trading along with capacity building of technical personnel on Carbon trading. Standardization, refinement and dissemination of agro forestry based amelioration technologies for problem soils. Development, standardization and adoption of agro forestry models linked with market for enhancing productivity and profitability Development of protocols for analysis of environmental and ecological economics attributes of different agro forestry systems on landscape basis Accreditation and gradation of germplasm centres / nurseries of important agro forestry species in different agro-climatic zones of country.

Cooperatives

Indian agriculture is characterized with predominance small and marginal farmers and one of the reasons for yield plateau and low income to farm families is land fragmentation. These farmers are deprived of access to latest precision farming techniques, farm mechanization, credit, technical advice, quality inputs, market intelligence and post harvesting facilities. Fragmentation of land is inevitable due to ever increase in human population and decreasing cultivable land. But there is need to address this issue by cooperative approach to farming. The economies of scale in procurement, technology adoption and marketing are better attained if small farmers combine together for collective farming and enhance their income.

Agricultural cooperation in India so far suffered from various Institutional drawbacks and not a universal success. An attempt needs to be made to convince the farmers about the benefits of cooperative farming and the economies of scale. The motivations for the collectives need to come from government offering tax breaks and concessions, a supporting bureaucracy and service support. Appropriate mechanism is put in place so that farmers have greater control of the market channels and improve profit opportunities. With the growing diminutions in the size of operational holdings, consider the need to promote commodity-based farmers' organizations at the production end of the farming enterprise

The policy and legal frame work under which the cooperatives are functioning be reviewed so as to create an enabling environment for them to attain autonomy and run their operations in a businesslike manner and accounting made transparent. Farmers cooperative are financially supported for creating initial infrastructure. Legislative and regulatory frame work be amended and strengthened to achieve the objectives. Need to bring in Co-operative Sector Reforms.

Contract farming.

The government of India, under the National Agricultural Policy, promotes private sector participation in the agricultural sector through the concept of contract farming and land leasing. This is to allow accelerated technology transfer, capital inflow and assured market for crop production, especially that of oilseeds, cotton and horticultural crops. This promotion of agri-tech has led to huge investments of over $10 mn in 2017.
The table below lists some of the foreign companies practicing contract farming in India:

company	state	Crops
Cargill India pvt ltd	MP	Wheat, maize
Hindustan lever	MP	Wheat
ITC-IBD	MP	Soyabean
Appachi	TN	Cotton
Nestle india ltd	punjab	Milk
Pepsi foods India ltd	Punjab, tamil nadu	Chillies,Gnut,tomato

The Model Contract Act of 2018 was recently unveiled in order to protect the interests of the farmers. The act brings in all services in the agricultural value chain under its gambit including contract farming. The traditional route of investment in agriculture is limited to the above-mentioned activities, which allow a 100% investment through automatic route. However, India does not have a dearth of opportunities in its vast, diverse agricultural sector. The government of India is keen to promote FDI in agriculture for India while also protecting the interests of its domestic farmers and consumers.

EXIM POLICY

India, with a large and diverse agriculture, need to transform the agricultural economy with continuous innovation and efforts towards productivity, pre & post-harvest management, processing and value-addition, use of technology and infrastructure creation. Considering agro processing and agricultural exports as a key area, "Make in India" need to be "Bake in India", with a renewed focus on value addition and on processed agricultural products. Need focus on target oriented agriculture export policies and build agriculture economic zones (AEZ) to encourage agricultural produce exports.

Need measures to boost exports of high margin, value added and branded products as India is remaining at the lower end of the global agri export value chain with majority of its exports are low value, raw or semi-processed and in bulk. Integrating **Indian** farmers and **agricultural** products with the global value chains would play a pivotal role in achieving the set goal of doubling farmers' income. Need to address the domestic factors, technology, trade facilitation, infrastructure, logistics, regulation, institutions, competitive markets and participation of private trade in all stages of supply chain including pre-harvest. Provide an institutional mechanism for pursuing market access, tackling technical barriers, chemical residues and deal with sanitary and phytosanitary issues.

Diversify our export basket, with focus on non-forest produce, wild herbs, medicinal plants, perishables, organic, ethnic and traditional agri products, keeping the processed and organic products out of export restrictions. Need focus on port development enhancing supply, quality, handling and hinterland connectivity duly identifying strategically important clusters, creating inland transportation links alongside dedicated ports with 24x7 customs clearance for perishables for boosting trade exponentially. Strengthen R&D activities for development of export oriented technologies for the upcoming markets and create awareness among farmers in the identified clusters on best practice for production of products suitable for export. There is a need for greater interaction among research organizations, industry and farmers to work on industry specific requirements need to identify exclusive organization to frame, regulate and implement policies related to both agricultural production and trade in an effective and calibrated manner.

Address the obstacles and support FPOs to help small holders overcome scale disadvantages and extend their reach to modern technology and distant markets along with skill development to tap overseas markets and global agri-business value chain. For increasing exports, initiate concerted efforts for targeted GI registration, stakeholder negotiation and preservation of GI

tag and stepping up of advertisement for marketing of our best products as “Make of India". Need to create ease of doing business addressing lengthy and cumbersome documentation and operational procedures at ports and implement 24 x 7 single window clearance of perishables imports and exports at key ports.

Need to have a single portal which will provide the facility for single accreditation of labs for testing protocols, residue levels in the food products and the tolerance levels followed by importing countries. Though India today is much better placed in terms of food security than it was before, large scale dumping of agri products in Indian market in view of liberalization of import policy have a huge impact on the food price. The government is using import as a mechanism to check food inflation hurting farmers, particularly at a time when domestic production is enough Importing of food grains is like outsourcing agriculture and import of unemployment. India’s import-promoting policies are linked to livelihood of farmers and India’s food security and sovereignty. Despite domestic production numerous policy decisions on imports have made the domestic market less remunerative for farmers. Need to prevent the import of non-specified blended produces and GM food products to protect the domestic food safety net. Need to have new export-import policy, advantageous to domestic producers and with a road map of exporting value added products and importing non-value added products. Liberalize import of agricultural products for value addition and re-export

NABARD:

NABARD is a development bank with a mandate for providing and regulating credit for the development of agriculture, small scale industries, cottage and village industries, handicrafts and other allied economic activities in rural areas. NABARD has played a crucial role in development of farm sectors like minor irrigation, horticulture &plantation, forestry, land development, animal husbandry, fisheries, farm mechanization, post harvest management, infrastructure for agriculture marketing etc., as well as non farm sector activities like rural based industries, agro industries including fruits and vegetable processing, artisans, handicrafts, handlooms etc

National Bank of Agriculture and Rural Development (Nabard) has provided more than ₹20,000 crore to Telangana during the financial year ended March 2021 for various programmes.

NABARD, Telangana has provided ₹13,915 crore to the banks for lending towards crop loans as well as term loans in the State. Out of this, ₹100 crore was disbursed to the beneficiaries of Nabard-supported watershed areas. An amount of Rs ₹6,633 crore was provided to the State for creating enabling infrastructure in the rural areas. Similarly, support was extended to

irrigation projects too. Over ₹4,600 crore was sanctioned to Mallanna Sagar reservoir under Kaleshwaram Lift Irrigation Project and an amount of ₹2,394.70 crore was disbursed during FY21.Further, ₹2,500 crore cash credit was disbursed to Telangana State Civil Supply Corporation for procurement purposes. Thus, the total financial support extended by Nabard for various interventions is ₹20,549 crore during the financial year of 2020-21, an increase of 25 per cent compared to ₹16,312.50 crore sanctioned in 2019-20," the bank said in a release.

The National Bank for Agriculture and Rural Development(NABARD) has pegged a credit potential of Rs 1,85,327 crore for priority sector lending in Telangana for 2023-24.Of this, the potential estimate for agriculture is Rs 1,12,763 crore comprising short-term crop loan component of Rs 73,437 crore and agriculture and allied term credit of Rs 39,326 crore. The assessment of credit potential for MSME and other priority sectors is Rs 54,672 crore and Rs 17,892 crore, respectively.

World trade organization (WTO)

A major concern growing with the increasing impact of WTO is, as to how the small and marginal farmers' who dominate the Indian agriculture, depend heavily on agriculture for their livelihood, have small marketable surplus and operate under heavy constraints to be competitive in a subsidized agriculture production and trade regime, could benefit from WTO. The concern more often swings to the other side that the spreading tentacle of WTO with reduced tariff regime and increased access to Indian market for the products from subsidized agriculture could severally damage the agriculture based livelihood of majority of Indian farmers. The challenge to policy makers is how to protect Indian agriculture from the impending WTO threat, enhance the competitiveness of Indian farming and make farming a viable and self sustaining enterprise to improve and ensure livelihood security of the farmers. A strategy to address this challenge shall necessarily involve re-orientation and injection of market linked dynamism in Indian agricultural R&D, strengthening of supportive institutions to serve the resource poor farmers, and steering fast the change with appropriate policies and trained human ware.

A strategy to address this challenge shall necessarily involve re-orientation and injection of market linked dynamism in Indian agricultural R&D, strengthening of supportive institutions to serve the resource poor farmers, and steering fast the change with appropriate policies and trained human ware.

- India needs to devise appropriate domestic policies (extensive domestic market reforms, heavy investment in building and maintaining infrastructure, etc.) to improve efficiency and competitiveness of domestic produce.

- It should continue to play leadership role in negotiating agreements with sound analytical basis and support of other developing countries with similar interest. A dedicated group of about 100 experts, on full time basis, should work on the WTO issues to provide analytical basis for negotiations and to help in planning appropriate strategies to strengthen Indian agriculture to face increasing trade liberalization and globalization.

- Export of high value products, horticulture products, processed products, marine products and rice should be promoted.

- India has to counter the challenges in the export of traditional items from the developing countries. In this regard, prioritization, enhancing production and processing efficiency, marketing and transport infrastructure, maintaining quality, stable supply etc. need immediate attention.

- There is a need to go whole hog in reforming domestic market as has been done by China. The constraints of multiplicity of laws in agricultural marketing, processing, storage, transport should be immediately addressed to impart simplicity, reduce transaction costs and attract private investments in post harvest management. Further, enforcement of Model APMC Act which encourages direct marketing and contract farming should be implemented in true spirit.

- There should be continuous insistence for reduction in domestic and export subsidies in the developed countries. Developing countries should put up a unified approach to ensure substantive reduction in subsides by the developed countries.

- All countries should notify their quality requirements of agricultural produce clearly on the WTO website.

- There is a need to assess the priorities of our national projects including the R&D programmes, and to develop and maintain the quality of infrastructure at the highest level. There should be strict monitoring of the national projects to ensure expected output as per the time schedule.

- Since IPR is becoming an important issue, a clear-cut policy on IPR, its protection, maintenance, evaluation, handling of IPR infringements, etc. should receive priority attention at the Central, State and institutional levels.

- A special campaign is required to create awareness for appreciating quality aspects of farm produce among the farming community, traders, consumers and exporters.

- India has to learn from the experience of other developing countries like Thailand and Malaysia regarding compliance to food safety standards.

- The Centre should consult states and receive their active support for trade policy formulation, WTO negotiation, etc.

- There is necessity to establish Export Processing Zones and Commodity Boards for targeted commodities. Agriculture needs to be brought under the Concurrent list of the Constitution. There should be a merger of several related departments like irrigation, fertilizer, food, agriculture, etc. for better coordination and synergy.

- Public investment in agriculture has to be raised, particularly in R&D including extension. The system related efforts towards re-orientation of R&D system will include general moratorium on establishment of new institutions, development of first rate human resource through quality agricultural education, need-based training in India and abroad, coordination and convergence of all development departmental efforts, harnessing ICT for rural development, adequate funding of research programmes, project based funding / budgeting, rigorous monitoring and impact assessment, strengthening social science skills, promoting public-private sector partnership, building leadership skills, reforms in financial and procurement management with full decentralization, strengthening policy analysis and vision-oriented market-led intelligence analysis skills, strengthening agri-business development and IPR management, and campaigning for better awareness and compliance in respect of produce quality by the farmers, traders, exporters, importers and the general public.

- The programme related efforts towards re-orientation of the R&D system will include priority attention to targeted export commodities particularly high value processed products, strengthening basic strategic and anticipatory research at ICAR and downstream research at SAUs where 4/5 of the scientists of NARS work, agro-ecological targets and functioning rather than national targets and functioning by the R&D system, profitability besides productivity as indicator of success, linking production with processing, marketing and consumption with focus on small and marginal farmers and

farm workers, establishment of quality testing / referral labs, research on minimal non-renewable natural resource use, developing high yielding varieties which must combine high yields, high protein content and other characteristics demanded by the importing countries such as freedom from aflatoxins

Free Trade Agreement

International trade has become one of the cornerstones of India's plan for economic development, which saw rapid expansion of its trade relations with rest of the world, helping the country to advance towards its development goals. Free trade agreements (FTAs) and bilateral investment treaties (BITs), which are treaties that regulate the tariffs, taxes, and duties that countries impose on their imports and exports, are often described as instruments to promote international trade and foreign direct investment.

Main aim of FTAs need to aim to promote global trade not only by lowering tariffs but also by addressing non tariff barriers in order to boost trade in goods and services. However FTAs can also be seen as tools for transnational corporations to push their interests at the expense of people and the environment. Such agreements are negotiated in secrecy away from public scrutiny, even though they affect broad domains of people's lives such as food, health, labour and the environment. Social movements have been resisting and fighting FTAs, because they are so broad in scope and they tend to threaten and mobilize a wide range of farmers.

The FTAs are expected to increase economic growth, create more dynamic business climate, lower government spending, bring foreign direct investments and technology. But the same FTAs are likely to be disadvantageous in increased job outsourcing, degradation of natural resources, theft of Intellectual Property and adversely impact Indian farmers as agriculture in India is traditional economy that relies on farming for most employment and small family farms can't compete with subsidized agri-businesses in the developed countries. Need safeguards for farmers and consumers in FTAs so that they are not exploited by corporate companies from open markets for their agricultural products and to target non-tariff barriers like product standards that relate to food, which seriously impacts the lives of smaller farmers and consumers.

Need focus on capacity built-up of domestic farmers to do forward integration by way of food processing, through co-operatives, for realizing better price because of Geographical Indications. Protective measures are also required in FTAs so that developed countries do not force to draft laws granting monopoly rights over seeds to transnational corporations and other institutional plant breeders, as well as industry-friendly animal and fish breeding regulations, effectively forbidding farmers to save seeds or reproduce fish breeds or livestock.

There is need for inclusion of regulations within trade agreements that protect against the disadvantages. Given the highly protected nature of agriculture in most developed countries and also the high intensity of agricultural trade among them, the signing of trade agreements with developed economies may turn this trade balance into deficit. Need to evolve concrete long-term strategies to make Indian agriculture competitive and enhance its efficiency and continue to seek substantial reduction in agricultural subsidies in the developed world and address issues relating to the removal of non-tariff barriers.

India need to promote a tag line “Food as per climatic zone is good for health” to encourage local consumers to consume locally produced goods and promote ‘Vocal for Local goods’ The free trade paradigm has very cleverly pitted farming communities of one country against those of another and sacrificing agriculture at the altar of economic liberalization market is becoming the new agricultural mantra.

Trade liberalization has already exposed developing country farmers to ruinous competition, driving down prices, with cheap agricultural products swamping. The trade in FTAs needs to be done only after meeting the criteria set by Rules of Origin (RoO) and formulating own Product Specific Rules of Origin (PSRO) framework and policies to make the developed countries follow them against Margin of Preference. The continuing WTO deadlock has given India the impetus to reorient trade policies from multilateral to bilateral agreements and explore the possibility of entering into comprehensive economic partnership agreements.

India also need to look for trans-continental FTAs and gear up to start preferential trade agreements aim to eliminate tariff barriers and remove technical barriers for imports. Need for the government to revisit the existing trade agreements through cost benefit analyses, sustainability impact assessment and regulatory impact assessment. While negotiating new agreements, particularly deeper FTAs with developed countries, on case by case basis, India needs to set its targets clearly and take steps for improving its domestic preparedness.

Agricultural and processed food products export development authority (APEDA)

The Agricultural and Processed Food Products Export Development Authority (APEDA) was established by the Government of India under the Agricultural and Processed Food Products Export Development Authority Act passed by the Parliament in December, 1985.

APEDA fosters the development and promotion of the export of scheduled products. It provides financial assistance for the development of export infrastructure, quality development and market development for the promotion and export of scheduled products under the broad categories of floriculture and seeds, fruits and vegetables, processed foods and vegetables, animal products and cereals covering more than 700 tariff lines on 8 digit HS Code.

Since agricultural and land are State subjects, this require State Government to extend full cooperation in reaching out to the farmers, identifying Agri potential, detailing with to interventions required for productivity and quality improvements, judicious use of pesticides, capacity building requirements, Infrastructures and logistics gap under cluster development approach, exit point issues, etc. APEDA is pursuing with the State Government Nodal agencies for their close coordination with other agencies to address the respective intervention in the State for Agri export.

APEDA is mandated with the responsibility of export promotion and development of the following scheduled products:

- Fruits, Vegetables and their Products.
- Meat and Meat Products.
- Poultry and Poultry Products.
- Dairy Products.
- Confectionery, Biscuits and Bakery Products.
- Honey, Jaggery and Sugar Products.
- Cocoa and its products, chocolates of all kinds.
- Alcoholic and Non-Alcoholic Beverages.
- Cereal and Cereal Products.

- Groundnuts, Peanuts and Walnuts.
- Pickles, Papads and Chutneys.
- Guar Gum.
- Floriculture and Floriculture Products.
- Herbal and Medicinal Plants.
- De –oiled rice bran.
- Green pepper in brine.
- Cashew Nuts and Its Products.
- Basmati Rice has been included in the Second Schedule of APEDA Act.

Suggestions/intervention

- Mega Food Parks shall be encouraged and at least two such parks would be encouraged in Nalgonda, Sanga Reddy and Nizamabad districts.
- Agri-Warehouses at the places where such facilities currently do not exist shall be supported by the Government.
- Cold Chains shall be set-up in projects identified.
- Food testing laboratories shall be set-up in such areas under cluster model shall be supported by state government and such units shall recover only variable costs from the users.
- New Food Processing units proposed in identified areas shall be provided financial assistance for packaging and equipment
- Where ever required Supply Chains shall be strengthened through provision of refer containers

FOREIGN DIRECT INVESTMENT

India is a typically agrarian economy and is among the leading exporters of agricultural products. With a rising population, globalization and a rapidly growing economy India stands to gain from increased foreign investments in the agriculture sector. Domestic agriculture in India is free market and the sector is attractive with numerous opportunities for investments with well defined and transparent laws, rules and regulations. At present, 100% foreign direct investment (FDI) is allowed through the automatic route into India for horticultural crops and aquaculture under controlled conditions, development and production of seeds and planting material, animal husbandry and under government route in tea sector. The government of India is working relentlessly to make agriculture in India a promising sector for global investment to allow accelerated technology transfer, capital inflow and market for crop produce. Some issues in APMC rules, restrictions on direct purchase from farmer and storage, deletion of most crop produces from Essential Commodities Act, have been addressed.

One of the major issues in foreign direct investments into Indian agricultural sector is issues pertaining to land acquisition. India has wide income disparity amongst farmers, with small farm holders at bottom of Indian economic pyramid. FDI should not be allowed in domestic agriculture farming and corporatized directly or indirectly The government need to protect the interests of its domestic farmers and consumers while promoting FDI in agriculture Indian marketing system developed over generations has characteristics of free entry, no rigging power, fierce competition among traders, free exit unlike the organized retail chains. Marketing permission for the organized groups need to be given only after minimum one stage processing. When dealing with genetically modified seeds or planting material the company.

Need to comply with safety requirements in accordance with laws enacted under the Environment (Protection) Act on the genetically modified organisms. Need to protect smallholders exposed to risk early in production phases, enforce strict measures to prevent mega land deals / resettlement issues and need adequate attention to social and environmental risks. The investments need to align with the national development strategy and the business models need to empower women, youth and vulnerable groups

Agriculture export policy (AEP)

The Agricultural Export Policy was introduced to increase and provide support to productivity, pre and post harvest management, value-addition, and upgrade technology. The Policy was introduced after the stagnant agricultural trade in the international market from 2013-2017. The decline of agricultural commodities reduced GDP and other economic affairs. To make significant reforms to the export policy for agriculture, India restructured from the Green Revolution Era and promoted Agricultural Export Policy to diversify the food and non-food agriculture base to emerge as a leading player in the world in agricultural trade. The Policy would increase agricultural exports leading to stable growth in GDP, benefits for farmers' employment in rural areas, quality and scope for value addition, and future market potential.

To promote agricultural exports, the Government has introduced a comprehensive Agriculture Export Policy (AEP) in the year 2018. The vision of this policy, as per the policy document, is to "Harness export potential of Indian agriculture, through suitable policy instruments; to make India a global power in agriculture and raise farmers' income." Existing Support Mechanism for Promotion of Exports .The main objectives of this policy are:

- To double agricultural exports from present ~US$ 30+ Billion to ~US$ 60+ Billion by 2022 and reach US$ 100 Billion in the next few years thereafter, with a stable trade policy regime.
- To diversify India's export basket, destinations and boost high value- and value-added agricultural exports including focus on perishables.

- To promote novel, indigenous, organic, ethnic, traditional and non-traditional Agri products exports
- To provide an institutional mechanism for pursuing market access, tackling barriers and deal with sanitary and phytosanitary issues.
- To strive to double India's share in world Agri exports by integrating with global value chain at the earliest.
- Enable farmers to get benefit of export opportunities in overseas market.

The policy recommendations in the Agriculture Export Policy (AEP) are organized in two broad categories: strategic and operational. The salient features of the agricultural export policy are highlighted below:

- Strategic Policy Measures : Infrastructure and Logistics Support, Holistic Approach to boost exports, Greater involvement of State Governments in Agri Exports

- Operational : Focus on Clusters, Promoting Value added exports, Marketing and promotion of "Brand India", Attract private investments into production and processing, Establishment of Strong Quality Regimen Research & Development, Miscellaneous

The AEP put focus on a stable and predictable policy, redirecting resources towards products that will earn higher returns in the international markets, while enabling improved responsiveness to market signals. The policy aims at providing assurance that the processed agricultural products and all kinds of organic products will not be brought under the ambit of any kind of export restriction (viz. Minimum Export Price, Export duty, Export bans, Export quota, Export capping, Export permit etc.) even though the primary agricultural product or non-organic agricultural product is brought under some kind of export restrictions. It is often pointed out that expenses towards logistics handling in India are about 14% to 15% of the cost of exports. Benchmarked against 8% to 9% in some of the developed economies, the savings on account of improved logistics has the potential to make Indian agricultural exports significantly competitive in the global marketplace.

The Agriculture Export Policy suggests measures to address the varied logistic bottlenecks through the newly formed Logistic Division in the Department of Commerce, Government of India, different Line Ministries and State Governments. The policy seeks greater involvement of various state governments by identifying a nodal state department or agency for promotion of agricultural export from the state. The policy lays emphasis on including agricultural exports in the State Export Policy of the states, besides, assessment of the State's potential in key agricultural sectors and drawing up an action plan to support the crucial infrastructure creation. As part of the Agriculture Export Policy, unique product-district clusters have been identified for export promotion. Products/clusters are identified based on the existing production contributing to exports, exporters operations, scalability of operations, size of export market/India's share, awareness about SPS requirements, and potential for increase in export in short term. The policy is also set to involve key organizations related to agricultural production and augment efforts towards promotion of export. For instance, the policy suggests

involving Krishi Vigyan Kendras to disseminate export-oriented technologies to farmers and create awareness among farming community on export prospects.

Rural Employment

There is enormous scope for raising the productivity of Indian agriculture, doubling crop yields and farm incomes, and generating significant growth in demand for farm labour. Need focus on providing necessary support to this sector in terms of skill and knowledge upgrades and access to financial capital and relevant technology. Need to develop employable skills at all levels establishing a network of government-certified, rural vocational institutes for a powerful stimulus for employment and self-employment generation. Plan for creation of a national network of 'Job Shops' linked to the Rural Information Centres to offer training programmes.

Economic development of both farm and allied sectors is the best strategy to promote rural development and reduce rural poverty. Explore the opportunities in activities like bee keeping, sericulture, dairy, Employment in agriculture has fallen and youth are migrating to urban for better opportunities, A combination of farm oriented and nonfarm work now need to be the most common form of rural employment. Focus of rural interventions need to be on high quality physical and social infrastructure and more responsive and effective institutions that cater to both farm as well as the non-farm sectors.

India's rural areas are undergoing considerable change and are becoming less and less agricultural, even as there is a serious need to improve the productivity in agriculture and in its allied sectors. As farm-oriented work is still the most prevalent form of employment among rural women, initiate appropriate structural, functional and institutional measures to empower women and build their capabilities and improve their access to inputs, technology and other farming resources.

To reduce the burden of the still large number of workers dependent on the agricultural sector for employment, the overall development of rural areas and creating productive jobs in the non-agricultural sector is becoming more and more critical. Rural development is now less and less synonymous with the agricultural sector for youth and skilled workers. Hence, the approach to promoting rural development need to change from an exclusive focus on boosting agricultural production to promoting other economic and social dimensions of the non-farm sector.

Exploit the potential in shifts in consumer preferences and growing incomes that altered the domestic and international demand for processed food products. Need more focused and integrated strategy to maintain competitiveness, more investments in the entire chain that

involves collection, grading, storage, packaging, and transport. Agro-based industries can be set up in rural areas or semi-rural belts to provide employment opportunities to youth and skilled workers. Need to look beyond allocations and intentions, and focus on evaluating the implementation and raising efficiency of investments being made in agricultural and rural sector. One such scheme is NAREGA, intended to provide employment to labour force, is creating issues to regular farm operations due to its improper implementation.

Youth in agriculture educated youth be helped and supported for setting up production-cum-processing centre to undertake outsourcing jobs. In order to attract youth to the agriculture sector a number of vocational training courses on different aspects of agricultural and allied activities including value addition and processing of agro-products be introduced.

Electricity:

Rural electrification is given a high priority as a prime mover for agricultural development. The quality and availability of electricity supply be improved and the demand of the agriculture sector be met adequately and be reliable and cost effective. Agreement conditions are bilateral. Electricity is supplied continuously for 24 hours, and during day when availability is in short. Compensation for farmers needs to be arranged for various power disruptions caused due to human error through Electricity Consumers Grievances Redressal Forums. The poor quality of electricity supply voltage fluctuations and limited hours of supply and the associated costs that it implies means that the effective costs of electricity access to farmers are higher than the low tariffs that they pay.

Distress Hotspots

Special attention is paid to distress hotspot areas to reduce risk and promote inputs for sustainable agricultural practices. In such areas knowledge connectivity, social support systems and marketing infrastructure be strengthened. Convergence of the benefits under different schemes also is encouraged.

Traditional knowledge:

In India the history and traditional knowledge of agriculture, particularly of tribal communities, relating to organic farming and preservation and processing of food for nutritional and medicinal purposes is one of the oldest in the world. Concerted efforts are made to pool, distil and evaluate traditional practices, knowledge and wisdom and to harness them for sustainable agricultural growth.

Incentives for Agriculture:

In order to protect the interest of farmers in context of removal of Quantitative Restrictions, continuous monitoring of international prices is undertaken and appropriate tariffs protection be provided. Import duties on manufactured commodities used in agriculture is rationalized. The domestic agricultural market is liberalized and all controls and regulations hindering increase in farers' income are reviewed and abolished to ensure that agriculturists receive prices commensurate with their efforts. Investment restrictions on the movement of agricultural commodities throughout the country are progressively dismantled. The structure of taxes on food grains and other commercial crops be reviewed and rationalized. Similarly, the excise duty on materials such as farm machinery and implements, fertilizers, etc. used as inputs in agricultural production, post harvest, storage and processing be removed. Appropriate measures be adopted to ensure that agriculturists by and large remain outside the regulatory and tax collection systems. Farmers are exempted from payment of capital gains tax on compulsory acquisition of agricultural land.

A conducive climate is created through a favorable price and trade regime to promote farmer's own investments as also investments by industries producing inputs for agriculture and agro-industries. Private sector investments in agriculture also be encouraged more particularly in areas like agricultural research, human resource development, post-harvest management and marketing.

Institutional Structure

Institutional reforms are so pursued as to channelize their energies for achieving greater productivity and production. The approach to rural development and land reforms to focus on

(i) Consolidation of holdings on the pattern of north-western states,

(ii) Redistribution of ceiling surplus lands and waste lands among the landless farmers, unemployed youth with initial start– up capital,

iii) Tenancy reforms to recognize the rights of the tenants and croppers,

(iv) Development of lease markets for increasing the size of holdings by making legal provisions for giving private lands on lease for cultivation and agri-business,

(v) Updating and improvement of land records, computerization and issue of land pass-books to the farmers and

(vi) Recognition of women's rights on land.

Social security

Coverage of farmers, particularly small and marginal farmers and landless agricultural workers, under a comprehensive national security schemes for livelihood security.

RENEWABLE ENERGY

Most farm machines are driven by fossil fuels, which contribute to greenhouse gas emissions and, in turn, accelerate climate change. Such environmental damage is mitigated by the promotion of renewable resources such as solar, wind, biomass, and bio -fuels. These renewable resources have a huge potential for the agriculture industry. The farmers should be encouraged by subsidies to use renewable energy technology.

The energy needs of rural areas are at present being met out of fossil fuels or forest wood and also dung cakes being made from cattle dung. As the fossil fuels are non- renewable sources of energy and are fast depleting and cutting the trees for fuel wood is creating ecological imbalance, there is a need to promote viable and renewable sources of energy.

The Government of India aims to reach a renewable energy capacity of 175 GW by 2022; 100 GW of this is planned through solar energy (targeting an investment of US$100 billion), 60 GW through wind energy, 10 GW through small hydro power, and 5 GW through biomass based power projects. Of the 100 GW target for solar, 40 GW is expected to be achieved through deployment of decentralized rooftop projects, 40 GW through utility-scale solar plants, and 20 GW through ultra-mega solar parks.

Considering these targets, renewable energy (solar, wind and hydro) would account for 10% of the total energy mix, by 2022. The estimated potential for power generation from renewable sources in Telangana is to the tune of 12000 MW. This includes 4244 MW from wind energy, mostly in erstwhile Rangareddy, Medak and Mahabubnagar districts.

The state has a vast solar potential with average solar insolation of nearly 5.5 kWh/sq.m for more than 300 sunny days in a year. There are solar modules manufacturing industries in the Fab City, Hyderabad. The state was generating close to 3700 MW of solar power constituting about 25 per cent of the commissioned capacity in the energy sector. It had set a target to achieve 5000 MW solar power.

For enhancing the self-sufficiency in energy and minimizing dependence on imported fossil fuels several programs is initiated to augment production and use of bio-fuels. Need exists for blending bio-fuels with petrol and diesel in a phased manner so as to catalyze the transition

form a completely fossil fuel based transport system to a partially bio-fuel-driven system. India has some special advantages in taking up plantation of tree-borne oilseeds for the production of biodiesel as the country has vast under-utilized or unutilized land, most of which are in the drought phone area. Encourage cultivation of bio fuel crops by framing favourable bio fuel policies.

Food Security

All people, at all times, and required to have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food for an active and healthy life. To achieve this, farmers are taking up the responsibility of production of sufficient food for ever increasing population. But farmers are facing numerous problems in farming. To work for food security to people farmers' income need to be secured and issues in farming need to be addressed. Improve the infrastructure, credit facilities, irrigation water, effective marketing and price policies. Solid foundation of food security is on development and spread of improved technologies, delivery of farm inputs and institutional credit to the farmers and assurance of a remunerative marketing and pricing environment for farmers. Fixing the minimum support prices at a level 50 per cent higher than the cost of production

A road map is prepared for making agriculture profitable and for restoring farmers' faith in farming. Increased investment in agricultural research and extension for continuously expanding the productivity potential, in productivity-raising infrastructure like irrigation and developing the policy of profitable price to farm produce would make way for food security. Need for one national market for agricultural products, which inter alia would require shifting the subject of agricultural marketing from the 'state' list to the 'concurrent' list in the Constitution.

The National Food Security Mission (NFSM), during the 12th Five Year Plan, had four components (i) NFSM- Rice; (ii) NFSM-Pulses; (iii) NFSM Coarse Cereals; and (iv) NFSM-Commercial Crops.

During 2017-18, the programme was implemented with components/interventions/cost norms/pattern of assistance of 12th plan. On the basis of EFC recommendations which was held on 29.11.2017, from the years 2018-19 and 2019-20, NMOOP and Seed Village Programme are now a part of NFSM and thus NFSM will have seven components viz. (i) NFSM- Rice; (ii) NFSM-Pulses; (iii) NFSM-Coarse Cereals (Maize, Barley), (iv) NFSM-Sub Mission on Nutri Cereals; (v) NFSM-Commercial Village Programme. These Operational Guidelines are for NFSM-Food grains,

Commercial Crops; (vi) NFSM Oilseeds and Oilpalm; and (vii) NFSM-Seed, Oilseeds and Oilpalm, Seed Village Programme and Sub Mission on Nutri - cereals.

Objectives:

- Increasing production of rice, pulses and coarse cereals through area expansion & productivity enhancement in a sustainable manner in the identified districts of Telangana.
- Restoring soil fertility and Productivity at the individual farm level Enhancing farm level economy to restore confidence among the farmers

Strategy:

- Focus on low productivity and high potential districts including cultivation of food grain crops in rain fed areas. Implementation of cropping system centric interventions in a Mission mode approach through active engagement of all the stakeholders at various levels.
- Agro-climatic zone wise planning and cluster approach for crop productivity enhancement. Focus on pulse production through utilization of rice fallow, rice bunds and intercropping of pulses with coarse cereals, oilseeds and commercial crops (sugarcane, cotton, jute).
- Promotion and extension of improved technologies i.e., seed, INM including micronutrients, soil amendments, IPM, input use efficiency and resource conservation technologies along with capacity building of the farmers/extension functionaries.
- Close monitoring of flow of funds to ensure timely reach of interventions to the target beneficiaries.
- Integration of various proposed interventions and targets with the district plan of each identified district.
- Constant monitoring and concurrent evaluation by the implementing agencies for assessing the impact of the interventions for a result oriented approach.

Various ongoing schemes of central and state government in agriculture sector

NATIONAL MISSION ON SUSTAINABLE AGRICULTURE (NMSA)

1. RAINFED AREA DEVELOPMENT (RAD)

Rain fed Area Development (RAD) is a component of National Mission for Sustainable Agriculture (NMSA).

Objectives:

- Increasing agricultural productivity of rainfed areas in a sustainable manner by adopting appropriate farming system based approaches.
- To minimize the adverse impact of possible crop failure due to drought, flood, un-even rainfall distribution through diversified and composite farming systems.
- Enhancement of farmers' income and livelihood support for reduction of poverty in rainfed areas. Benefits of the Programme: This will act as a catalyst to accomplish the ultimate objective of enhanced productivity, minimizing the risk of crop losses due to uncertainties of weather conditions, harnessing efficiency of resources, assuring food and livelihood / income security at farm level and strengthen the farmers' capacity to adapt to climatic changes.

Brief Guidelines:

- AD aims at promoting integrated Farming System(IFS) with emphasis on multi-cropping, rotational cropping, inter-cropping, mixed-cropping practices with allied activities like horticulture, livestock, fishery, agro forestry, apiculture etc. to enable farmers not only in maximizing the farm returns for sustaining livelihood, but also to mitigate the impacts of drought, flood or other extreme weather events.
- Depending on the type and extent of natural resources/assets/commodities already developed or supported, location-specific crops, fruits, vegetables, spices, flowers, feed & fodder, livestock, fisheries, apiculture, mushroom, medicinal & aromatic plantation and related income generating activities would be supported.
- Adoption of a cluster approach in a village or an area of not less than100 Ha(contiguous or non-contiguous in difficult terrain with close proximity, in a village/adjoining villages) may be preferred for injecting investments to utilize the potential of available/created common resources.
- Selected clusters will have soil analysis/soil health card as mandatory.
- Farmers would have the option to choose one or combination of farming systems suitable to the specific eco-system supported through local KVK, SAU, ICAR Centre,

ICRISAT, ATMA etc., for maximizing agricultural productivity from the existing natural resource assets.

- Support to each farm family under RAD component will be restricted to a farm size of 2 Ha and financial assistance will be limited to Rs.1 lakh. However, storage/processing unit and/or construction of poly house etc., are excluded from these limits.
- Area of operation: Implementation of the identified IFS activities is proposed to be undertaken in all the rain fed areas.
- Maximum permissible limit to each farmer is 2 ha.

2. RASHTRIYA KRISHI VIKAS YOJANA (RKVY) – RAFTAAR

Rashtriya Krishi Vikas Yojana was initiated in 2007 as an umbrella scheme for ensuring holistic development of agriculture and allied sectors by allowing states to choose their own agriculture and allied sector development activities as per the district/state agriculture plan.

During 2017, the RKVY guidelines have been revamped as RKVY RAFTAAR – Remunerative Approaches for Agriculture and Allied sector Rejuvenation to enhance efficiency, efficacy and inclusiveness of the programme for the remaining period of the Fourteenth Finance Commission with 60:40 funding ratio between Central & State Govt. Initially the programme was implemented from 2017-2020 and now extended up to the financial year 2021-22 for the following streams:

a. Regular RKVY-RAFTAAR –70% – Includes Infrastructure comprising of assets 50%, Value addition 30% & Flexi funds- 20%

b. Special sub-schemes – 20%

c. Innovation and agri-entrepreneur development - 10%

The Govt. of India has allocated an amount of Rs.206.96 Crores as 60% Central share and requested the State Government to contribute the matching State share 40% amounting of Rs.137.97 Crs totaling to an amount of Rs.344.93 Crores under RKVY-RAFTAAR during 2021-22.

3. PARAMPARAGATH KRISHI VIKAS YOJANA (PKVY)

- This scheme promotes the production of agriculture products free from chemical and pesticide residues by adopting eco-friendly low cost technologies.
- PKVY is an elaborated component under SHM of major project NMSA. Under PKVY Organic Farming is promoted in cluster approach and PGS certification.
- GOI has instructed to implement PKVY in inspirational districts i.e. Khammam, Asifabad, Bhupalpally @ 5 clusters/district during 2020- 21.

4. Soil Health Card (SHC)

Components of the Scheme:

The main components of the scheme is to issue Soil Health Cards, organizing Demonstrations and training on application of soil test based recommendations, Promotion of Nutrient Management Practices and identify soil fertility related constraints and develop need based fertilizer management strategy.

Main Objectives:

- To issue soil health cards to 100000 farmers of the state holding wise in the selected of the mandals, so as to provide a basis to address nutrient deficiencies in fertilization practices. Benefits of the programme:
- The Scheme envisages distribution of Soil Health Cards to the farmers holding wise to promote Soil Health Management.
- It will promote balanced and judicious use of plant nutrients.
- Promotion of integrated nutrient management system is expected to reduce the consumption of chemical fertilizers by 20%.
- The productivity of selected crops is expected to increase significantly .
- The demand for organic sources of plant nutrient like bio-fertilizers, organic manure, vermi-compost, slow release of nitrogenous fertilizer like neem/Sulphur coated urea will increase, which in turn improve the soil fertility as well nutrient use efficiency.
- Subsidy Pattern: Sharing Pattern is 60:40 (Central & State Share) Budget Source: Centrally Assisted State Plan Scheme of National Mission for Sustainable Agriculture.

NATIONAL MISSION ON AGRICULTURAL EXTENSION & TECHNOLOGY (NMEAT)

1. **SUB MISSION ON AGRICULTURE EXTENSION (SMAE)**

Erstwhile Sub-Mission on Agricultural Extension (SMAE) was being implemented under Nation Mission on Agricultural Extension & Technology(NMEAT) w.e.f.2014-15. Now SMAE has been subsumed as sub scheme of Umbrella Scheme-Green Revolution- Krishonnati Yojana from 2018-19. It is currently operational in 32 rural districts in Telangana State.

Main activities included in the cafeteria:

The funding support for the Scheme is in the ratio of 60:40 (Centre: State) for all components except Farmer Friend component. In this Telangana State, for each 5000 Acres of cultivable area, one (1) Agricultural Extension Officer is recruited to carry out the activities and for regularly advising Good Agricultural Practices for the benefit of the farmers. The Cafeteria of Activities consists of Farm Schools, Demonstrations, Formation of Commodity Interest Groups, Joint Visits by Scientists and Extension Functionaries, training, farmer-scientist interactions, exposure visits, capacity building, field days and publishing leaflets etc.

2. **SUB MISSION ON SEED & PLANTING MATERIAL (SMSP)**

The Seed Village Program (SVP) is one of the important components of the Sub Mission on Seed and Planting Material (SMSP) Under NMAET (National mission on Agriculture Extension & Technology (NMAET) being implemented by Government of India. The Seed Village Program ensures supply of quality seed of notified varieties to the farmers in time at their places at affordable prices besides ensuring quick multiplication of new seed varieties in a shorter time in that mandal /district based on the crop situation.

Objectives:

- To improve the quality of Farm Saved Seeds
- To increase the Seed Replacement Rate (SRR)
- To enhance the horizontal spread of high yielding varieties among farmers for improving the productivity of crops.

Incentives under SVP

The following incentives will be provided to farmers under Seed Village Programme:

A. Supply of Foundation Seed: - Financial assistance @ 50% subsidy is available for distribution of foundation seeds of cereals for 1 acre area per farmer per crop each season.

B. Financial assistance @ 60% subsidy is available for distribution of foundation seeds of pulses, oilseeds and green manure seeds for a maximum of one acre per farmer per crop each season.

C. Trainings: Three one day trainings will be conducted to the farmers on seed production technology. C. Certification: Certification of the produced seed is also proposed under Seed Village Program in free of cost by TSSOCA for the year 2021-22

D. Proposal of Buyback of the Certified Seed produced under Seed Village Program for the year 2021-22. For the year 2021-22, GOIs allocation for SMSP is Rs. 166.61 Lakhs for the implementation of the scheme.

3. **Sub Mission on Agriculture Mechanization (SMAM)**

- Under Sub Mission on Agriculture Mechanization, an action plan for the year 2021-22 was submitted for an amount of Rs.27941 Lakhs covering Training, demonstrations, Farm Machinery like Tractors, Power Tillers, Self-propelled machinery, Tractor drawn implements, Plant Protection Implements etc. and Farm Machinery Banks. Approval from GOI is awaited. Once approved the same will be allocated among the districts.

- In addition to the above farm machinery and implements will also be supplied on subsidy to the farmers under GOI schemes such as RKVY Rastriya Krishi Vikas Yojana and SMAM- Sub Mission on Agricultural Mechanization. As per the Government of India Approved action plan and funds released for which approvals and allocations are awaited from GOI.

- Under Sub Mission on Agriculture Mechanization, GoT state has given the BE for an outlay of 600.00 Lakhs for implementation of the scheme for the year 2021-22

4) **National e Governance Plan on Agriculture (NeGPA)**

Objectives:

- Bringing farmer centricity & service orientation to the programs ¾ Enhancing reach & impact of extension services

- Improving access of farmers to information & services throughout crop cycle.

- Building upon enhancing & integrating the existing ICT initiatives of Centre & States ¾ Enhancing efficiency & effectiveness of programs through process redesign
- More effective management of schemes of DAC by Promoting a common framework across states.

5) National Food Security Mission (OS & OP)

Government of India has merged National Mission on Oilseeds Oil Palm (NMOOP) the central Sector Scheme with National Food Security Mission (NFSM) from 2018-19. The main objective of this scheme is to increase the productivity and production of oilseeds by extending assistance on different program components of scheme. Oilseeds program is being implemented by Agriculture department and Oilpalm program is implemented by Horticulture department. Scheme is implemented with 60:40 (Centre: State) funding pattern

Objective:

To augment the availability of vegetable oils and to reduce the import of edible oils by increasing the production and productivity of vegetable oils sourced from Oilseeds and Oil palm.

OIL SEEDS

Strategies for increasing Oilseeds production

- ™ Use of new varieties through Minikits / seeds production by Central Agencies /states. ™
- Adopting Good Agronomic/Agricultural practices like Ridge-furrow / Broad-bed-furrow technologies in soybean and groundnut, protective irrigation, application of gypsum in groundnut and intercropping etc.,

Interventions under different Components

- Seed Component: ™ Purchase of Breeder Seed, Production of Foundation and Certified Seed, distribution of certified seed on subsidy and Seed Minikits supply on 100% subsidy.
- Production Inputs: ™ Supply of PP Equipment, supply of PP Chemicals/Weedicide, gypsum, micronutrients, Supply of Power operated Implements on 50% subsidy and supply of sprinklers sets/water Carrying pipes on subsidy.

- Transfer of Technology: ™ Block demonstrations and training of Farmers & Extension Officers