

TASK FORCE ON AGRI COST MANAGEMENT
THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

Statutory Body under an Act of Parliament

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Behind every successful business decision, there is always a **CMA**

MISSION STATEMENT

“The CMA Professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.”

VISION STATEMENT

“The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally.”

INSTITUTE MOTTO

असतोमा सद्रमय
तमसोमा ज्योतिर् गमय
मृत्योर्मा मृतं गमय
ॐ शान्ति शान्ति शान्तिः

From ignorance, lead me to truth
From darkness, lead me to light
From death, lead me to immortality
Peace, Peace, Peace

About the Institute

The Institute of Cost Accountants of India is a statutory body set up under an Act of Parliament in the year 1959. The Institute as a part of its obligation, regulates the profession of Cost and Management Accountancy, enrolls students for its courses, provides coaching facilities to the students, organises professional development programmes for the members and undertakes research programmes in the field of Cost and Management Accountancy. The Institute pursues the vision of cost competitiveness, cost management, efficient use of resources and structured approach to cost accounting as the key drivers of the profession. In today's world, the profession of conventional accounting and auditing has taken a back seat and cost and management accountants are increasingly contributing toward the management of scarce resources and apply strategic decisions. This has opened up further scope and tremendous opportunities for cost accountants in India and abroad.

After an amendment passed by Parliament of India, the Institute is now renamed as "The Institute of Cost Accountants of India" from "The Institute of Cost and Works Accountants of India". This step is aimed towards synergising with the global management accounting bodies, sharing the best practices which will be useful to large number of trans-national Indian companies operating from India and abroad to remain competitive. With the current emphasis on management of resources, the specialized knowledge of evaluating operating efficiency and strategic management the professionals are known as "Cost and Management Accountants (CMAs)". The Institute is the 2nd largest Cost & Management Accounting body in the world and the largest in Asia, having approximately 5,00,000 students and 85,000 members all over the globe. The Institution headquartered at Kolkata operates through four regional councils at Kolkata, Delhi, Mumbai and Chennai and 113 Chapters situated at important cities in the country as well as 11 Overseas Centres. It is under the administrative control of Ministry of Corporate Affairs, Government of India.

About the Task Force on Agri Cost Management

The Institute of Cost Accountants of India has constituted an Agriculture Task Force viz. 'Task Force on Agri Cost Management' with the objective of evolving ways and means of augmenting the farmer's income. The Institute looks forward in extending support to the Government initiatives by way of preparing concept papers and research monographs on Agricultural Costing & Pricing, conducting awareness programmes, courses and discussion sessions on pan India basis to come out with an advisory on the steps to be taken in order to achieve the objectives set by the Government in this regard and extending support to the farmers.

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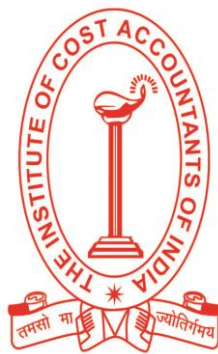
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Agri Bulletin

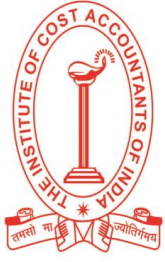
TASK FORCE ON AGRI COST MANAGEMENT

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शोभा करांदलाजे
SHOBHA KARANDLAJE



सत्यमेव जयते



आज़ादी का
अमृत महोत्सव

राज्य मंत्री
कृषि एवं किसान कल्याण
भारत सरकार

Minister of State For
Agriculture & Farmers Welfare
Government of India

D.O. No.....710.....MOS(A&FW)/VIP/2021-22/

MESSAGE

I am delighted to learn that Institute of Cost Accountants of India has constituted a Task Force on Agri Cost Management and has been carrying out several activities with a view to support the government's initiatives towards Augmentation of Farmers' Income. I am also happy to understand that the Task Force has been vigorously pursuing the theme, 'Educate, Empower, Enrich and Enhance' in relation to Indian Agriculture.

Farming is a basic need and farmers are the backbone for every country and more so in case of India wherein two thirds of the population is rural oriented. Apart from ensuring food security, farming is essential for several agro based industries such as textiles, sugar, oil, and so on. Atmanirbhar Agriculture does lay foundation for Atmanirbhar Bharat.

Holding a CMA Convention on Agri Value Management in Bangalore on 21st May is, certainly, bound to throw up fruitful outputs that would benefit the Indian farmers at large. I commend the efforts being made by the Institute of Cost Accountants of India in the direction of finding ways and means to improve agri productivity and reduce cost of cultivation. The contribution of the CMAs in evolving compatible prices that are viable for farmers and affordable for the ultimate consumers can go a long way in building a New India.

I do hope that CMA Agri Bulletin that is being brought out every six months will certainly add value to the knowledge bank of Agri Stakeholders. My hearty congratulations to the resourceful team of Cost Accountants.

Shobha Karandlaje
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MESSAGE



CMA P. Raju Iyer

President

The Institute of Cost Accountants of India

Task Force on Agri Cost Management was conceived and put in place about two years back with a view to support the government's initiatives towards Augmentation of Farmers' Income. Ever since its inception, the task force has been doing commendable work.

For the year 2021-22, the Task Force has invented the theme 'Educate, Empower, Enrich and Enhance' and has undertaken several programmes in this direction. One such effort is bringing out a CMA Agri Bulletin emphasizing the concept 'Farmer First'. And here comes the bulletin into your hands.

The quest for 'Farmer First' should certainly hunt at ascertaining the cost of cultivation with reasonable accuracy. A logical step, therefore, for the way forward is to undertake an immediate review of the existing methodology being applied for computing the cost of cultivation of farm produce and rejuvenate its accuracy by switching over from traditional systems to modern systems such as the Activity Based Costing.

I congratulate the entire team of the Task Force for bringing out such an innovative and informative bulletin.



CMA P. Raju Iyer

21st May, 2022

MESSAGE



CMA Vijender Sharma
Vice President
The Institute of Cost Accountants of India

Indian economy is intertwined with agriculture because of the fact that agriculture is highly significant not just to meet the food and nutritional needs of the nation but also for creating critical rural demand for the manufacturing and services sectors. Therefore, several economists consider agriculture as the primary driver for the economy with a multiplier impact of agri income on GDP ranging from five to ten percent. However, in spite of several policy initiatives, farmers' income continued to remain low leading to huge disparity between farm workers and non-farm workers. One estimate puts the farm workers earnings just as low as 25% of the earnings of the workers from other sectors.

As such, 'Agri Cost Management' along with techniques and approaches from Management Accounting can be of immense benefit to agriculture and agri-enterprises in striding towards 'Augmentation of Farmers' Income'. For the year 2021-22, the Task Force has carved out a four-pronged theme driver for 'Educating, Empowering, Enhancing and Enriching' the farmers in coordination with various Statutory and Public Institutions. The task force is moving forward with a diligent action plan towards achieving the scripted targets.

I appreciate the efforts of the Task Force on Agri Cost Management for its efforts in bringing forth a wonderful CMA Agri Bulletin.



CMA Vijender Sharma
21st May, 2022

MESSAGE



CMA (Dr.) K Ch A V S N Murthy
Chairman
Task Force on Agri Cost Management
The Institute of Cost Accountants of India

It is my benevolent privilege to place before you the fourth edition of CMA Agri Bulletin. This particular edition has been brought out on the theme ‘Farmer First’ in line with the action plan of our Task Force. The bulletin contains varied articles spreading over multiple aspects of this theme.

The topics covered include: Agricultural Production Cost Management Strategies for Sustained Profitability; Agri-produce Cost Computation: An Immense Need for re-orientation; Crop Insurance for Sustainable Development of Farmers; Rural Development in India – Business Opportunities; Extracts from a Key Note Address on MSP; Better Price to Agriculture Produce; Case for Refining Computation Methodology of CoC of Sugarcane; Bamboo a Perfect Crop; An Overview of Fish Farming in India; Jalam; Challenges in facilitating Statutory Compliance among Farmer Producing Organisations; and Making an Atmanirbhar Bharat. Each of these articles throw up new insights on numerous dimensions concerning the Indian Farmer and ultimately ‘Making an Atmanirbhar Bharat’.

I reiterate the words of CMA R.K.Sinha, my colleague in the Task Force, which read, ‘Having agreed to attempt for a mandatory task of making the agriculture viable and profitable – all the stakeholders (since entire Mankind need FOOD) should put in their efforts.... Optimization of Input Costs is certainly achievable with typical Cost management Cycle viz., “Measuring – Monitoring – Optimizing’’. I am confident that the Indian CMA fraternity to stand up to this challenge and strengthen the governments’ efforts in this direction.

I extend my heartfelt gratitude each and every author and researcher who has contributed to this well-structured and well-informed edition of CMA Agri Bulletin.



CMA (Dr.) K Ch A V S N Murthy
21st May, 2022

FOREWORD



CMA (Dr.) Sreehari Chava
Convenor
Task Force on Agri Cost Management
The Institute of Cost Accountants of India

Swami Vivekananda is reported to have observed “If people start living in villages, the life span of people will increase, and diseases will also be very less in number. If educated people start living in villages, they will get developed. And agriculture sector also becomes better by scientific way of approach in agriculture...” Apparently, this is what India needs Now...

The Concept Paper on agriculture “Augmenting Farmers’ Income: Roadmap for CMAs” being brought out on the occasion of a virtual agriculture meet on 23.12.2020 is commendable – Thus blessed us Shri Narendra Modi, the Honourable Prime Minister.

Atmanirbhar Krishi is important to achieve the goal of Atmanirbhar Bharat- Thus supported us Shri Narendra Singh Tomar, Honourable Minister of Agriculture and Farmers Welfare.

Cost Accountants can help the farmers in reducing the cost of the agriculture, increasing the revenue and searching for the multiple sources of additional revenues – Thus inspired us Shri Nitin Gadkari, Honourable Minister for Road Transport and National Highways in his message of 17th December 2020 when we brought out our very first issue of CMA Agri Bulletin.

Therefore, the theme driver “Educate – Empower – Enrich – Enhance” that steers each and every activity of the Task Force on Agri Cost Management as also this edition of CMA Agri Bulletin.

Here is wishing you a benevolent reading of the bulletin with concerted focus on prudent deployment and diligent utilisation of Agri Resources!

A handwritten signature in black ink, appearing to read 'Sreehari Chava', written in a cursive style.

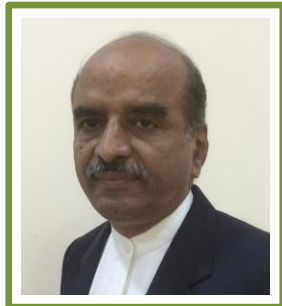
CMA (Dr.) Sreehari Chava
21st May, 2022



RESEARCH ARTICLES

'Educate, Empower, Enhance and Enrich' the farmers

AGRICULTURAL PRODUCTION COST MANAGEMENT STRATEGIES FOR SUSTAINED PROFITABILITY



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1. Introduction

Agricultural production cost generally refers to the fixed and variable costs incurred in crop production and other allied enterprises. Proper budgeting of the input costs could result in enhanced farm profitability. Cost of cultivation is one of the major considerations to derive the Minimum Support Price (MSP). In India, about 85 percent farm holders are small and marginal and often follow traditional cultivation practices without proper accounting for costs of agricultural operations. The agricultural costs can be classified under three major heads *viz.* pre-production costs, production costs and post-production costs. Pre-production costs incur at least one year in advance to the production of the commodity; production costs are the expenses incurred during the production and post-production costs are the expenses involved in marketing the agricultural commodities. While pre- and post-production costs more or less remain same, production costs vary due to several unforeseen exigencies. Managing the crop by adopting scientific methods could help in reducing overall production cost. In this paper, a few examples of proven technological interventions such as use of quality seed/planting material, soil testing based nutrient management, water management, farm mechanization, use of artificial intelligence, IoTs- for scientific decision making etc. that could reduce production costs are discussed.

2. Some promising technologies for cost reduction

a. Use of quality seed/planting material

Use of the genetically pure seed/planting material is a primary requirement to ensure fair price and marketability. In absence of access to proper seed material, farmers in remote villages depend on seed from their neighbor farmers. Even in self-pollinated crops, over generations, the variety gets mixed up. For instance, around 400 variants of TMV2 variety of groundnut were recorded across groundnut growing regions of the country. Such variability is quite common in self-pollinated crops. Though, several improved crop varieties are released in various crops, due to non-availability of the seed material, they are not accessible to farmers. Thus, the seed replacement ratio by improved varieties in many crops is very low. This issue needs a holistic approach to address aspects such as a) variety developmental variation; b) avoiding mechanical mixtures; c) frequent checking for mutations; d) minimizing natural crossing by maintaining isolation distance in seed production plots; e) to check for genetic drift; f) standardized breeding techniques; g) ensuring male sterility and h) faulty seed certification system. While some issues are research related, others need to be addressed at capacity building and policy fronts. In recent years, through novel approaches like participatory seed multiplication programs wherein farmers are also made stakeholders, this gap is being bridged. In absence of robust monitoring mechanism of seed multiplication chain, supply of spurious seeds could pose serious threat to the livelihoods of small and marginal farm holders. A strengthened transparent regulatory mechanism could help to

resolve these issues. In addition to varietal purity, care also must be taken to ensure that seed quality of the improved variety is good with good germination percentage to reduce stand losses.

b. Soil Testing based nutrient management

Soil is a precious natural resource and soil health need to be optimally managed for sustainable farm returns. In recent times, soil health is ignored even by the literate farmers, the consequences of which are faster degradation of the soils rendering them uncultivable. Misuse and abuse of the inorganic nutrients for reaping higher crop harvests damages soil physico-chemical and biological properties. Such practices also disturb the balance in availability of nutrients required for crop growth. Periodical soil testing gives information on the available nutrient status and thus helps to optimize the use need-based of expensive nutrients. The application of the right quantity and type of fertilizers helps the farmer to cease spending preventable additional expenses on fertilizer application. Often, nitrogenous fertilizers are misused due to two reasons viz. mindset of the farmers that nitrogen boosts productivity geometrically and availability of subsidy. The recommended ratio of NPK is 4:2:1 whereas the national usage ratio stood at 6.7: 2.4:1 while in states like Punjab and Haryana it was as high 31.4:8:1 and 27.7: 6.1:1, respectively. The highest usage of these fertilizers is found to be in potato, sugarcane, cotton, wheat, and paddy with 347.2, 192.6, 176.7 and 165.2 Kg ha^{-1} . This excessive and imbalanced usage has also resulted in the decline in the amount of food grain produced per kg of fertilizer applied from 13 kg in the 1970s to just 4 kg in 2010. The excessive usage of fertilizers results in soil acidification, heavy metals pollution, soil compaction, and changes in soil microbiome. It also increases burden of fertilizer subsidy provisioning by the Government. India's agriculture is heavily dependent on the usage of fertilizers. Thus, soil-test based integrated nutrient management facilitates a) judicious and need-based fertilization; b) appropriate combination if organic, inorganic and biofertilizers; c) minimized losses of applied fertilizers; d) reduced soil, water and environmental pollution; e) improved soil health; f) reduced GHG emissions and g) resilience against climate change impacts.

Singh et al (2017) reported a net saving of 20 kg of P_2O_5 per ha when Rhizobium + PGPR were used without any reduction in economic returns and also reduced cost of cultivation. Sarwar et al (2021) reported highest systems productivity by conjunctive use of organic (50%) and inorganic fertilizers (50%) coupled with biofertilizers. It also improved the soil organic carbon, plant growth and yield.

c. Irrigation management

Water productivity forms an integral part of component of enhanced farm productivity. The objective of irrigation management should be to make use of water in a sustainable and profitable manner. The disadvantages of traditional flood irrigation method include i) unsuitability for crops that are sensitive to water logging; ii) increased cost due to requirement of land levelling; iii) wastage of water as run off and evaporation; iv) uneven distribution of water to crops; and v) possibility of soil erosion. To overcome these, water saving mechanisms such as sprinkler and drip irrigation systems have been developed. Drip irrigation could be coupled with fertilizer delivery system called 'fertigation' to ensure regulated quantities of water and nutrient delivery in the root zone when needed and thus ensuring optimal crop growth. A detailed study by Narayanamoorthy (2004) revealed that adoption of drip irrigation resulted in 23%, 19%, and 29% increase in yield and 1.28, 13.61 and 11.60 HP hours/quintal water use efficiency were recorded in sugarcane, grapes and banana, respectively. The cost of cultivation was lesser with drip irrigation system than flooding method for sugarcane, grapes and banana with increased productivity and B:C ratio of 1.91, 1.77 and 2.23, respectively. Further, drip irrigation saved 44%, 37% and 29% water and ₹3455, ₹4812 and ₹7935 on energy in sugarcane, grapes and banana, respectively, over flood irrigation system. Similarly, Gorain et al (2018) observed that drip irrigation in high water demanding crops like sugarcane and banana resulted in reduced water requirement by 5940.53 m³/ha and 3658.81 m³/ha, respectively and the value of water was ₹1,18,217/ ha and ₹69,993/ha, respectively. The social benefits included considerable reduction in energy costs and labour charges. As the life span of the drip irrigation system is considered as 10 years, the B:C ration of the social cost and benefits discounted for 10 years was 2.08.

d. Planting methods in paddy

Generally, paddy is cultivated using three methods viz. traditional, SRI method and direct seeding. The System of Rice Intensification (SRI) initiative involves transplanting young single seedlings wide apart instead of the conventional method of transplanting multiple mature seedlings close together. SRI does not depend on continuous flooding of rice fields; it only requires the fields to be wet. Direct sowing of the paddy there is no nursery raising cost and only two labourers are required as compared to SRI and traditional methods where 15

and 20 labourers are required, respectively. Both SRI and direct seeding methods were on a par and significantly higher yielding (28-34%) than traditional transplanting method (Reddy et al., 2009) and cost of cultivation was also the lowest (less by 15% as compared to transplanting method) in direct seeding method with a B:C ratio of 2.16.

e. Use of Plastic Mulching

Mulching is the process/practice of covering the soil or ground to create favourable growth and development of the plant translating into higher productivity. Organic mulches have been in vogue since centuries, which make use of leaf, dead leaves, straw and other compost etc. However, due to non-availability of the organic mulch, this has been replaced with plastic mulch. Plastic mulching i) improves soil structure and texture; ii) insulates the soil; iii) reduces pests, pathogens and weeds; iv) enhanced plant growth, v) higher crop quality and vi) reduces the risk of root damage. In some of the crops, major chunk of the cost is allocated for weeding operations. About 80 percent of the cost is spent on weed management in the tuberose cultivation (Indhumathi et al., 2020) and adopting plastic mulch reduced this cost with enhanced B:C ratio of 4.3. Similarly, in watermelon, the B:C ratio was as high as 6.4 against 4.6 in without mulch treatment.

f. Zero tillage/minimum tillage

Zero tillage refers to the arable land on which no tillage is applied between harvest and sowing. In this practice, the following crop is sown directly into soil not tilled since the harvest of the previous crop. In rice-wheat system, usually such practice is very useful which not only saves field preparation time but also reduces damage to soil. Tripathi et al. (2013) planting wheat after the harvest of rice directly on untilled soil which retains the rice crop residues reduced the tillage costs and thereby increased profitability through net savings in production costs by 12.73%. The other benefits are soil health restoration including soil microbial populations, energy savings and irrigation costs for crop establishment.

g. Agricultural Contingency Planning

Contingency planning in agriculture is an approach for enhanced preparedness to cope with aberrant weather-related risks viz., droughts, floods, heat wave, cold wave, untimely and high intensity rainfall, frost, hailstorms, pest and disease outbreaks and thus minimizes the crop losses. The agro-ecologies across the country are endowed with certain advantages and at the same time are vulnerable to weather-driven hazards. A thorough understanding of such advantages and disadvantages will give an opportunity to prepare in advance for such unforeseen events and thus reduce the risk intensity.

The district agricultural contingency plans (DACPs) are available with information on i) district agricultural scenario, ii) stage-wise vulnerability of various agricultural systems and iii) recommended adaptation measures. These documents are updated at regular intervals to incorporate recent scenarios and technologies. The DACPs have been operationalized since 2013 by integrating the long-range weather forecast with the agricultural calendar of the district with an emphasis on the agro-ecologies supposed to face weather aberrations. The major benefit realized from these plans include

- Despite -20 to -59% deficit rainfall in 30 out of 51 districts in Madhya Pradesh, the total sown area and food grain production increased by 15% and 13%, respectively.
- Though most of Gujarat state received 18-23% deficit rainfall in 2014-15, the impact was negligible except for groundnut, sorghum and pearl millet.
- In Karnataka, deficit rainfall situation was managed by (a) encouraging the sowing of maize, cotton, pearl millet in unsown areas of sorghum, pigeon pea, groundnut and sunflower; (b) encouraging farming community to take up land configuration, soil management practices; (c) utilizing the common property resources for fodder production and d) promote drought safety net programmes i.e., crop insurance.
- Promotion of community nurseries for rice seedlings to overcome the delayed sowing of paddy on a village basis was the major intervention initiated to meet the demand of the entire village in many districts.
- Additional power supply to irrigate standing maize crop at critical growth stages; adoption of *in-situ* moisture conservation measures, short duration rice varieties like MTU 1011, direct seeded rice, crop diversification from cotton to other short-duration of legumes; integrated farming systems; micro irrigation in cotton as water saving mechanism were taken up in Telangana.

3. Conclusion

Thus, several technologies are available for reduction of cost of cultivation. However, functional policy frameworks coupled with extensive awareness building programs among stakeholders is essential to ensure their adaptation. Similarly, efforts should be made to package the technologies rather than propagating them individually. For instance, farm pond technology should be supported by lining of the pond, drip irrigation system for efficient use of harvested water, supply of improved varieties of crops that fetch maximum price etc. While dissemination of technologies, care must be taken to ensure that right strategies are adopted. For instance, while some technologies like improved varieties can spread at individual farmer level, natural resource conservation technologies need community mobilization.

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AGRI-PRODUCE COST COMPUTATION: AN IMMENSE NEED FOR RE-ORIENTATION



CMA Rakesh Kumar Sinha
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Task force on Agri Cost Management

Backdrop

As per FAO-Food and Agriculture Organisation of the United Nations, world agriculture statistics, India is the 2nd largest country in worldwide in production of Paddy (Rice) and Wheat. Indian farming contribution to GDP is 17-18%. Indian farming sector generates 50% employment which is much higher than any other sector's employment.

Concerns

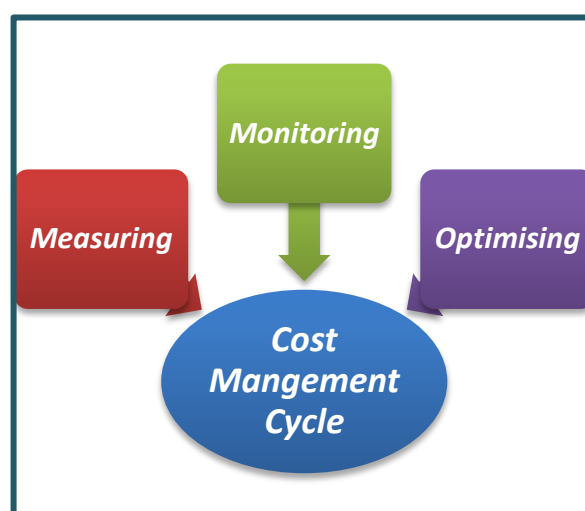
If a term VUCA is to be coined – everyone would get connected to the situations of Volatility, Uncertainty, Complexity and Ambiguity that the industry is exposed to. One should realize that all these concepts are to be connected even to farmer or farming activity. Secondly - due to poor infrastructure, irrigation, floods, poor seed quality, harvest approx 30% agriculture produce spoiled every year. Soil test is not being done cent percent. Due to lack of sufficient number of cold storage significant percentage of agriculture produce spoiled every year.

Need of the Hour

Having agreed to attempt for a **mandatory task** of making the agriculture viable and profitable – all the stakeholders (since entire Mankind need FOOD) should put in their efforts. Farmer should feel that Agriculture is profitable firstly and commands respect in the society. Thus, it aptly fits into the conventional equation: $COST + PROFIT = PRICE$. The cost of cultivation rotates around the factors like Input Costs - Productivity aspects – Local Conditions. Optimization of Input Costs is certainly achievable with typical Cost management Cycle viz., “Measuring – Monitoring – Optimizing”.

Role of ICMAI

The task force on Agri Cost Management of the Institute of Cost Accountants of India is carrying out R&D on the method and application of cost accounting techniques in order to derive actual cost of production of various agriculture produces produced across the PAN India. This will definitely be helpful to the government, farmers and other stake holders. The task force is brainstorming on the aspect of application of Cost Accounting Standards issued by the Institute of Cost Accountants of India and Generally Accepted Cost Accounting



principle to the agricultural costing. As a member of the Task Force an attempt is made to fit in the Agricultural Costs into the framework of Generally Accepted Cost Accounting Principles.

Experience Study

Here is an effort to throw light at the tasks involved in compiling a Cost Sheet for Paddy and Wheat taking into consideration the experiences of Farmers from Bihar. Predominantly across Bihar; Three steps i.e; Plough, Sow and Cutting are involved in production of Paddy (धान) and and Wheat (गेहूँ). Paddy is normally a Kharif crop. Its plough is started during the monsoon season generally in between July-August. Paddy requires more water in comparison to wheat. Whereas wheat is a Rabi crop and plough is started during winter season generally in between November – December.

Process

Land Preparation to Transplantation to applying the fertilisers to Harvesting – each of the activity accumulates costs. More important aspect is that for the crop paddy - watering is to be done five times in an interval of 15-30 days. In case of wheat the nursery stage is replaced by sprinkling activity. Fertiliser application practices are adopted in line with conventional practices for the respective crop and climatic condition.



The author with farmers

Nexus between the Factual Position and Costing Principles:

- **Production Cost Centres:** Based on the process involved in the farming of paddy or wheat and to derive cost of production **Agriculture field (Khet)** and **Threshing place (Khaliyan)** can be treated as Production Cost Centre. Costs accumulated to the production cost centre are treated as a **direct costs**.
- **Service Cost Centres:** Where canal system is not available for irrigation – the same is carried out by using of bore water or water from pond or well. For this motor is running either through electricity or diesel generator set. After harvesting the produce consumes packing material. Transportation of crop also takes place from the storage point. All these activities can be treated as Service cost centres. Costs attributed to the service cost centre are treated as **indirect costs**.
- **Unit of Measurement:** Generally, agriculture fields are measured or termed in Katha or Bigha or Acre or Hectare. In cost sheet unit of measurement i.e., cost incurred, crop produced may be per katha or per bigha or per acre or per hectare depending upon the availability of agriculture land to the farmers. One Bigha is equal to 20 Katha or 80 decimals. One acre is equal to 1.6 bigha or 32 katha or 100 decimals. One hectare is equal to 2.4712 acre or 4 bigha.
- **By Products:** Sales realisation from by-products has to be adjusted from the cost of production. Puwal and Bhusa are the by-products of paddy and for wheat Bhusa is the by product.
- **Opportunity Cost:** The agriculture land remains vacant for two months between the cropping of Paddy and Wheat. Farmers and other agriculture labours remain unemployed during these two months. Strategic steps are required to minimize the opportunity cost. The opportunity cost should be taken to the cost of produce based on economic feasibility.
- **Selling price:** - Central government every year announces Minimum Support price (MSP). State government purchases crops from the farmers through Primary Agriculture Credit Society (PACS).

Suggestive Contents of Cost proforma:

A tentative template can be developed considering the following Line Items:

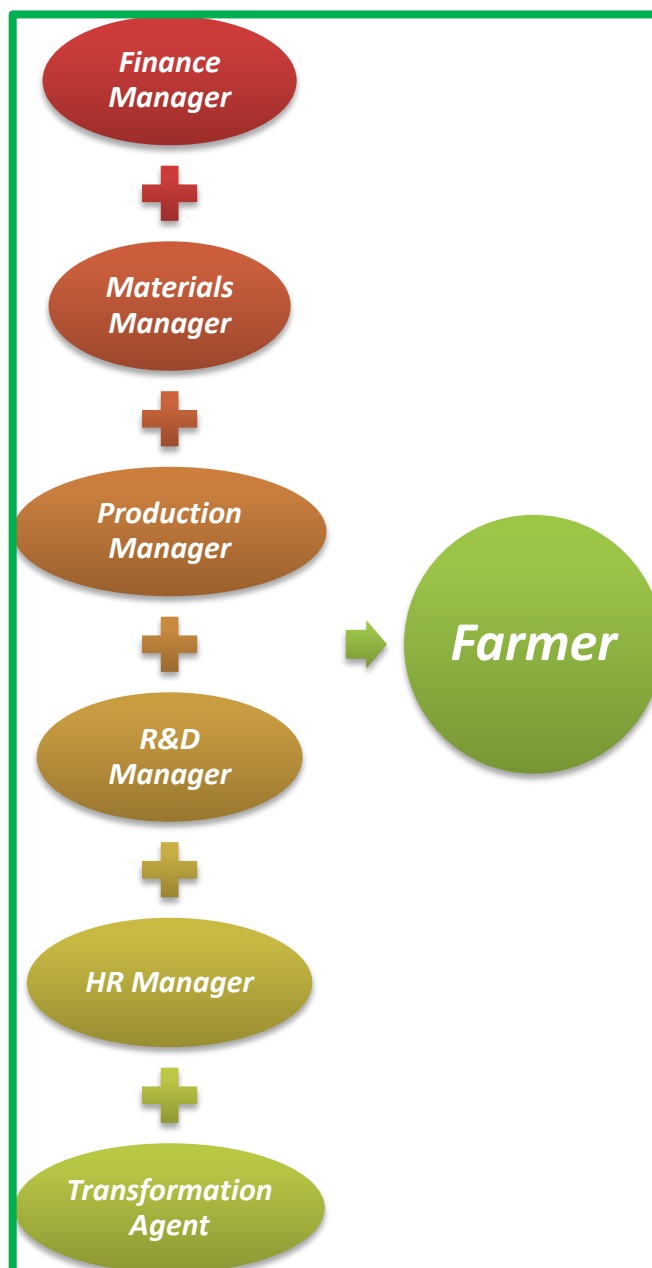
- a) Materials consumed viz., Seeds and Fertilisers
- b) Utilities Consumed: It could be either Electricity or the Water been drawn from Irrigational facility

- c) Labour Cost is collected by mapping varied activities required to be performed during the crop period.
- d) Machine Utilisation if any: Suitable Depreciation and Operating costs are calculated per hour and accordingly the activities are charged with.
- e) Overheads include Soil Testing charges and imputed cost for the supervision time spent in by the Farmer
- f) At this stage the Cost of production can be arrived at either per Acre or per hectare
- g) Packing material and Transportation Costs are generally treated as post Production Costs
- h) In case agricultural Crop Loan is availed – the Interest charges are also loaded into the costs. Thus, the Cost of sales is calculated

Such Cost of sales has to form as the base for fixation of Minimum support price

Finally....

Let us realize that the farmer is a Finance Manager – a Materials Manager – a Production Manager – An R&D Manager - A HR Manager and as well a Transformation Agent for achieving the Sustainability Goals. Let us hear to his voice. Capacity Building of Farming community should never be neglected and should be a focal point of every government. **Otherwise – there would be no farmer one fine day. Let us hope that all the stakeholders realize this aspect!**



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CROP INSURANCE FOR SUSTAINABLE DEVELOPMENT OF FARMERS



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The agriculture sector in India has been growing at the rate of 3% to 4% in the last 5 years (2016 to 2021) and the sector contributes nearly 18% to our economy. The Gross Value of Agriculture production including forestry and fishing was estimated at Rs.19.48 lakh crore during the year 2020. India is the largest producer of milk, spices, and spice products and the second-largest producer of horticulture crops. India remains one of the top 3 countries in the world in the production of paddy, wheat, pulses, groundnut, rapeseed, vegetables, sugarcane, tea, jute, cotton, tobacco leaves, and so on. As per the Economic Survey of India 2020-21, the total food grain production of the country was estimated to be nearly 300 million tonnes in the financial year 2020-21.

Nearly 58% of our population primarily works in agriculture and they are one of the highly vulnerable segments, has continuously been affected by natural disasters, particularly, floods, unseasonal rains, storms, and droughts, etc. Nearly 86% of the farmers in India are small and marginal farmers with an average land size of fewer than 5 acres, when a disaster strikes, the entire livelihood of the farmers gets affected as nearly 78% of such farmers take loans for their agriculture activities, thus, the disasters further add to their indebtedness and poverty. Insurance provides primary risk protection to the farmers in such situations. We have been running various crop insurance schemes right from 1972, starting from Comprehensive Crop Insurance Scheme (CCIS) from 1985 to 1999, National Agriculture Insurance Scheme (NAIS) from 2000 to 2015, then, Modified NAIS from 2010 to 2016. In 2016, our prime minister had introduced a new agriculture insurance scheme called Prime Minister Fasal Bima Yojana (PMFBY). It is one of the most comprehensive crop insurance schemes in India and is also said to be the largest insurance scheme in the world covering nearly 6 crore farmers. The scheme provides financial compensation to the farmers in case of yield loss triggered by all the important agriculture risks emanating right from sowing failure, damages to standing crops, post-harvest losses, etc. The scheme covers all the natural catastrophic perils including localized calamities like storms, landslides, forest fire, unseasonal rainfall, animal damage, etc. The premium rates are highly subsidized and are one of the lowest with the farmer's premium being fixed at 2% for food crops and oilseeds grown in Kharif season and the same is 1.5% for rabi crops. The remaining part of the actuarial premium is shared by the central and state government on a 50:50 basis.

Though the scheme is one of the most comprehensive and has become very popular among the farmers, still the scheme coverage in terms of area of cultivation is only at 30% and the farmer's participation has slightly come down in recent times, particularly during 2020 and 2021. The number of farmers covered during the Kharif season 2021 is about 2.65 crores and the premium collected is Rs.23,223 crores, while the number of farmers covered was 5.6 crores and the total premium collected was Rs.35,800 during the financial year 2018-19. However, looking at the total number of farmers participating in the agriculture activities, which would be approximately 12 crores and the total growth in the agriculture sector, still, a lot of initiatives needs to be taken by all the stakeholders – policymakers / Central and State Governments, Regulators, Insurers, Intermediaries, and farmers, etc. to increase the crop insurance penetration in the country.

The following are suggestions to improve the agriculture insurance penetration and to make the scheme financially sustainable.

1. Increase the coverage of farmers:

The crop insurance penetration needs to be increased, currently, only about 24 percent of the farmers have been enrolled under the PMFBY scheme, it has to be increased to at least 50% in the next 2 to 3 years. Though a considerable number of farmers are aware of the scheme, still the awareness needs to be created among the small and marginal farmers who are vulnerable. All the stakeholders - Government officials (Central & State), Insurers, Bankers, and Intermediaries need to educate about the importance of adequate risk protection, benefits of the scheme, and they must provide real value to the farmers. Unless they do that, the farmers would not come forward to insure their crops. More importantly, crop insurance needs to be made compulsory among all types of farmers. However, after the government made it optional even to the loanee farmers, the penetration has come down significantly during the last 2 years. Hence, it is important to make crop insurance compulsory for the farmers would not only help in reducing the financial burden of the farmers but also protect them financially at the time of natural disasters. Secondly, it would also reduce the adverse selection and moral hazard which would result in reduced premium rates and encourage the insurers to expand the crop business largely.

2. Increase the number of crops covered under the scheme

The PMFBY scheme currently covers largely food crops and oil seeds but provides limited coverage to horticulture crops. We need to improve the coverage of the scheme to bring more crops under this scheme. India is the largest producer of horticulture crops, hence, a customized multi-peril insurance product for horticulture and vegetable crops needs to be introduced. Need to develop an exclusive cover for herbal and medicinal plants. There is a growing need for exotic hybrid crops including floriculture which are highly expensive and needs insurance production.

3. Bring more innovation in the products

The crop insurance needs to be made still more comprehensive covering a greater number of horticulture, floriculture, vegetables, and medicinal plants, etc. With the help of technology and availability of satellite images, IoT, or sensor-based data, it is possible to develop a block-chain based parametric insurance. Blockchain technology can be used and the blockchain enables insurers to develop an end-to-end completely automated insurance solution. The technology uses a fully integrated algorithm that can automatically pull out the data from multiple data sources i.e., satellite images, big data, IoT or sensor data, IMD and Automated weather station, etc., can perform the underwriting of the crops, verify the farmers crop details, and automatically estimates the claim when the predefined triggers are breached. The claim amount can be credited automatically into the farmer's bank account. such type of insurance is currently available in the developed markets like the USA, France, U.K, for many natural calamity risks like floods, earthquakes, cyclones, and storms, etc. There is a need to develop a customized policy for horticulture and planting or cash crops like vegetables, bananas, coconuts, coffee, tea, cardamom, pepper, and medicinal plants. Some of these crops are highly weather-sensitive and suitable weather parameter needs to be used as the proxy indicator for each of these products. Certain crops are sensitive to multiple perils like rainfall, temperature, wind speed, humidity, soil moisture, etc. hence appropriate crop insurance either single peril or multi-peril-based crop insurance scheme needs to be developed. This would make crop insurance comprehensive enough to compensate the farmers.

4. Need to develop Revenue Insurance scheme:

One of the major concerns of the farmers today is that the current insurance scheme does not compensate them adequately. The compensation covers only the cost of cultivation or input cost, and it covers only the yield risk, mainly shortfall in the yield. It does not cover their cost of transportation, storage risk, and market risk or revenue loss. Particularly, cash crops like coffee, tea, pepper, cardamom, banana, etc., face the risk of price fluctuation. The market prices of these commodities can also be linked to yield risks. Based on these data, a revenue-based model can be developed for India in similar line with the countries like the US, wherein the market prices of all crops are available through Chicago Commodity Exchange Board. The insurance company's system is linked to the commodity exchange, and when the market price of the insured crops falls below the threshold level, then the policy compensates for the revenue loss to the farmers. We have a commodity exchange board or MCX in India and using the market prices of the

commodities traded in the commodity board, a revenue insurance model can be developed. This kind of insurance can be helpful to the farmers in compensating them adequately which can make them self-sufficient.

5. Provide technical support or value addition to the farmers

We also need to develop the capacity building because today some of the agriculture field staff including the government officers, intermediaries, and bankers involved in the crop insurance scheme, do not have adequate technical knowledge about agriculture insurance and their awareness about insurance is also very limited, so we need to educate them and we need to bring for the farmers the knowledge level of how they can minimize the risk so the insurer can collaborate with the ICMAR or Krishi Vigyan Kendra's (KVK), there are KVK's in every district of the state, the insurer can collaborate with KVKs to provide the technical support in terms of soil testing, provide the hybrid seed varieties and provide necessary technical advice to the farmers for better management of their crops.

6. Strengthen the distribution system to improve the penetration

In order to increase the insurance penetration, we need to have multiple channels that can help to reach the farmers and insurance buying needs to be simplified and easily accessible to every farmer in their field. Buying insurance policies through mobile applications and tying up through agriculture distribution partners like vegetable commission agents, fertilizer and agriculture feed outlets, agriculture credit societies, cooperative banks, government intuitions, farmer producer organizations, and intermediaries, etc., apart from the existing channels like agents, brokers, etc., would help in reaching to the maximum number of farmers.

7. Use of technology in the entire process of crop insurance.

The recent guidelines by the Ministry of Agriculture and Farmers Welfare have laydown a high emphasis on the increased use of technology at various stages of crop growth. The satellite images and weather data can be used to assess crop health at every stage of crop growth (Planting, nursery, flowering, fruit development, and harvesting, etc.). Smartphone with Agri. the application can be used for the underwriting of the crops. The use of Geo-coding and a cadastral map would reduce the area correction factor as it can help to identify the exact area of cultivation and the type of crop sown by the farmers. Introduce smart sampling in all the areas where PMFBY has been implemented, which will replace the manual process of crop cutting experiments (CCE) in the years to come. The pilot study has been done in some states like Maharashtra, Orissa, and Andhra Pradesh. Now they use satellite images and weather sensors which provide the required proxy indicators. Using these proxy indicators and agro-climatic conditions of the region, the region can be classified as a high risk, medium risk, and low-risk area. In each cluster or region, only a minimum number of CCE plots can be determined, as each cluster is highly homogenized with low variance. Currently, we require a minimum of 4 CCEs to be conducted at every insurance unit level (village or Gram panchayat) and the same at the National level, a minimum of 5 lakhs CCEs' which is time-consuming and requires a huge number of field staff to be deployed for this purpose. This entire process delays the submission of required yield data to the insurers which delay the claim settlement to the farmers. Drones can be used for loss assessment and also prevent moral hazards in crop insurance. Today the cost of drones has come down and with the help of AI-enabled Virtual/Augmented Reality (AR), localized and catastrophic losses can easily be assessed which can reduce the need for manual survey or loss assessment by the surveyor in the affected areas.

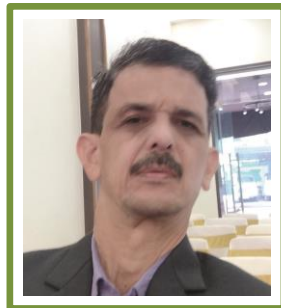
Now they can use a smart application with an Artificial Intelligence algorithm using machine learning / deep learning tools, wherein, the farmer can then take photos of the damaged crops using the smartphone and upload the 360-degree image of the damaged crops along with the longitudinal and latitudinal location of the site. The smart application uses the deep learning algorithm to compare the image and assess the damage instantly and automatically calculates the loss or claim amount payable. The farmers instantly. So, these experiments are being done in India today, and very soon we may see parametric insurance being launched with the help of technology and which will improve the claim settlement and increase the agriculture penetration in the country.

As discussed above, there has been a lot of improvements made in the last 4 years by the central and state government by making the PMFBY scheme farmers friendly, but still, lots of improvements need to be done in order to make the farmers live sustainably. There are various risks like transportation and storage risks and

market risks, etc., that are not covered under the crop insurance scheme. Revenue risk needs to be covered for cash crops and plantation crops. There are futures and options-based derivative covers available that insurance can be linked with that and promote a better revenue-based insurance model for the high-value crops. Revenue-based insurance or parametric insurance models can make the farmer's life sustainable for a long period. We need to come out with customized products delivering value to the farmers, then only the farmers will come forward voluntarily to insure their crops adequately. As insurance act as an effective risk mitigation measure at the time of disasters, adequate insurance among all farmers can make their lives sustainable for a long period. Apart from crop insurance, there are many agriculture insurance products like livestock insurance and animal insurance that would provide additional financial support to the farmers in distress. There is about 500 million livestock population, and 300 million cattle population and penetration of such insurance are very limited, nearly 70% of the farmers who are growing poultry or cattle need to be protected. There is a still huge population of farmers who are either do not have any kind of insurance or adequate protection, we need to provide comprehensive risk protection to the section of farmers who are highly vulnerable to various kinds of disasters which are rising today due to climate change. This requires an integrated approach from all the stakeholders who can come together and develop a farmer-friendly insurance scheme that will help farmers in attaining sustainability.

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RURAL DEVELOPMENT IN INDIA – BUSINESS OPPORTUNITIES



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India is predominantly an agricultural economy country and almost all the basic crops of food is cultivated in Rural parts of the various States in India. All the basic needs of the food of the India are satisfied by Rural parts of the various States in India.

Traditionally, rural development was centred on the misuse of land-intensive natural resources such as forestry and agriculture. This sector used to depend much on the climate for its flourishing but with the introduction of technology and science, this field too has witnessed huge development.

Rural development still remains the core of the overall development of the country. Therefore, it is important for the government to be productive and provide enough facilities to upgrade their standard of living. Rural development is a term that concentrates on the actions taken for the development of rural areas to improve the economy.

The Rural development usually refers to –

1. The method of enhancing the quality of life and financial well-being of individuals, specifically living in populated and remote areas.
2. Creation of required basic infrastructural facilities like internal road development, electricity, irrigation, etc.
3. Constructing the cold storage facilities for the storing of agricultural produce.
4. Making available water resources for consumption as well as for the agricultural purposes.
5. Making available transportation facilities at affordable rates to the farmers and agri-business owners to transport the agricultural produce to the market place.
6. Creating better communication facilities like radio, TV, Internet facilities which will create on line marketing opportunities of agricultural produce.
7. Creating awareness about the basic needs of their life and to overcome the difficulties.
8. Creating public health and sanitation facilities.
9. Making available credit facilities (through creation bank network) for the farmers and the agri-business owners at affordable rates.
10. Alleviation of poverty of rural population by creation of employment opportunities for the young generation of rural population.
11. Enforcement of law and order to protect the interest of the rural population against the miscreants.
12. Creating literacy among the rural population by giving quality education to the young generation.
13. Honing the skills of the young populations by giving more appropriate practical training in the related field.

Importance of Rural Development:-

Rural development is important not only for the majority of the population residing in rural areas, but also for the overall economic expansion of the nation. It is considered to be of noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy that tries to obtain an improved and productivity, higher socio-economic equality and ambition, and stability in social and economic development.

Scope for Improvement:-

There is a definite scope of improvement in the life of rural population by carrying out the above developmental activities in letter & spirit.

Objectives of Rural Development:-

See the basic definition of Rural Development, the main objectives can be summarised as under:

- To improve productivity and wages of rural people
- To guarantee increased and quick employment possibilities
- To demolish unemployment and bring a notable decline in underemployment
- To guarantee an increase in the standard of living of the underprivileged population
- To provide the basic needs: elementary education, healthcare, clean drinking water, rural roads, etc.

Few more words about Rural Development:-

To bring about the Rural Development, it is necessary in the first place to increase employment opportunities for the young population of the rural areas. The employment opportunities can be created / increased through the concentrated efforts of the Central Governments / State Governments / NGOs by going through the specific skills and the educational qualifications of the concerned rural areas. If feasible and practicable to arrange for more training on the skills so that the rural youth will become self-employed and can thus start his own business. This will automatically give impetus to other developmental activities.

We have given below the detailed agri-business opportunities through which the local / regional skills will be fine-tuned in the form of starting the business in the rural areas.

Information about Agri Businesses in India:-

Amid this corona crisis and global recession, agriculture has emerged as one of the most evergreen sector. Moreover, this sector is gradually growing across the globe and there are hundreds of agriculture related business ideas that one can easily start.

While some agriculture business requires low investment, some may need medium to large investment. One can start agriculture related business of his own choice looking into the exact skills required and the time to start earning the profit on the same.

Moreover, agriculture is a very vast field which includes forestry, animal husbandry, and fishery too. The businesses related to agriculture are quite profitable and demanding but requires passion and dedication.

Here are the list of agriculture related business ideas. This list is indicative only, and not exhaustive. You can shortlist the most suitable business idea and get quiet handsome earning.

Sr. No.	Nature of Business	Gestation Time	Investments	Remarks
1	Grocery Shopping Portal	Low	High	Easy to start after having full knowledge of market potential

2	Tree Farming	High and Time Consuming	Moderate to High	High Maintenance costs
3	Vermicompost or Organic Fertilizer Production	Low	Minimum	Easy to initiate with a little knowhow of the production process.
4	Business of Fertilizer Distribution	Low	Moderate	This business is suitable for people who live in small towns or rural areas. In this business, you are required to buy fertilizers from big cities and make them available in rural areas. This could be one of the best small agricultural business ideas in India to start in small towns.
5	Flower Business (Floriculture)	Moderate	Low to Moderate	Can be a good business opportunity
6	Mushroom Farming	Low	Low	Mushrooms are in great demand at hotels, restaurants, and households.
7	Livestock Farming & Dairy Development	Moderate	Moderate to High	Value added products of milk (like Curd, Buttermilk, Butter, Ghee, Srikhand, Rabadi Basundi, etc.) have great demand.
8	Poultry Farming	Moderate	Moderate to High	The poultry farming business has transformed into a techno-commercial industry. In the last few decades, it is one of the fastest-growing industries.
9	Organic Greenhouse	Moderate	Moderate to High	It has good potential to grow because the demand for organically grown products has been increasing consistently. Beforehand, this business was done on small family-run farms, but with increasing demand as people are now buying land for making organic greenhouse.
10	Beekeeping	Moderate	Moderate	With the increasing awareness for health, the demand for honey is growing day by day. This way, beekeeping has become a great business opportunity. This business demands day-to-day monitoring of the bees with close supervision.
11	Fruits Tree Farming	Moderate to High	High	Value Added products like Jam, Jelly, Pickles, Juices, Syrups, etc. can be prepared on certain Fruits. High Market Potential is available in case of Seasonal Fruits.

11	Fruit & Vegetable Exports	Moderate	High	Great export potential for this type of business.
12	Broom Production	Low	Moderate	For centuries, the broom has been used for sweeping up the floor and removing the dirt and dust in and around workplaces and homes. The process of broom production is quite simple and the project can be initiated with low capital investment. Maintaining a good quality and competitive prices can give you good profits in a short span of time.
13	Groundnut Processing	Moderate	Moderate	If you can procure good quality raw material (groundnuts) for this business, you can initiate it with moderate capital. Processed groundnuts have very good market potential all over the world.
14	Quail Farming	Moderate	Moderate to High	It is about raising quails for profitable eggs and meat. At the global levels, quail farming business is gaining importance as it fulfils daily family nutrition demand.
15	Tea Plantation	High	High	With the increasing demand for tea leaves, this business has huge potential. Tea plants typically required acidic soil and heavy rainfall, although they can be grown anywhere from sea level to high altitudes. So, if your demographic situation is suitable for growing tea, you should go in this business. This is one of the good agriculture business ideas in India that requires high capital.
16	Coco-beans Cultivation	Moderate	Moderate to High	This can be also a good business opportunity in rural sector.
17	Hydroponic Retail Store	Moderate	Moderate	The use of hydroponics technology is increasing very fast these days. In a hydroponics system, plants/crops are cultivated without soil. In this business, you can sell many hydroponics equipment in one place.

18	Farming of Medicinal Herbs	Moderate	Moderate High	Growing of medicinal herbs at the commercial level is one of the most profitable agriculture business ideas. If you possess good knowledge about the herbs and have sufficient land, you can initiate the farming of medicinal herbs. You may need to take certain licenses from local government in the case of medicinal herb business.
19	Agro Tourism	Moderate	Moderate to High	One can start a small business in the Rural Area (particularly where there is a sea- shore and having nice sight-seeing or sceneries, etc.) where the owner of the Land can become a businessman by offering agro-tourism services. Even these services can also be offered in hilly rural areas
20	Spices Cultivation	Moderate	Moderate to High	The spices like Cardamom, Turmeric, Nutmeg, Ginger, Dry Chilli, Black Pepper, etc. can be used to generate business opportunities. This type of business has great potential in Hotel Industries in city as well as in rural areas.

Major Corporate Players in Agri Business in India:-

Some major corporate business houses are taking active interest in supporting agri- business of the farmers in rural areas. These corporate houses purchases the agricultural produce directly from farmers by offering attractive prices and market them (agricultural produce) under the brand name to the ultimate consumers in different parts of India.

The list of such corporate players are mentioned hereunder.

Sr. No.	Particulars of Private Players	Nature of Products dealing in
1	M/s. Dabur India Ltd.	Fruits, Vegetables, & Processed Grains
2	M/s Godrej	Fruit, Vegetables, & Processed Grains
3	M/s. ITC	Fruits, Vegetables, & Processed Grains
4	M/s. Vadilal	Milk & Milk Products
5	M/s. Nestle India	Milk & Milk Products
6	M/s. Gujrat Sahakari Dudh Vitaran Sangha	Milk & Milk Products
7	Al Kabeer Group	Meat, Poultry, and Marine Products
8	Hind Group	Meat, Poultry, and Marine Products
9	V. N. Group	Meat, Poultry, and Marine Products

10	Sula Vineyards	Consumer Food (Alcoholic Beverages, Soft Drinks, Packaged Drinking Water, Packaged Food)
11	Coca Cola	Consumer Food (Alcoholic Beverages, Soft Drinks, Packaged Drinking Water, Packaged Food)
12	Fritolay	Consumer Food (Alcoholic Beverages, Soft Drinks, Packaged Drinking Water, Packaged Food)
13	Tata Group	Tea & Coffee Products

Source:- The above information of Corporate Players in Agri-Business is taken from IBEF (India Brand Equity Foundation. Website – www.ibef.org)

Companies Act, 2013:-

Apart from the above Corporate Players, Companies Act, 2013 have a Separate Chapter on Producer Companies indicating the importance of Rural Sector in agricultural business in India. All of these companies have been incorporated in the different parts of Rural Sector in various States in India.

The definition of a Producer Company under Chapter:-

A producer company is basically a body corporate registered as **Producer Company under Companies Act, 2013** and shall carry on or relate to any of following activities classified broadly: –

- Production, harvesting, processing, procurement, grading, pooling, handling, marketing, selling, export** of *primary produce of the Members or import of goods or services for their benefit.
- Rendering technical services, consultancy services, training, education, research and development** and all other activities for the promotion of the interests of its Members;
- Generation, transmission and distribution of power, revitalization** of land and water resources, their use, conservation and communications relatable to primary produce;
- Promoting mutual assistance, welfare measures, financial services**, insurance of producers or their primary produce.

Further the Statistical Records of MCA (Ministry of Corporate Affairs), Government of India shows the following figures of Companies & LLPs (engaging it Agricultural & Allied Activities) incorporated under Companies Act, 2013 during the last 3 Financial Years, thereby indicating the importance of Agri Business in Corporate Form of Organisation.

Financial Years	No. of Companies Incorporated	No. of LLPs incorporated
2019-20	5173	687
2020-21	10686	1086
2021-22	10666	799

Figures of Incorporation for the months of November, 2021 to January, 2022 are not available. All these figures of Incorporation have been taken from MCA Web- site.

Benefits under Income Tax Act, 1961:-

Even the Income Tax Act, 1961 is helping to the **Producer Company** in the form of tax deductions. The details of the same areas under.

Where the gross total income of an assessee, being a **Producer Company** having a total turnover of **less than one hundred crore rupees** in any previous year, includes any profits and gains derived from **eligible business**, there shall, in accordance with and subject to the provisions of this section, be allowed, in computing the total income of the assessee, a deduction of an amount equal to **100% of the profits and gains** attributable to such business for the previous year relevant to an assessment year commencing on or after the **1st day of April, 2019**, but before the **1st day of April, 2025**.

For the purposes of this section, —

(A) **”eligible business”** means

1. The **marketing of agricultural produce** grown by the members; or
2. The **purchase of agricultural implements, seeds, livestock** or other articles intended for agriculture for the purpose of supplying them to the members; or
3. The processing of the **agricultural produce** of the members

(B) **“producer company”** means

We have defined the Producer Company under the Companies Act, 2013 in the above paragraph.

(C) **“member”** means

who fulfils the quantum and period of patronage of the Producer Company as may be required by the articles.

Agencies / Organisations facilitating Balanced Rural Development:-

These Agencies / Organisations necessarily mean –

1. Various Banks (whether NABARD or Nationalised Banks or Co-operative Banks or Regional Rural banks) that help the farmers / owners of agri business the required credit facilities through various schemes in time at affordable rate of interest.
2. The infrastructural facilities providers which help the farmers / agri business owners required infrastructural facilities (like internet facility to communicate with customers / bankers / market agents, etc.) at affordable prices.
3. The Transport Companies that help the farmers / agri business owners the required transport facilities to lift up the agricultural produce to the market place.
4. The Cold Storage facilities providers to store the perishable agricultural produce at reasonable / affordable prices. In this case State Warehousing Corporations are helping the farmers and the agri-business owners to a great extent.
5. Agricultural Scientists / Agencies / Institutes that help the farmers / agri business owners about the sowing seeds, quality of crop, fertilizers to be used for better production, prevention of soil erosion, advising about suitability of environment to any particular crop, etc.
6. Meteorological Services provided / predicted by private agencies or by the concerned Government Department that help to understand the climatic conditions about the rain (excess or shortage) in a year.
7. Services provided by Government Department or by private agencies or NGO about the Rain Harvesting in case of any Draught happened in a harvesting season.
8. The Insurance companies that help the farmers and agri business owners in taking insurance of the crop and produce, and settlement of claims in case of any loss in the event of draught or famine.

Cost Accountant’s Role in Agri-Business:-

The Cost Accountant can offer consultancy services with respect to –

1. Understanding the exact nature of business and explaining as to how the same is to be established.
2. Formation of proper legal entity of business.
3. Helping to the business owners in gathering all the relevant information of processes to be carried out for arriving at the costs of the final product / service.
4. Determining the exact cost of the final product / service.
5. Determining the final price of the finished product / service.

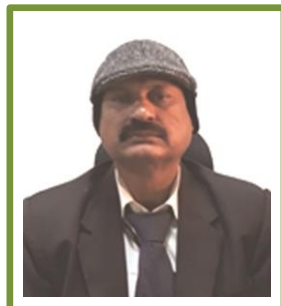
6. Approaching to the financing company for the credit facilities available under various schemes of Central Government to the agri-business enterprises.
7. Exploring the export market possibility of the final product.
8. Taxation Matters & Other Regulatory Compliances

Conclusion:-

The Government of India's intention in its endeavour is to help the agri-business owners as well as the farmers to become self-employed and thus to become a good employer to the persons of the surrounding areas / localities particularly in rural parts of the States in India. This intention will help the communities in rural India to remain self-reliant and not to unnecessarily run to cities / towns in search of employment. This will automatically help to ease down the burden of population of cities / towns, and this will further help to sustain with the overall environment in cities / towns as well as in rural parts of India. This will help in achieving the desired objectives of Government of India as stated in the earlier parts of this Article.

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EXTRACTS FROM THE KEY NOTE ADDRESS ON MSP IN THE WEBINAR ON 23.12.2021



Shri D. K. Pandey

Adviser Cost

Commission for Agricultural Costs and Prices (CACP)

Ministry of Agriculture and Farmers Welfare

Government of India

- Commission for Agriculture Costs and Prices recommends Minimum Support Price (MSP)/Fair Remunerative Price (FRP) for 23 mandated agricultural crops through five Price Policy Reports every year. FRP is recommended for sugarcane only.
- These Price Policy Reports are for kharif crops, rabi crops, copra, jute and sugarcane.
- Price Policy for Kharif crops are related to 14 kharif crops, namely,
 - 5 cereals (paddy, jowar, bajra, maize ragi),
 - 3 pulses (tur, moong, urad),
 - 5 oilseeds (groundnut, soybean, sunflower, sesamum, nigerseed),
 - 1 commercial crop cotton.
- Price Policy for rabi crops is related to 6 rabi crops, namely,
 - 2 cereals (wheat, barley),
 - 2 pulses (gram, lentil),
 - 2 oilseeds (rapeseed & mustard, safflower).
- Three Price Policy Reports are related to commercial crops, namely,
 - copra,
 - jute,
 - sugarcane.
- Thus, Commission recommends MSPs/FRP for
 - 7 crops under cereals,
 - 5 crops under pulses,
 - 7 crops under oilseeds,
 - 4 commercial crops.
- Price Policy Report are time bound work, hence Price Policy Report is submitted to Government on
 - 31st March for Kharif crops,
 - 31st July for rabi crops,
 - 7th September for copra,
 - 15th October for jute,
 - 30th November for sugarcane.

- The mandates relating to recommendation of MSP/FRP have been provided by the Government to the Commission from time to time.
- Accordingly, presently, following determinants are considered while recommending MSP/FRP.
 - demand and supply situation,
 - cost of production,
 - price trends in the market, both domestic and international,
 - inter-crop price parity (measured by relative returns),
 - terms of trade between agriculture and non-agriculture sector (average change to the prices that farmers received for their products and the prices paid for inputs of the productions),
 - likely impact of MSP/FRP on consumers, producers and overall economy,
 - rational utilization of natural resources viz. land & water and other production resources, and
 - Minimum of 50 percent as the margin over cost of production in case of MSPs and reasonable margin in case of FRP.
- Cost data are collected under “**Comprehensive Scheme (CS) for Studying the Cost of Cultivation of Principle Crops in India**” launched in 1970-71 and executed by Directorate of Economics and Statistics (DES), M/o Agriculture & Farmer Welfare through Agricultural universities/Institutions.
- Presently, Comprehensive Scheme is executed in 20 States.
- A stratified three stage random sampling has been adopted under Comprehensive Scheme:
 - tehsil as primary sampling unit
 - a cluster of villages as secondary unit
 - operation holdings within the cluster as third and ultimate stage of sampling unit.
 - A total of 8100 sample size of farmers throughout the countries are selected for a block of three years.
 - Presently, 2019-2021 Block Period is under execution.
- Based on actual cost estimates, yields and other data under Comprehensive Scheme, per quintal costs of production (CoPs) A_2 , A_2+FL & C_2 of a crop at all-India level are projected for the marketing year, which are considered while recommending the MSP/FRP of that crop for that marketing year.
- As concerned about increasing of income of the farmers, suggestions are as under:
 - For each mandated crop, it is observed that share of cost of human labour in total cost of production is significantly higher than machine labour, The annual wage rates are increasing rapidly in almost all States. Agriculture sector is facing acute shortage of labour. Therefore, there is need of mechanization at large scale. Through enhancing mechanization upto maximum extent in farming, the cost of cultivation and production may be reduced substantially, and simultaneously, shortage of labour in farming would be also overcome significantly.
 - Cost of production may be reduced by enhancing productivities of the agricultural crops, which would ultimately increase the farmers’ income.
 - Assured marketing will provide remunerative prices to the farmers for their produces, hence selling prices of the agricultural crops may be enhanced by developing the assured markets, and consequently, farmers’ income would be increased.
 - Warehouses may be developed at village level for storage of crops, so that, farmers may sell their produces at the time when reasonable and remunerative prices prevail in the market.
 - Crop diversification is now felt necessary to enhance the farmers’ income. Farmers may diversify from growing tradition crops like paddy and wheat to nutria-cereals, pulses, oilseeds and horticultural crops, to enhance their income, nutritional security, sustainability, and to maintain demand-supply balance of all crops.

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BETTER PRICE TO AGRICULTURE PRODUCE (Instant Sale Vs. Store and Sale)



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Abstract:

Agriculture is the backbone of India's economic activity in many ways. It still hires nearly 50 percent of the workforce and it is growth in agriculture that catalyzes growth in the manufacturing and the services sector too. Due to the sector's key role in the country's economy, there is a significant emphasis on the schemes for agricultural production which resulted in considerable growth in agricultural production.

However, to drive the employment and growth which can result in the economic prosperity of the rural areas, the sector requires well-functioning markets. The schemes though increased the agricultural production they have not achieved appreciably in terms of **price realization** for the produce due to less access to an efficient and scientific marketing system. In this regard, Agricultural marketing has gained significant importance and acts as a key facilitator of the agricultural sector.

An efficient and organized marketing system would ensure the maximum price realization for the farmers, which will induce them to produce more and market their products in an increasing proportion.

Pledge loan facility helps the farmers to avoid distress sale of agricultural produce during the harvest season by storing their produce in the godowns of regulated markets and also to meet their immediate requirements and preparations for the next cropping season.

Abbreviations: APMC-Agricultural Produce & Livestock Market Committee; CWC-Central Warehousing Corporation; FCI-Food Corporation of India; MF-Marginal Farmer; MMT-Million Metric Tonnes; MSP-Minimum Support Price; PML-Produce Marketing Loan; SF-Small Farmer; SWCs-State Warehousing Corporations; WHR-Warehouse Receipt.

India with the existence of 46 soil types has the Second-largest arable land in the World. Also, there is the existence of 20 Agri-climatic Regions with 15 major climates existing in the country.

India is the Largest Producer of Spices, Pulses, Milk, Tea, Cashew, Jute, and the Second Largest of Rice, Wheat, Sugarcane, Oilseeds, cotton, Fruits, and Vegetables.

During the 2019-20 Crop Year, food grain production reached a record of 296.65 Million Tonnes and the target was set for FY 2021-22 by the Government for further increase the same by 3.9%.

Rabi crops were sown in a total area of 34.8 million Hectares by November 27, 2020, 4% more than the Previous Season, and 2% above the average of the last five years.

According to the Ministry of Agriculture, out of a total of 97 lakh hectares sown area in the 2020-21 Rabi season, the Wheat and other Rabi Crops account for nearly 44 percent.

Kharif Crops will be sown on 50.9 lakh hectares in the season of 2021-22. In 2021-22, the Government purchased a record 43.33 MT of Wheat during the Rabi marketing season. In the case of Pulses and Oilseeds, the Government through nodal agencies has procured a total of 1.04 million tonnes at an MSP value of US\$ 761.63 million (₹ 5,662.82 crores) in 2021.

India has reached a milestone record production of Horticulture Crops of 331.05 million metric tonnes (MMT) in 2020–21 (As per 3rd Advance Estimate) which is an increase of 10.5 million metric tonnes over the production in FY20. Also, it is expected that there will be a significant rise in Fruits, Flowers, Spices, and Honey production.

In Livestock, India has the largest population of around 535.78 Million, which translates to approximately 31% of the World's livestock Population. In Milk production, it is expected that there will be an increase of 208 MT in FY21 from 198 MT in FY20, which is a growth of 10% Y-O-Y.

Food-Grain Storage Capacity in India:

Currently, The Total Agri Warehousing Capacity of India is around 91 MMT with State Agencies owning 41% of the Capacity and the balance distributed among Private Entrepreneurs, Co-operative Societies, Farmers, etc.

However, these State Agencies use 66% (60 MMT) of India's total Agri. Storage Capacity which also includes Hired capacity of 23 MMT. A storage capacity of 37 MMT is held through 3 Public Sector Agencies which are The Food Corporation of India (FCI), Central Warehousing Corporation (CWC), and State Warehousing Corporation (SWC).

In July of every year, due to the Average Buffer Stock norms for Food Grains of around 25 MMT and a Peak of 32 MMT, the Storage Capacity available with Government Agencies is used mainly for the storage of Foodgrains central Stock and for the Buffer Stock the Public Distribution Systems and other Government Schemes are used.

Warehouses:



Warehouses are Scientific Storage structures especially constructed for the protection of the Quantity and Quality of Stored Products.

Importance of Warehouse:

- ✓ *Scientific Storage:* The product is protected against quantitative and qualitative losses by the use of such methods of preservation as are necessary.
- ✓ *Financing:* The financial needs of the person who stores the product are met by warehouses as Nationalized Banks extend advance credit on the security of the warehouse receipt issued for the stored products up to 75 to 80% of their value.
- ✓ *Price Stabilization:* Warehouses help in the price stabilization of agricultural commodities by checking the tendency to make post-harvest sales among the farmers.
- ✓ *Market Intelligence:* Warehouses also offer the facility of market information to persons who hold their products in them.

Warehousing In India:

- ≈ *Central Warehousing Corporation (CWC)*: On 02.03.1957, Central Warehouse Corporation was established as a statutory body in New Delhi and it provides safe and reliable storage facilities for almost 120 agricultural and industrial commodities.
- ≈ *State Warehousing Corporations (SWCs)*: Separate warehousing corporations were also set up in different states of the Indian Union. The areas of operation of the State Warehousing Corporations are centers of district importance. The total share capital of the State Warehousing Corporations is equally contributed by the concerned State Government and the Central Warehousing Corporation.
- ≈ *Food Corporation of India (FCI)*: Apart from CWC and SWCs, the Food Corporation of India has also created storage facilities and is the single largest agency with a total capacity of 26.62 million tonnes.

Opportunities in Agri Warehousing:

It is expected that agricultural warehousing will witness the highest growth rate of approximately 17% in terms of revenue from 2019 to 2024. It was valued at 145.82 billion rupees in 2019 which is expected to reach 365.75 billion rupees by the end of 2024.

As of 2019, India has a total of Agri. warehousing capacity of around 91 million metric tonnes with the majority of the capacity being owned by state agencies. The growing need for proper storage of fruits and vegetables in the country is fuelling the demand for Agri. warehousing in the country.

At present India's total warehousing capacity is estimated as 160 Mn tonnes out of which approximately one third is managed by the private sector while the rest by FCI (Food Corporation of India), CWC (Central Warehousing Corporation), SWC (State Warehousing Corporation), and state agencies and the co-operative sector.

The government has taken several steps with adequate budgetary provisions to develop robust and integrated Agri. logistics systems in the country for transportation of Agri. produce.

There is a core focus on improving holding and warehousing capacity as per the latest budget. NABARD has been tasked with geo-tagging the 162 million metric tonnes (MMT) of warehousing, cold storage, etc., the capacity which will help farmers with better market intelligence. Also, the government will provide viability gap funding to set up more **Warehousing Development and Regulatory Authority (WDRA)** norms-compliant warehouses.

Produce Marketing Loan (PML):

It is a well-known fact that the Prices of Agricultural Commodities immediately after Harvest, tend to be **Low** compelling the Agriculture Farmers, especially the Small Farmers (SF) and Marginal Farmers (MF) with Low or NO Holding Capacity, to resort to '**Distress Sale**'.

It is felt that there is a need to provide the Agriculture Farming Community with 'Pledge Finance' to enable them in availing Credit when the Prices are Low and to sell their Produce when the Prices are Favourable.

Initially, the 'Pledge Finance Facility was extended through the State and Central Warehousing Corporations on Warehouse Receipts by the Financing Banks. However, since the Godowns of State & Central Warehousing Corporations were **Limited** and Located at Division or District levels involving Transportation Charges, the facility was **Not of Much** avail to the Agriculture Farmers.

Therefore, to facilitate the Agriculture Farmers with **Credit** when the Agricultural Prices are **Low**, the Agricultural Marketing Departments / Boards of various States have started implementing the Pledge Finance Scheme, through their Agricultural Produce & Livestock Market Committee (APMCs). However, due to limited Storage Infrastructure and distant APMCs, not many Agriculture Farmers benefitted through the Pledge Finance Schemes of the Agricultural Marketing Departments / Boards.

Further, the Banks extending Post-harvest Loans under "Pledge Finance" had problems of:

- ⇒ Quality Assessment of the Agricultural Produce.
- ⇒ Security of the Produce Pledged and

⇒ Security of the Loan.

These led to the rising of Collateral Management Service providers like:

- ≈ **National Collateral Management Services Ltd., (NCMSL).**
- ≈ **National Bulk Handling Corporation Ltd., (NBHC), etc.,**

Which are being promoted by a ‘Consortium of Banks’ and other related Organisations. These Collateral Management Service Providers:

- ≈ Assay the Quality of the Produce.
- ≈ Issue the Warehouse Receipts.
- ≈ Maintain and manage the Produce, and
- ≈ Offer Collateral Security of the Produce Stored, to the Banks on behalf of the Agriculture Farmers who Store the Produce.

They in turn Charge their margin for the Services provided. The Banks extend ‘Pledge Finance’ to the Agriculture Farmers based on the Warehouse Receipts issued by the Collateral Management Service Providers (CMSL).

The Banks / Financial Institutions are providing “Produce Marketing Loan (PML)” to the Agriculture Farmers based on the Warehouse Receipts issued by the following Intermediaries (Who provide Storage Facilities to the Agriculturists for their Agriculture Produce) including Agriculture Farmer’s Warehouses (As per individual Banks Credit Policy guidelines).

- ⇒ Agriculture Farmer’s Warehouses.
- ⇒ WHR (Warehouse Receipts) issued by Approved Warehouses, not managed by Collateral Managers.
- ⇒ WHR issued by Central Warehouse Corporation (CWC)/State Warehouse Corporation (SWC) Warehouses.
- ⇒ Negotiable Warehouse Receipt (NWR) issued Registered Warehouses.
- ⇒ Ware House Receipts which are issued by Collaterally Managed Warehouses.

Produce Marketing Loan (PML): Produce Marketing Loan is a Short-term Loan (Maximum Period 12 Months) given to Agriculture Farmers against the Security of fungible farm produce either Stored at Agriculture Farmer’s Place / Godown or Stored in accredited / non-accredited warehouses. This is aimed at enabling the Agriculture Farmers to avoid “**Distress Sale**” immediately after harvest when the prices are usually low, by providing necessary “**Liquidity Support**” against the Pledge of Agri. Commodities (Farm Produce).

Salient features of a Produce Marketing Loan (PML) are as under:

Eligibility to avail ‘Produce Marketing Loans’:

- ≈ Agriculture Farmers, including Group of Agriculture Farmers, who have Availed Crop Loan from the same Bank Branches where they availed Kisan Credit Card Loans (KCC).
- ≈ Agriculture Farmers, including Group of Agriculture Farmers, who have Availed Crop Loan from Other Banks.
- ≈ Agriculture Farmers, including Group of Agriculture Farmers, who have **not** Availed Crop Loan from any Bank.
- ≈ In the case of Non-borrowers and Borrowers of other Banks, PML is generally sanctioned by the Banks against Warehouse / Cold Storage receipts only.
- ≈ Further, Corporates, Partnership Firms, and Organizations engaged in Agriculture or Allied Agricultural activities are also Eligible for Produce Marketing loans from Banks.

Normally, the Maximum Loan Limit under PML is ₹ 50 Lacs. per Agriculture Farmer (It will differ from Bank to Bank based on their Credit Policy guidelines).

Valuation of Commodity (Agriculture Produce):

The Commodity offered for Pledge will be Valued by the Banks considering the Lowest of the following:

- a) Minimum Support Price, wherever declared (By the Government of India).
- b) Current Market Price (Market Information / Commodities Market).

Further, in case services of Approved Collateral Managers are engaged, the Local Market Price advised by the Collateral Manager, as prevailing at the Close of Business on the Previous working day, will be the Benchmark Market Price to value the Commodity (Agriculture Produce).

Prices announced by Commodity Exchanges Managed by NCDEX /MCX or by the Agricultural Marketing Information Network AGMARKNET at its Official-Site www.agmarknet.nic.in will be guiding for the Bank Branches. In case, Minimum Support Price (MSP) of certain Commodity is not declared by the Govt. of India but the State Level Banker's Committee has taken a view on the 'Benchmark Price' for lending, the Head Offices of the Bank may accord approval for accepting this Price for being accepted by Branches Under their Control.

Margins of the Loan:

Normally are in the Range of 25% to 40% (Depending on the type of Security WHR etc.)

Primary Security:

PML is Primarily secured by Hypothecation / Pledge of Agricultural Produce Stored with the Cultivator in his Godown or by Pledge of Warehouse Receipts including Receipts issued by Rural Godowns / Cold Storages if the product is stored in Warehouse / Rural Godowns / Cold Storages.

Collateral Security (Differ from Bank to Bank based on their Credit Policy guidelines):

1. Agriculture Farmers Own Warehouse:

- ≈ Collateral Security shall be waived up to a Limit of ₹ 1Lac.
- ≈ For Amount Exceeding ₹1 Lakh, a Mortgage of Land will be obtained by the Banks.

2. Warehouse Receipt (WHR):

- ≈ Issued by Approved Warehouses, Not Managed by Collateral Warehouses.
- ≈ Collateral Security waived up to ₹10 Lacs. For Loans above ₹10 Lacs and up to ₹50 Lacs, a Mortgage of Land is obtained.

3. Warehouse Receipt (WHR):

- ≈ WHR Issued by Central Warehousing Corporation/State Warehousing Corporations.
- ≈ Collateral Security waived up to ₹10 Lacs. For Loans above ₹.10 Lacs and up to ₹ 50 Lacs, a Mortgage of Land is obtained.

4. Negotiable Warehouse Receipt (NWR) issued by Registered Warehouses:

- ≈ Collateral Security waived up to ₹ 10 Lacs. For Loans above ₹ 10 Lacs. and up to ₹ 50 Lacs., Mortgage of Land is obtained.

5. WHR Issued by Collaterally managed Warehouses:

- ≈ Collateral Security waived up to ₹ 50 Lacs.

Insurance:

The warehouse will invariably obtain Adequate Insurance cover for all possible Risks and Threats and mention the Policy number in Warehouse Receipt, certifying that the Commodities Accepted or Pledged are adequately covered for Risks mentioned in the Policy.

'Comprehensive Insurance Cover' is to be acquired. 'Insurance Cost' to be Borne by the Agriculture Farmers.

Before accepting the WHR of a Certain Godown, the Banks will ensure that the ‘Insurance Policy’ of the Warehouse Covers Risks of:

- a) Fire and Allied Perils including Flood or any other Natural Calamities or Acts of God.
- b) Burglary / Theft.
- c) Earthquake.
- d) Spontaneous Combustion.
- e) Any other Risk(s) Specifically on the Advice of Banks; and
- f) Fidelity Insurance Cover for Employees of the Warehouse.

Interest Subvention:

RBI has advised the Banks to continue the Interest Subvention Scheme at 2% p.a. is available on PML under stipulated conditions.

In agriculture, price reduction due to a post-harvest glut is not uncommon. A large chunk of farmers’ profit got wiped out and pledge loans serve as an effective tool to mitigate the related monetary loss

To Sum Up:

Presently, the marketing system which includes collection, handling, storage, transport, processing, wholesaling, retailing, exports, and associated infrastructure, is not coordinated and is fragmented with inadequate supply chain infrastructure. This is leading to high wastage and losses. As a result, the producer gets about only 30-40 percent of the final price, as compared to around 60 percent in advanced countries. Even an additional margin of 3 percent in final price translates into a 10 percent increase in net income of the farmers and that itself is a powerful incentive to invest in agriculture. But this requires cutting down on the long chain of intermediaries, which can happen only with improved market access by farmers, interconnected markets, an efficient supply chain, and a robust marketing information system in addition to increasing the ‘Pledge Loans’ offered by Banks to the Agriculturists and also increase in Godowns / Warehouse facilities to Agriculturists in Rural Areas.

References:

1. *RBI Guidelines.*
2. *Government of India Guidelines.*
3. *NCDX / MCX.*
4. *Agmarknet.*
5. *Warehousing Development and Regulatory Authority.*

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CASE FOR REFINING COMPUTATION METHODOLOGY OF COC OF SUGARCANE!



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Fair Remunerative Price (FRP)

The concept of Statutory Minimum Price (SMP) of sugarcane was replaced with the ‘Fair and Remunerative Price (FRP)’ of sugarcane for 2009-10 and subsequent sugar seasons. Accordingly, the cane price is decided by the Central Government on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) in consultation with the State Governments and after taking feedback from associations of sugar industry. The FRP of sugarcane considers the following factors:

- a. Cost of production of sugarcane;
- b. Return to the growers from alternative crops and the general trend of prices of agricultural commodities;
- c. Availability of sugar to consumers at a fair price;
- d. Price at which sugar produced from sugarcane is sold by sugar producers;
- e. Recovery of sugar from sugarcane;
- f. The realization made from sale of by-products viz. molasses, bagasse and press mud or their imputed value;
- g. Reasonable margins for the growers of sugarcane on account of risk and profits.

Everything apart, the “Cost of Cultivation” (CoC) is the fundamental factor that drives the FRP.

The notified FRP of sugarcane payable by sugar factories for each sugar season from 2009-10 to 2021-22 is tabulated below:

Sugar Season	FRP (Rs. per quintal)	Basic Recovery Level
2009-10	129.84	9.5%
2010-11	139.12	9.5%
2011-12	145.00	9.5%
2012-13	170.00	9.5%
2013-14	210.00	9.5%
2014-15	220.00	9.5%
2015-16	230.00	9.5%
2016-17	230.00	9.5%
2017-18	255.00	9.5%

2018-19	275.00	10%
2019-20	275.00	10%
2020-21	285.00	10%
2021-22	290.00	10%

For the sugar season 2021-22, the recommended price by the CACP is assumed to cover:

- $A_2 + FL$ cost of production of sugarcane (wherein $A_2 + FL = \text{Actual paid out Costs} + \text{Family Labour}$); and
- Provide a margin of 87.1% over $A_2 + FL$ cost.

It is relevant to note that A_2 , which stands for actual paid out costs incurred by the farmer, includes the following twelve elements:

- Value of hired human labour
- Value of bullock labour (owned and hired)
- Value of machine labour (owned and hired)
- Value of seeds (owned and purchased)
- Value of manure (owned and purchased)
- Value of insecticides and pesticides
- Value of fertilizers
- Irrigation charges
- Interest on working capital
- Misc. expenses (artisans etc.)
- Land revenue, cess & taxes
- Rent paid for leased land

Out of the twelve, serials (i) to (x) are considered as operational costs and serials (xi) and (xii) as fixed costs. In addition, there are imputed costs which include Rental Value of Own Land; Depreciation on Implements & Farm Buildings; and Interest on Own Fixed Capital. The aggregate of A_2 , FL and Imputed costs are termed as the Comprehensive Costs (i.e., C_2).

Cost Estimates

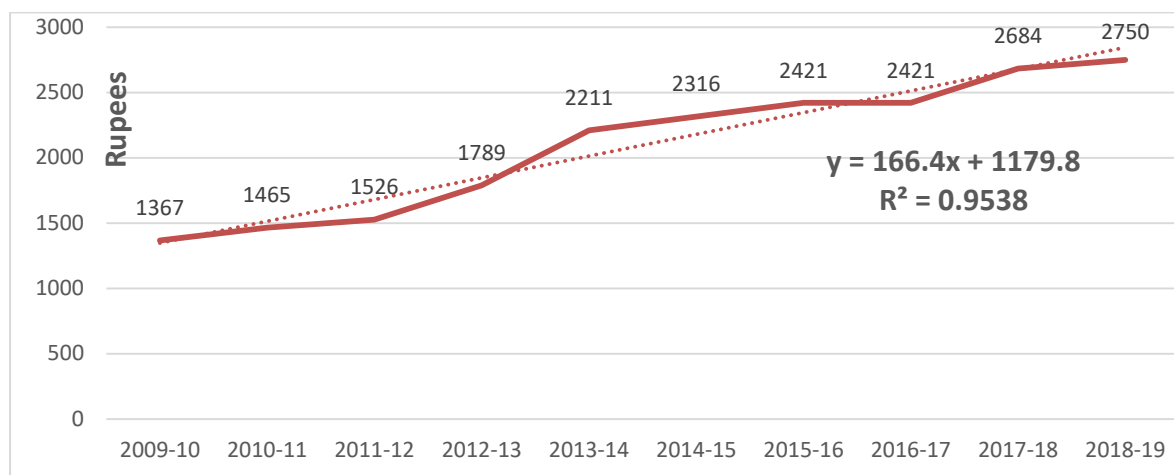
The projected cost estimates of sugarcane for the crop year 2020-21 are stated to have been worked out by the CACP on the basis of actual estimates for the three years of 2016-17, 2017-18 and 2018-19 in case of Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Uttarakhand; and for the two years of 2017-18 and 2018-19 in case of Bihar and Haryana. The estimates consider a basic sugar recovery level of 10% and project a total cost of Rs.2240/- comprising; paid-out costs (A_2) at Rs. 1310/- (58.48% of the total cost), family labour at Rs.240/- (10.72%) and imputed costs at Rs.690/- (30.80%) per MT of sugarcane. On this basis, CACP has recommended a baseline FRP of Rs.2,900/- per MT of sugarcane for the sugar season 2021-22.

Deriving the computations from the data collected from the “Price Policy for Sugarcane” reports of CACP for the relevant years, year-wise comparisons of cost of cultivation of cane relating to Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Uttarakhand for the ten-year period from 2009-10 to 2018-19 are furnished as Annexure 1.

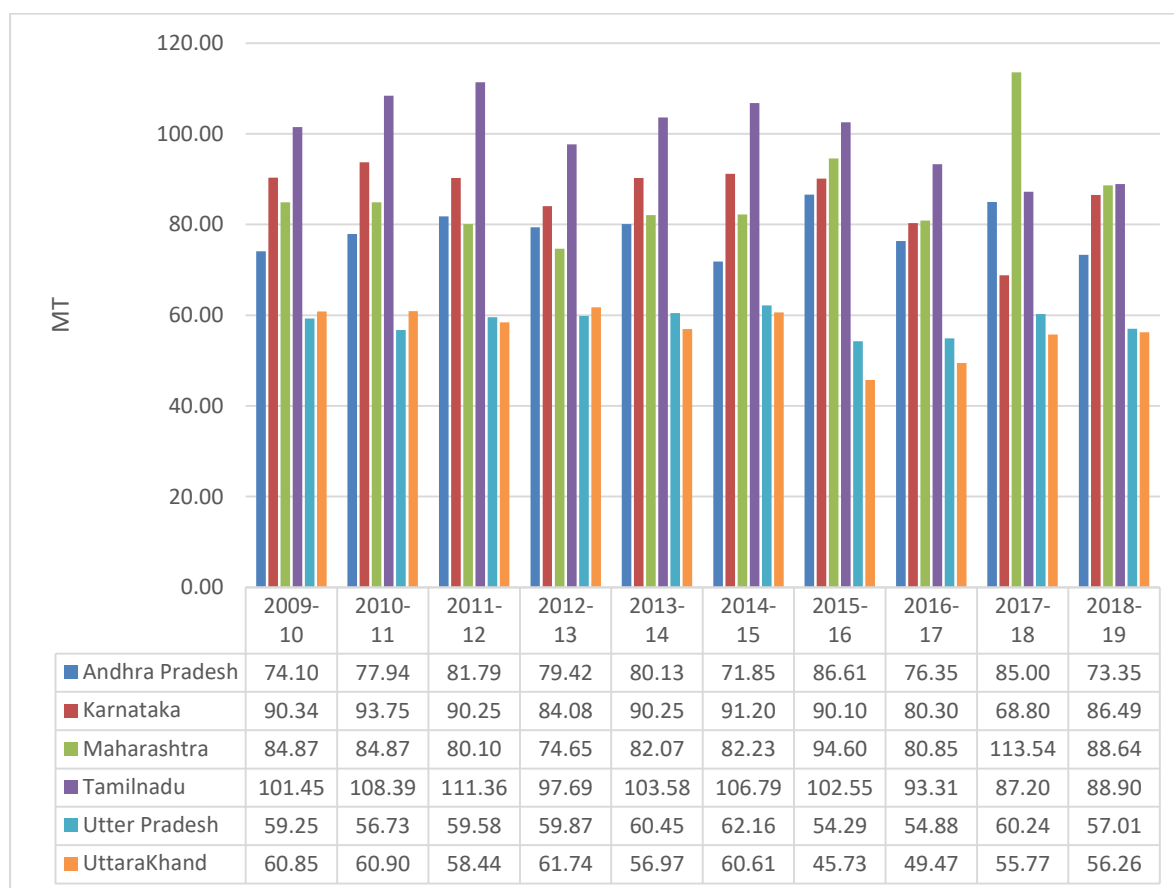
Referring to the data relating to FRP and the analytical figures contained in annexure 1, the following trend graphs have been constructed covering the period from 2009-10 to 2018-19.

- Trend of FRP of Sugarcane per MT (Considering 10% Recovery)
- Trend of Yield of Sugarcane per Hectare
- Trend of Paid Out Costs per MT of Sugarcane
- Trend of Family Labour per MT of Sugarcane
- Trend of Imputed Costs per MT of Sugarcane
- Trend of Total Cost per MT of Sugarcane
- Trend of Margin per MT of Sugarcane after Paid Out Costs
- Trend of Net Margin per MT of Sugarcane

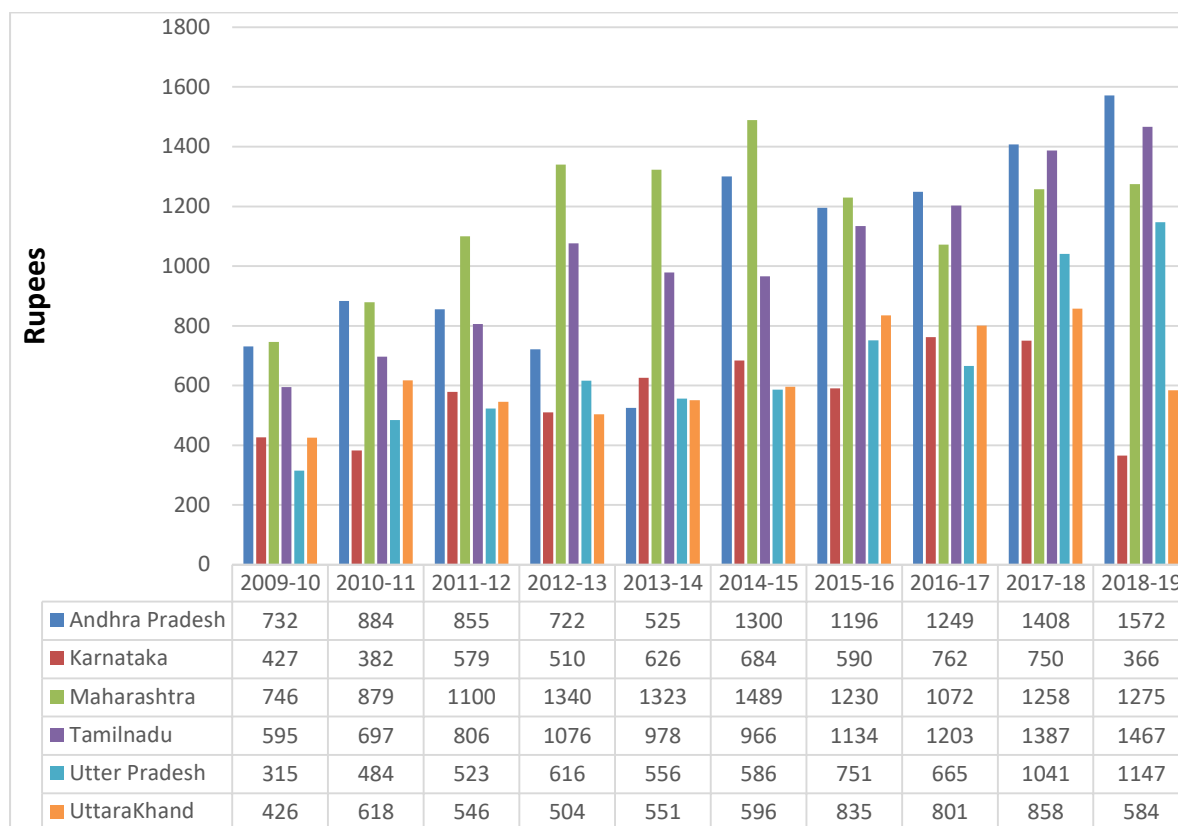
Graph 1: Trend of FRP of Sugarcane per MT (Considering 10% Recovery)



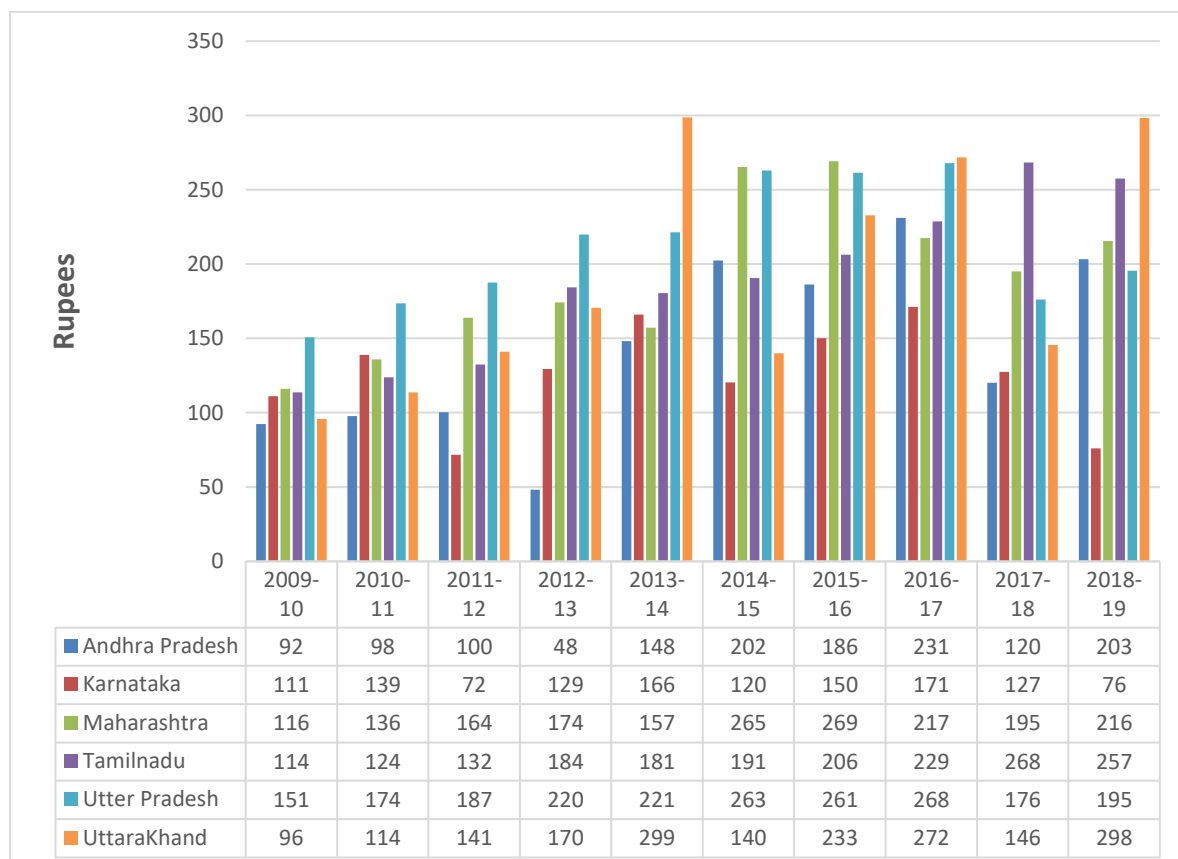
Graph 2: Trend of Yield of Sugarcane per Hectare



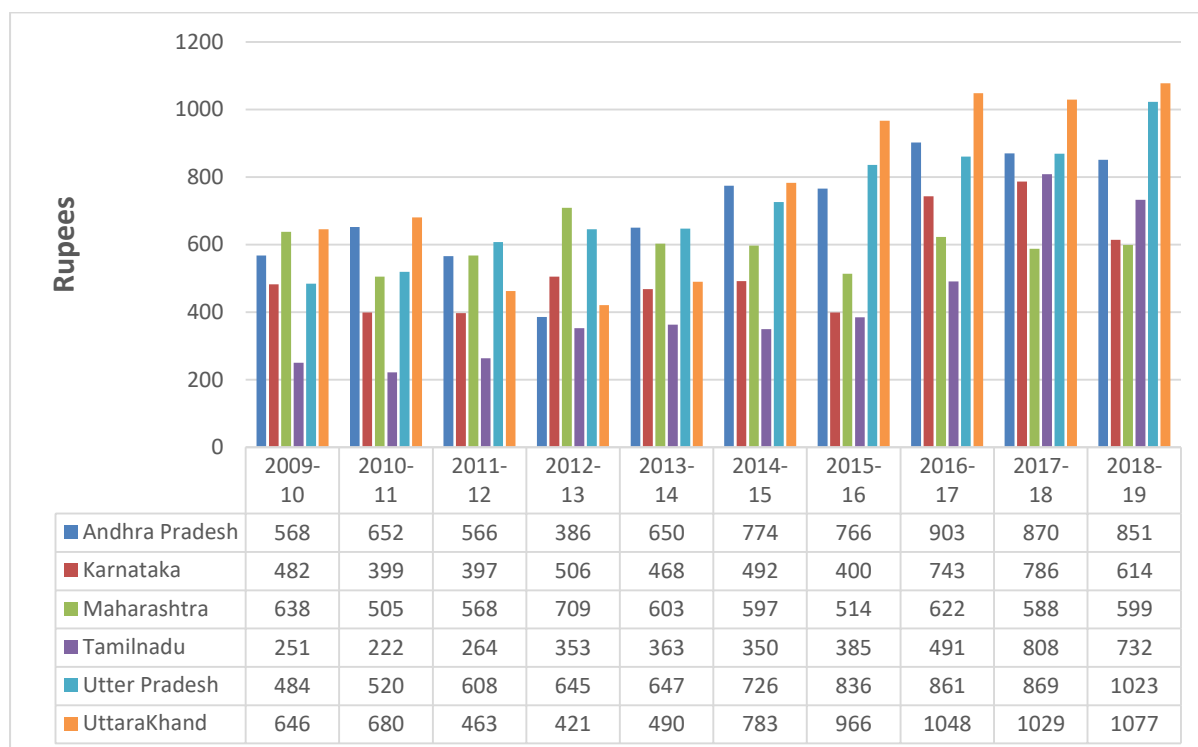
Graph 3: Trend of Paid Out Costs per MT of Sugarcane



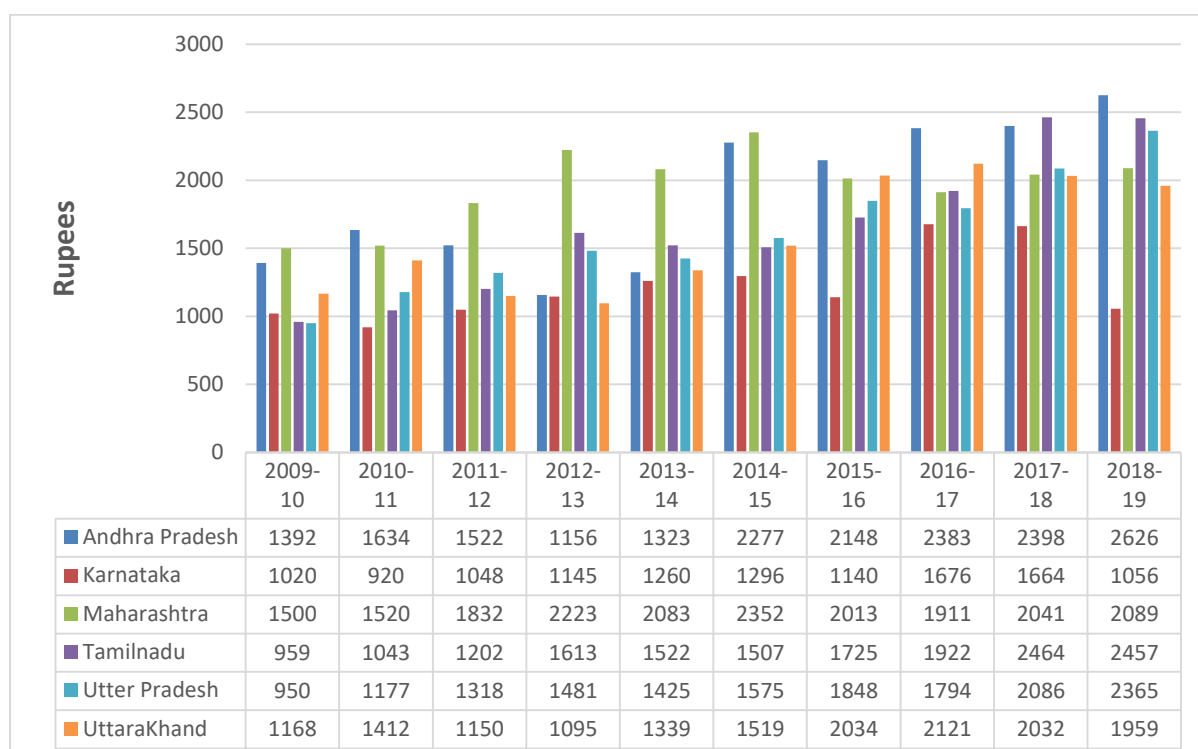
Graph 4: Trend of Family Labour per MT of Sugarcane



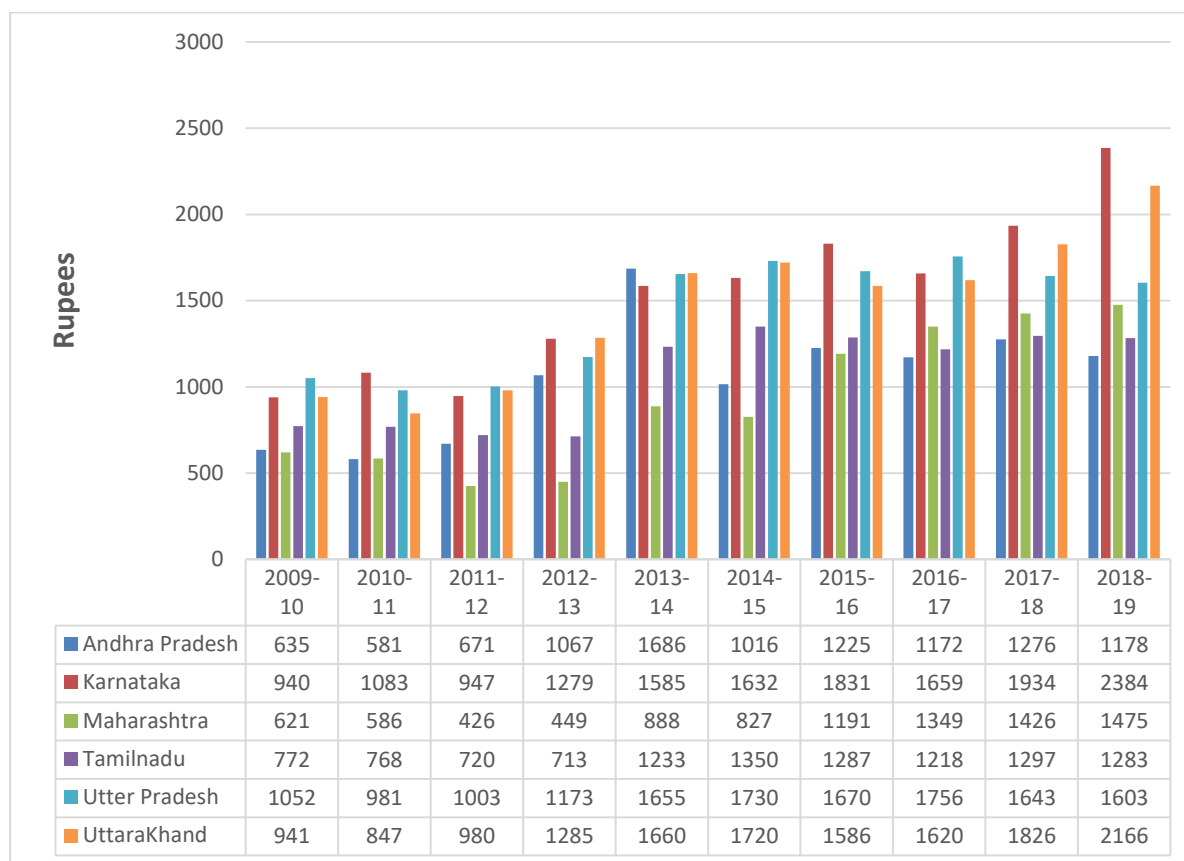
Graph 5: Trend of Imputed Costs per MT of Sugarcane



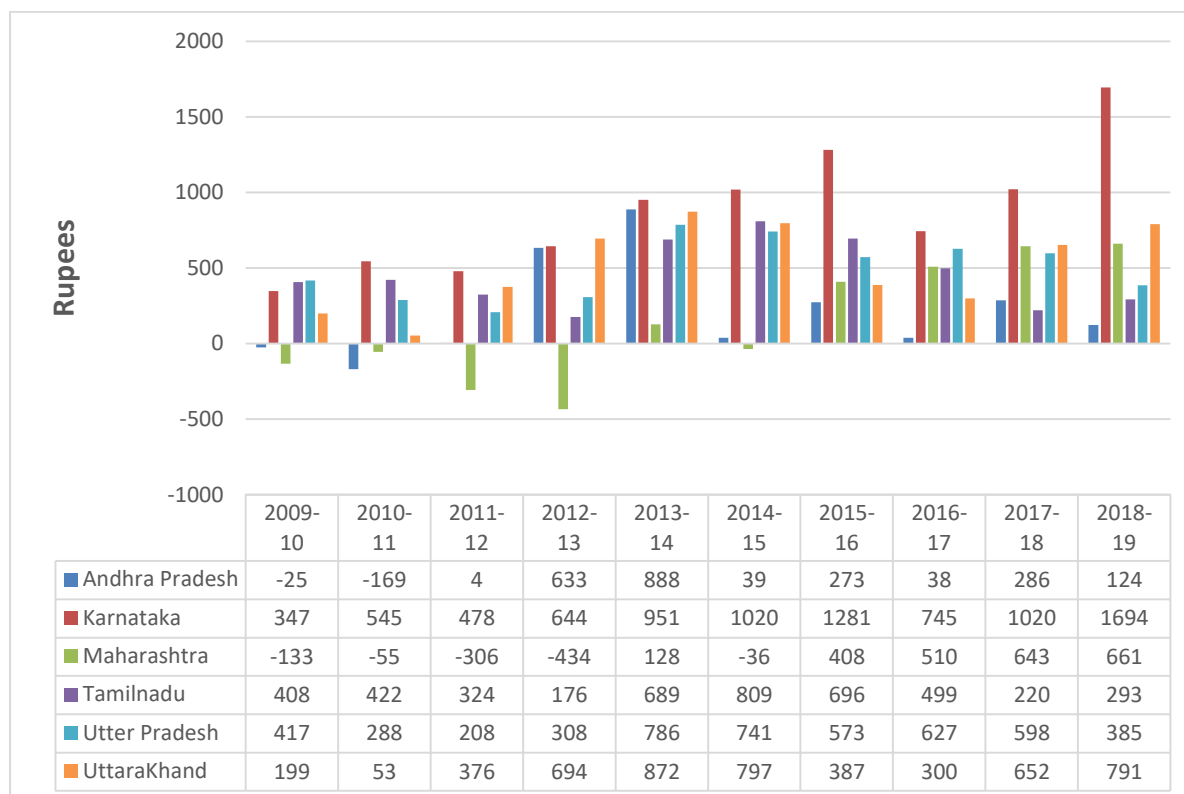
Graph 6: Trend of Total Cost per MT of Sugarcane



Graph 7: Trend of Margin per MT of Sugarcane after Paid Out Costs



Graph 8: Trend of Net Margin per MT of Sugarcane



The, above furnished, graphical presentations through up the following critical observations:

FRP: The notified FRP for the years 2009-10 to 2017-18 considers basic sugar recovery level of 9.5% and the FRP for 2018-19 and onwards considers basic sugar recovery of 10%. In order to facilitate fair comparison, the FRP for the years from 2009-10 to 2017-18 has been converted into equivalent of 10% level while plotting Graph 1. The graph shows that FRP has been growing consistently, having gone up from Rs.1367/- in 2009-10 to Rs.2,750/- by 2018-19. The trend is near linear. This observation is corroborated by the linear equation “ $y = 166.4x + 1179.8$ ” and “ $R^2 = 0.9538$ ”.

Yield: Graph 2 indicates that yield per hectare differs substantially from state to state. This fact has, appropriately, been affirmed by the CACP itself wherein it reiterates “There are large variations in sugarcane yield and sugar recovery across States”. For the ten ten-year period 2009-10 to 2018-19, the average yield per hectare works out to 78.65 MT in case of Andhra Pradesh, 86.56 MT for Karnataka, 86.64 MT for Maharashtra, 100.12 MT for Tamil Nadu, 58.45 MT for Uttar Pradesh and 56.67MT for Uttarakhand. Despite the state-to-state variations, the silver lining is that the period-to-period yield variations for the individual state are not substantial.

Costs: Graphs 3, 4, 5 and 6 reveal that there are considerable variations in each and every category of the costs (i.e., paid out costs, family labour, imputed costs and total costs) from year to year and as also from state to state.

The coefficient of variation (CV) of paid out costs works out to 33.07% for Andhra Pradesh, 25.39% for Karnataka, 19.20% for Maharashtra, 27.41% for Tamil Nadu, 37.86% for Uttar Pradesh and 23.46% for Uttarakhand. In the given context, any CV which is above 5% needs to be construed beyond the tolerable level. As such, the observed variations are certainly beyond the comprehensive levels.

The coefficient of variation of family labour computes to 42.21% for Andhra Pradesh, 26.57% for Karnataka, 26.92% for Maharashtra, 28.53% for Tamil Nadu, 19.73% for Uttar Pradesh and 40.61% for Uttarakhand. In absolute terms, Andhra Pradesh has reported family labour of Rs.92/- per MT of cane in 2009-10; an all-time low of Rs.48/- in 2012-13; an all-time high of Rs.231/- in 2016-17; and Rs.203/- in 2018-19. Similarly, Karnataka has reported family labour of Rs.111/- per MT of cane in 2009-10; an all-time low of Rs.72/- in 2011-12; an all-time high of Rs.171/- in 2016-17; and another low figure of Rs.76/- in 2018-19. In one sentence, the disparities are apparent and striking. The ground reality is that estimation of family labour is quite tricky and could be camouflaged by several discriminatory allocations and apportionments.

The coefficient of variation of imputed costs works out to 23.42% for Andhra Pradesh, 26.59% for Karnataka, 9.88% for Maharashtra, 47.34% for Tamil Nadu, 23.82% for Uttar Pradesh and 33.81% for Uttarakhand. A diligent observation would attest that these variations are beyond rationally acceptable levels. A rational apprehension is that there could be several discretionary permutations and combinations in estimating the imputed costs.

In the ultimate, the coefficient of variation of total cost turns out to 28.32% for Andhra Pradesh, 21.31% for Karnataka, 14.13% for Maharashtra, 31.96% for Tamil Nadu, 26.70% for Uttar Pradesh and 26.03% for Uttarakhand. The year-to-year differences in costs are too huge to miss nay explain. Same is the case with reference to state-to-state comparisons as also most of the individual elements of costs. Thus arises a reasonable apprehension about a factual error overriding the cost estimates.

Margins: The term ‘Margin after Paid Out Costs’ refers to the margin available to the farmer after defraying all the paid-out costs. It is derived by deducting the paid-out costs from the FRP. The term ‘Net Margin’ refers to the margin available to the farmer after defraying total costs. Total costs (in other words C_2) are the sum of paid out costs, family labour and imputed costs. Net margin is derived by deducting total costs from the FRP. Graphs 7 and 8 disclose that margins (i.e., margin per MT of sugarcane after paid out costs as also net margin per MT of sugarcane) fluctuate widely from year to year and state to state.

Going by the absolutes, it is Maharashtra in 2011-12 which reported the lowest ever (Rs.426/- per MT) margin after paid out costs whereas the highest ever (Rs.2,384/-) was reported by Karnataka in 2018-19. Moving on to the net margin, the picture appears to be very gloomy and uncertain for the lowest ever [Rs.(-)434/- per MT] was reported by Maharashtra in 2012-13 and the highest ever (Rs.1694/-) has been reported in 2018-19 by Karnataka.

Statistically, the lowest coefficient of variation in relation to 'margin after paid out costs' works out to 23.04% and belongs to Uttar Pradesh. In relation to 'net margin' the lowest CV works out to 40.45% which, again, belongs to Uttar Pradesh. The lowest CV itself is pretty abnormal in both the cases. Evidently farmers from different states are getting different levels of margins with explicit inequality in returns.

The rationale is that the impact on margin is the consequential effect of the variations in yield and the disparities in costs. The variations in yield may be attributed to tropical and environmental factors which are beyond the control of the farming community. In the same way one part of the disparities in costs may be traced to locational factors whereas the other part which is quite significant, apparently, springs up from the avoidable estimating errors.

Cost Estimation Methodology

CACP uses the cost estimates compiled under the 'Comprehensive Scheme for studying the Cost of Cultivation of Principal Crops in India'. The scheme is pretty old and was evolved on the basis of the principles governed by traditional systems of costing. Under this system, costs are ascertained elementwise, i.e. human labour, bullock labour, machine labour, seed, fertilisers and manure, insecticides, irrigation charges, interest on working capital, and so on.

It has been a universal experience that inaccuracies do creep into traditional cost computations because of the discriminations in apportioning the indirect costs. As a step forward, Activity Based Costing (ABC) System has been introduced during the 1990s with a view to overcome the accuracy limitations relating to the processes and methods of cost ascertainment under the traditional costing systems. ABC system assumes that products consume activities and activities consume costs. ABC facilitates tracing most of the costs directly and thus enables cause and effect correlation as also correction.

Considering the adoption of ABC methodology, sugarcane farming may, broadly, be classified into a chain of eight activities comprising:

1. Soil Preparation
2. Plantation
3. Earthing Up
4. Nutrient Management
5. Inter Culture & Weed Control
6. Pest Control
7. Irrigation Management
8. Harvesting

Taking cognisance of the above stated activities, the Proforma Cost Computations of Sugarcane per Hectare with Plantlets (as per the norms and practices prevailing in Central India), structured activity-wise, is appended as Annexure 2. The said computations encompass three vital fundamentals:

- a. Each of the elements of cost of cultivation are segregated activity-wise such as soil preparation, plantation, etc., and then function-wise within an activity such as ploughing, disc harrowing and ridge making as in the case of soil preparation;
- b. Actual or normative quantities (in terms of units of measurement) such as ploughing hours, number of plants, man-days and so on as also rates per unit are ascertained for each of the elements or functions; and
- c. No distinction has been made between family labour or other labour as also own resources or hired resources.

In addition, the approach shifts the focus towards working out the costs on the basis of actual utilisation of the relevant resources and eliminates the idle costs completely from the ambit. For example, human labour or machine labour; whether owned or purchased or hired; can be traced directly to the activity or function concerned without adding any idle loading. As a result, the methodology eliminates any disparities in estimating the quantum and value of family labour and hired labour as also own resources and hired resources.

ABC methodology also makes it feasible to subdivide each of the activities into functions and schedule them into an agri-time-frame; for example, first dose of fertilisers in 2nd week of crop season, second dose of

fertilisers in 8th week, etc. Monitoring a time-based schedule can inculcate agri discipline, both operational and financial, amongst the agriculturalists.

An added and desirable need would be comparing the actual costs with normative costs. The normative costs for this purpose can be easily evolved on the basis of average productivity of a model plot being manned by a farmer of average efficiency. Such an exercise can enable setting the feasible standards, region-wise, for a farmer to achieve.

At the end of it, the proforma computations encompass all the paid out activities of sugarcane cultivation except harvesting and transportation. In most of the cases harvesting is out-sourced on contractual basis where in the cost ranges to about Rs.300/- per MT. Transportation cost depends upon the distance between the sugarcane fields and the sugar mill and ranges between Rs.7/- to Rs.9/-per MT per Km.

Imputed costs, i.e., rental value of own land; depreciation on implements & farm buildings; and interest on own fixed capital, are non-cash by nature and notional in character. Land, implements and farm buildings are properties belonging to the farmer. The capital funds infused into these assets are expected to generate rational returns which should contain the elements of risk free return and risk premium return. On this basis, the estimated return on farm equity may be reasoned out to be two times the bank deposit rate (viz. one whole towards risk free return and the other whole towards risk premium, both together aggregating to two times the whole). Rationality would, therefore, have it that imputed costs may be replaced by expected return on farm equity. The intrinsic advantage of such a computation is that it becomes easier to compare it with market parameters.

Way Forward

The quest for ‘Farmer First’ should certainly hunt at ascertaining the cost of cultivation with reasonable accuracy. A logical step, therefore, for the way forward is to undertake an immediate review of the existing methodology being applied for computing the cost of cultivation of sugarcane and rejuvenate its accuracy by adopting the ABC system. The proposition does hold good not only for the CoC of sugarcane, but also for all the principal crops as a whole!

Resources

1. https://dfpd.gov.in/gen_policy_02.04.2022
2. “Price Policy for Sugarcane” reports of CACP for the years from 2013-14 to 2021-22
3. Discussion with Sugarcane farmers of Vidarbha

Cost of Cultivation of Sugarcane: Year-wise and State-wise Comparison

Serial	Element	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
A	Cost Per Hectare (Rs.)										
1	Operational Costs										
	Andhra Pradesh	58171	73797	78169	45401	53950	105736	117674	113012	129881	130183
	Karnataka	48572	48856	58733	53738	71437	73315	66680	74948	60375	38186
	Maharashtra	72975	85901	101012	112826	121181	143965	141437	103860	164934	132041
	Tamil Nadu	71681	88194	104454	123142	120014	123399	137266	133305	144348	153262
	Utter Pradesh	27573	37219	42249	49845	46942	52321	54665	50919	73273	76246
	Uttarakhand	31719	44523	40137	41600	48360	44578	48817	53063	55941	49605
2	Fixed Costs										
	Andhra Pradesh	44987	53522	46320	46442	52097	57832	68358	68912	73968	62422
	Karnataka	43607	37420	35853	42517	42271	44906	36028	59663	54101	53114
	Maharashtra	54329	43095	45716	53136	49750	49399	48987	50673	66772	53116
	Tamil Nadu	25655	24864	29386	34458	37637	37493	39673	46082	70504	65130
	Utter Pradesh	28713	29579	36301	38806	39184	45594	45670	47550	52364	58564
	Uttarakhand	39329	41443	27055	26004	27930	47491	44205	51876	57398	60640
3	Total Cost										
	Andhra Pradesh	103158	127319	124489	91843	106047	163568	186032	181924	203849	192605
	Karnataka	92179	86276	94586	96255	113708	118221	102708	134611	114476	91300
	Maharashtra	127304	128996	146728	165962	170931	193364	190424	154533	231706	185157
	Tamil Nadu	97336	113058	133840	157600	157651	160892	176939	179387	214852	218392
	Utter Pradesh	56286	66798	78550	88651	86126	97915	100335	98469	125637	134810
	Uttarakhand	71048	85966	67192	67604	76290	92069	93022	104939	113339	110245
4	Paid Out Costs										
	Andhra Pradesh	54206	68877	69964	57332	42085	93400	103557	95371	119671	115276
	Karnataka	38557	35854	52279	42865	56469	62366	53175	61210	51620	31631
	Maharashtra	63318	74591	88090	100034	108556	122420	116321	86633	142815	112972
	Tamil Nadu	60333	75529	89730	105162	101323	103108	116265	112248	120964	130386
	Utter Pradesh	18666	27459	31152	36869	33631	36417	40775	36521	62691	65369
	Uttarakhand	25915	37618	31909	31091	31367	36120	38187	39638	47851	32854
5	Family Labour										
	Andhra Pradesh	6841	7619	8206	3820	11865	14539	16132	17641	10210	14907
	Karnataka	10041	13019	6465	10886	14979	10973	13523	13752	8762	6567
	Maharashtra	9850	11529	13121	13005	12891	21820	25462	17579	22153	19105
	Tamil Nadu	11541	13426	14746	18002	18697	20360	21153	21336	23398	22890

	Utter Pradesh	8933	9848	11168	13160	13387	16345	14194	14702	10612	11143
	Uttarakhand	5826	6926	8245	10524	17013	8476	10647	13448	8115	16784
6	Imputed Costs										
	Andhra Pradesh	42111	50823	46319	30691	52097	55629	66343	68912	73968	62422
	Karnataka	43581	37403	35842	42504	42260	44882	36010	59649	54094	53102
	Maharashtra	54136	42876	45517	52923	49484	49124	48641	50321	66738	53080
	Tamil Nadu	25462	24103	29364	34436	37631	37424	39521	45803	70490	65116
	Utter Pradesh	28687	29491	36230	38622	39108	45153	45366	47246	52334	58298
	Uttarakhand	39307	41422	27038	25989	27910	47473	44188	51853	57373	60607
B	Yield (MT per Hectare)										
	Andhra Pradesh	74.10	77.94	81.79	79.42	80.13	71.85	86.61	76.35	85.00	73.35
	Karnataka	90.34	93.75	90.25	84.08	90.25	91.20	90.10	80.30	68.80	86.49
	Maharashtra	84.87	84.87	80.10	74.65	82.07	82.23	94.60	80.85	113.54	88.64
	Tamil Nadu	101.45	108.39	111.36	97.69	103.58	106.79	102.55	93.31	87.20	88.90
	Utter Pradesh	59.25	56.73	59.58	59.87	60.45	62.16	54.29	54.88	60.24	57.01
	Uttarakhand	60.85	60.90	58.44	61.74	56.97	60.61	45.73	49.47	55.77	56.26
C	Cost per MT (Rs.)										
1	Operational Costs										
	Andhra Pradesh	785	947	956	572	673	1472	1359	1480	1528	1775
	Karnataka	538	521	651	639	792	804	740	933	878	442
	Maharashtra	860	1012	1261	1511	1477	1751	1495	1285	1453	1490
	Tamil Nadu	707	814	938	1261	1159	1156	1339	1429	1655	1724
	Utter Pradesh	465	656	709	833	777	842	1007	928	1216	1338
	Uttarakhand	521	731	687	674	849	735	1068	1073	1003	882
2	Fixed Costs										
	Andhra Pradesh	607	687	566	585	650	805	789	903	870	851
	Karnataka	483	399	397	506	468	492	400	743	786	614
	Maharashtra	640	508	571	712	606	601	518	627	588	599
	Tamil Nadu	253	229	264	353	363	351	387	494	809	733
	Utter Pradesh	485	521	609	648	648	733	841	866	869	1027
	Uttarakhand	646	681	463	421	490	784	967	1049	1029	1078
3	Total Cost										
	Andhra Pradesh	1392	1634	1522	1156	1323	2277	2148	2383	2398	2626
	Karnataka	1020	920	1048	1145	1260	1296	1140	1676	1664	1056
	Maharashtra	1500	1520	1832	2223	2083	2352	2013	1911	2041	2089
	Tamil Nadu	959	1043	1202	1613	1522	1507	1725	1922	2464	2457
	Utter Pradesh	950	1177	1318	1481	1425	1575	1848	1794	2086	2365

	Uttarakhand	1168	1412	1150	1095	1339	1519	2034	2121	2032	1959
4	Paid Out Costs										
	Andhra Pradesh	732	884	855	722	525	1300	1196	1249	1408	1572
	Karnataka	427	382	579	510	626	684	590	762	750	366
	Maharashtra	746	879	1100	1340	1323	1489	1230	1072	1258	1275
	Tamil Nadu	595	697	806	1076	978	966	1134	1203	1387	1467
	Utter Pradesh	315	484	523	616	556	586	751	665	1041	1147
	Uttarakhand	426	618	546	504	551	596	835	801	858	584
5	Family Labour										
	Andhra Pradesh	92	98	100	48	148	202	186	231	120	203
	Karnataka	111	139	72	129	166	120	150	171	127	76
	Maharashtra	116	136	164	174	157	265	269	217	195	216
	Tamil Nadu	114	124	132	184	181	191	206	229	268	257
	Utter Pradesh	151	174	187	220	221	263	261	268	176	195
	Uttarakhand	96	114	141	170	299	140	233	272	146	298
6	Imputed Costs										
	Andhra Pradesh	568	652	566	386	650	774	766	903	870	851
	Karnataka	482	399	397	506	468	492	400	743	786	614
	Maharashtra	638	505	568	709	603	597	514	622	588	599
	Tamil Nadu	251	222	264	353	363	350	385	491	808	732
	Utter Pradesh	484	520	608	645	647	726	836	861	869	1023
	Uttarakhand	646	680	463	421	490	783	966	1048	1029	1077

Proforma Cost Computations of Sugarcane per Hectare with Plantlets

Serial	Particulars	Unit of Measurement	Norm / Quantity	Rate	Rupees
1	Soil Preparation (by tractor)				
i	Ploughing	Hours	7.5	500	3750
ii	Disc Horrowing	Hours	2.5	800	2000
iii	Ridge Making	Hours	3.75	800	3000
vi	Sub Total (i..iii)				8750
2	Plantation				
i	15000 Plants @ 2.50 per stick	Number of Plants	15000	2.5	37500
ii	Male Labours	Man-days	5	275	1375
iii	Female Labours	Man-days	37	175	6475
iv	Sub Total (i.. iii)				45350
3	Earthing Up				
i	Light Earthing up Operation (Tractor)	Hours	2.5	800	2000
ii	Main Earthing up Operation (Bullocks)	days	5	800	4000
iii	Sub Total (i+iii)				6000
4	Nutrients				
4.1	Organic Manure				
a	Yard Manure (Dung)				
i	Two Tractor loads @1500 per Tractor	Trolley	5	1500	7500
ii	Transport and Labour Charges		5	500	2500
iii	Sub Total (i..ii)				10000
	Or				
b	Application of Green Manure				
i	Cost of Seed (Dhaincha/ Jute)	Kg	88	90	7920
ii	Tractor Rent/ Labour charges	Hours	2.5	800	2000
iii	Sub Total (i..ii)				9920
c	Say				10000
4.2	Chemical Fertilizers				
i	Urea	Bags	8	260	2080
ii	DAP	Bags	7	1175	8225
iii	Iffco 10:26:26	Bags	8	1175	9400
iv	Labour Charges	Days	10	275	2750
v	Sub Total (i..iv)				22455

4.3	Micro Nutrients				2500
4.4	Total (Nutrients)				34955
5	Interculture & Weed Control				
i	Seed Treatment	Ltr	5	300	1500
ii	Weedicide	Ltr	5	600	3000
iii	Labour Charges	Man-days	5	275	1375
iv	Sub Total				5875
6	Pesticides				1500
7	Irrigation				
a	Canal Irrigation				
i	Irrigation charges				4500
ii	Labour Charges	Man-days	24	275	6600
iii	Sub Total				11100
	or				
b	Own Irrigation				
i	Electricity Charges	KW	2250	3	6750
ii	Labour charges	Man-days	44	275	12100
iii	Sub Total				18850
c	Say				18850
8	Total (1.7)				121280
9	Interest on Working Capital @ 8% on Cost				9702
10	Total (8+9)				130982

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BAMBOO A PERFECT CROP



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01.00 Introduction

Bamboo originated from the Malay word "Mambu". Malay is the National language of Malaysia and Indonesia. In the late 16th century (1590-1600) Dutch named it "Bamboes" after which it got its Neo-Latin name "Bambusa", then in English it became "Bamboo"

Bamboo, also known as a giant grass, is inherently, a Nature grown pipe and is the fastest growing plant in the world. A few species of bamboo grow as fast as 47.6 inches in a period of 24-hours. There are over a thousand species all over the planet that are native to every continent except Europe, North America and the poles. It sustains extremes of drought and drowning, generates more oxygen than trees and is considered a critical element in the balance between oxygen and carbon dioxide in the atmosphere.

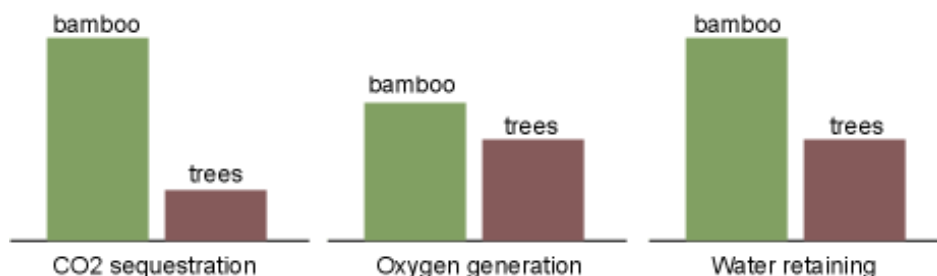
01.01. Resilience of Bamboo

Resilience Means the property of a substance to return to its usual shape after being bent, stretched, or pressed, the amount of potential energy stored in an elastic material when deformed and the ability to recover strength, spirits, good humor, etc. quickly. This property helps farmers in extreme conditions like drought, floods, earth quakes etc. When all the crops will get spoiled due to natural calamities, bamboo will resurrect itself and give the sustenance to its owner.

01.02. The Eco Healer

A sixty-foot tree cut for market takes 60 years to replace. A sixty-foot bamboo cut for market takes 60 days to replace. Bamboo minimizes CO₂ gases and generates up to 35% more oxygen than equivalent stand of trees.

1 hectare of bamboo sequesters 62 tons of CO₂/year whereas 1 hectare of young forest sequesters 15 tons of CO₂/year



01.03. Bamboo is Essential: Bamboo is one of those providential developments in Nature which, like the horse, the cow, wheat and cotton, have been indirectly responsible for man's own evolution.

Bamboo is well placed to address four major global challenges

- i. **Shelter Security**, through the provision of safe, secure, durable and affordable housing and community buildings
- ii. **Livelihood Security**, through generation of employment in planting primary and secondary processing, construction, craft and the manufacturing of the value-added products
- iii. **Ecological Security**, by conservation of forest through timber substitution, as an efficient carbon sink and as an alternative to non-biodegradable and high embodied energy materials such as plastics and metals.
- iv. **Food Security**, through bamboo based agro-forestry systems, by maintaining the fertility of adjoining agricultural lands and as a direct food source i.e bamboo rice and bamboo shoots.

02.00 Bamboo Plantation

India is the world's second largest cultivator of bamboo after China, with 136 species and 23 genera spread over 13.96 million hectares. The annual bamboo production in the country is estimated 3.23 million tons. According to Forest Survey of India (FSI), in India bamboo grows in 8.96 million hectares of forest area, which constitutes about 12.8% of total forest area of the country. However, despite all this, the country's share in the global bamboo trade and commerce is only 4 per cent.

In order to increase the share of bamboo in global trade and commerce, focus can be shifted from the bamboo as a forest produce to bamboo as a farm produce. Lot of industries require bamboo as raw material. But due to non-availability of the same, these industries have not flourished in India. Below is list of a few such industries, which require bamboo supplies in large quantities:

- **Bamboo timber**
- **Bamboo plyboard**
- **Bamboo flooring**
- **Bamboo yarn and fabrics**
- **Bamboo ethanol**

It grows on marginal and degraded land, elevated land along field bunds and river banks. It adapts to most climatic conditions and soil types acting as a soil stabilizer and effective carbon sink and helping to counter the green house effects.

02.01. Soil, Water & Climatic requirements:

The bamboo plantation grows well in hot climatic conditions. Cold winds are not suitable for the growth of bamboo during initial years. Plantation should be done in rainy season only, as it requires lot of water in the first year. 2nd year onwards water requirement is reduced. It can just survive on normal rains and even sometimes in drought conditions also.

Bamboos can be grown and cultivated on a wide variety of soils having acidic inclination. Any soil except rock-strewn soils with a pH range of 4.5 to 6.0 is suitable for bamboo plantation.

02.02. Propagation

The bamboos can be propagated through the seeds, seedlings, plantlets, culms cuttings, or rhizomes. The most common method of bamboo plantation is through plantlets and culms cuttings. The mortality rate in propagation through plantlets is quite low. The rhizome planting method, is also good but more care is needed in the initial phase.

Plants are usually nurtured in nursery for a period of one year and later it is transplanted in the farm during rainy season. For propagation through culms, culms of one year, having achieved height of one meter, dug along with roots are to be planted.

The pits of 1 meter x 1 meter x 1 meter size are dug and nursery-raised plants are planted, at a spacing of 5 meter x 5 meter, centre to centre. The number of bamboo plants that can be placed in 1 acre land is about 200. The size of pit and centre to centre distance depends on the specie to be planted.

The gestation period in bamboo planting is 5 years it means that bamboo becomes enough dense and the distance between two culms is wiped out. Hence the inter space can be used during first 3 years for earning some extra income by growing low height inter crops such as vegetables, ginger, chillies or turmeric.

02.03. Manuring and Fertilization

For high quality and best yield, fertilizers are used. As the bamboo plants are heavy feeders, so fertilizers are needed to be applied in appropriate quantity. Dosing of all kinds of nutrients from fertilizers viz green manures, organic compost, wood ash and chemical fertilizers are needed at regular intervals. It is always suggested to apply fertilizer after harvesting and previous to irrigating the plants.

Leaf biting and sucking insects are common in young bamboo plants. Hence appropriate pesticides should be applied to control these pests.

02.04. Harvesting

Following the growth cycle of bamboo, mature stems can be cut off carefully without disturbing rest of the plant. A bamboo culm takes 3 – 4 years to mature. So, leaving the young bamboos in a grove, mature bamboos can be harvested, 5th year onwards every year thereafter, till the flowering of the grove.

03.00. Bamboo, a good source of ancillary income for farmers

Bamboo can be planted as main crop or as an additional crop on the periphery of the farm. Bamboo once planted continues to stand for a span of 40 years to 100 years depending upon the specie. Fifth year onwards it can be harvested every year. So, it is a source of constant ancillary income to the farmer in addition to the regular crops.

Apart from the income from the sale of bamboo poles, farmers can do some value addition by making bamboo handicrafts, jewellery, rakhis and other utilities. This can further generate the revenue and employment for rural population, mainly women.

03.01. Cost of Plantation and maintenance thereafter

The basic cost of plantation is mentioned in Table 1. The cost considered for this study is for *Dendroclamus Strictus*, a specie commonly available in Vidarbha region of Maharashtra, with dry and hot climatic zone. The cost and revenue will vary from region to region and specie to specie.

Table 1: Cost computations:Per Acre Bamboo Plantation

Sr	Activity	Qty	UOM	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1	Land Preparation	5	Mandays	350	1750						
2	Pits digging	200	nos.	100	20000						
3	Cost of Plants	200	Nos.	100	20000						
4	Green Manure	50	Kg	2.5	125	125	125	125	125	125	125
5	Labour for Plantation	5	Mandays	350	1750						
6	Fertilizers	200	Kgs	25	5000	5000	5000	5000	5000	5000	5000
7	Deweeding/ Pesticide	10	Mandays	350	3500	3500	3500	3500	3500	3500	3500
8	Drip irrigation Charges				50000						
9	Water Cost				5000	5000	5000	5000	5000	5000	5000
10	Family Labour for routine care	90		350	31500	31500	31500	31500	31500	31500	31500
11	Sub total				138625	45125	45125	45125	45125	45125	45125

It is evident from the table 1, that in first year, cost of plantation is Rs. 1,38,625/- there after every year a cost of Rs.45,125/- is estimated to incur for the maintenance of bamboo clumps. If the initial cost of plantation is capitalised and written off during next 10 years, the annual expenditure for 2nd year and onwards can be estimated at Rs.58,988/-. 8th year onwards bamboo clumps attain enough maturity hence fertilizers, de-weeding, irrigation is not required. Only small care from farm owner is sufficient.

03.02. Revenue Model

Bamboo is a stubborn plant and has a tendency to grow at its own. In a grove, every year new shoots keep growing and older ones keep maturing and become due for harvesting. Culms with the age of fiveyear plus can be harvested carefully without harming the new shoots. Table 2, given below, indicates the calculation of new shoots coming in and old poles becoming due for harvesting:

Table 2: Estimated Growth and Harvesting per Culm

Year	New Shoots	Total Poles	Harvesting	Balance
1	4	4		
2	4	8		
3	4	12		
4	4	16		
5	6	22	4	18
6	6	24	6	18
7	6	24	8	16
8	8	24	8	16

Its evident from the table 2 that 5th year onwards harvesting needs to be done and every year number of the new shoots is growing and proportionately number of poles to be harvested are also increasing. So, we can say that initially bamboo plantation gives a slow but steady income flow and acts as a long-term investment.

Table 3 shows the year wise per acre revenue and margins for bamboo plantation. The Revenue considered for this study is for *Dendroclamus Strictus*, a specie commonly available in Vidarbha region.

Table 3: Revenue and Margin Per Acre

Year	No. of Poles Extracted	Rate per pole	Total Revenue	Total Cost	Margin	Accumulated Margin/ (Loss)
1				138625	-138625	-138625
2				45125	-45125	-183750
3				45125	-45125	-228875
4				45125	-45125	-274000
5	760	120	91200	45125	46075	-227925
6	1140	120	136800	45125	91675	-136250
7	1520	120	182400	45125	137275	1025
8	1520	120	182400	45125	137275	138300
9	1900	120	228000	45125	182875	321175
10	1900	120	228000	45125	182875	504050

It is evident from Table 3, that returns start flowing in from 5th year onwards but actual profit after nullifying earlier losses comes from year 7. Thereafter its margin is ever increasing with very little efforts. This return is quite handsome as compared to other conventional crops. Additionally, it helps in maintaining the quality of surrounding air, soil and underneath water table.

In addition to above, the revenue from intercropping can also be generated in initial 3 years to minimise the losses of gestation period. However the same has not been considered here. Suitable crops for the purpose may be seasonal vegetables, ginger, chillies or turmeric. This crop mix will give enough revenue for the sustenance i.e. seasonal vegetables will provide the revenue in short term and turmeric can give long term gains.

04.00. Assimilation

Concluding one can say that bamboo plantation is a win-win situation for farmers. It gives them good returns and a healthy living. If Bamboo is planted on the main farm land, it gives sumptuous returns in the long run, in addition to the non-financial benefits for the farmer, society and environment, at large.

If bamboo plantation is done on farm periphery, it will save the cost of fencing, protects the main crop and stops soil erosion. It also generates additional income by way of cost saving or generating revenue:

- a. Sale of bamboo poles,
- b. Sale of additional crops grown in initial 3 years
- c. Bio mass for manure
- d. Bio mass pallets can be made and supplied to power plants as fuel for boiler.
- e. Making and sale of Bamboo handicrafts
- f. Making bamboo charcoal with branches

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AN OVERVIEW OF FISH FARMING IN INDIA

(Pradhan Mantri Matsya Sampada Yojana)



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The rate of Commercial Fish Farming in India is increasing rapidly because fish and fish products have a huge demand in the Indian Market. The Consumption Rate and demand for fish are increasing gradually with the current population growth. Sea and Rivers are the major sources of Fish. However, the quantum of Fish from those natural resources is gradually decreasing due to the high volume of fish collection. As a result, setting up a Commercial Fish Farming Business is a must to catchup with the nutritional demand of the Indian People.

	<p>India is Blessed with a large number of Rivers, Lakes, and many Natural Water Resources and hence there are Great Opportunities for setting up a New Career, Business, and Income Source in Commercial Fish Farming in India.</p>
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Setting up a Commercial Fish Farming Business has many advantages. They are:

- ≈ Fish and fish products have a huge demand in India and it is one of the most common and favorite items on the food menu for more than 60 percent of Indian people.
- ≈ Market Demand and Price is always High for Fish and Fish related Products.
- ≈ Indian Climate is Very Suitable for fish production and fish farming business.
- ≈ Various types of fish are easily found water sources are available.
- ≈ Various types of fast-growing fish species are available. Farming those species ensures rapid returns on investment.
- ≈ Easily available and low-cost labor to start an integrated fish farming business with various types of animals, birds, crops, and vegetables. Also this integrated fish farming will increase the production and decreases the feeding costs.

Indian Fisheries	
Global position	3 rd in Fisheries 2 nd in Aquaculture
Contribution of Fisheries to GDP (%)	1.07

Contribution to Agriculture GDP (%)	5.15
Per Capita Fish Availability (Kg.)	9.0
Annual Export Earnings (₹ In Crores)	33,441.61
Employment in Sector (Million)	14.0

Fish farming in India is a very profitable and less risky business. When it comes to commercial fish farming it will create wide employment opportunities. Unemployed educated young people can also start a commercial fish farming business. This will provide them with both financial freedom and permanent income opportunities.

If suitable land and facilities for fish farming, People from other occupations can also easily start doing fish farming business.

How to Start Fish Farming?

For setting up a profitable fish farming business, the following are the various steps:

Pond Preparing: The most important infrastructure of the fish farming business is a pond. We can't do a commercial fish farming business without a pond. Utilizing the existing pond or constructing a new one is required for fish farming in India. We can raise fish in both seasonal and permanent ponds. In case of the seasonal pond where water will not exist for the whole year, we have to raise some fast-growing and quick maturing fish breeds. Prior to stocking minnow in the pond it should be prepared properly, surface of the pond should be cleaned properly and then it should be fertilized. Optimize the PH value of pond water and soil. A high-quality pond environment ensures high production and profit. See full pond management system.

Fish Breeds: Selecting proper fish breeds to play a vital role in the overall production and profit. Always try to raise the fish breeds that are suitable for the area. When selecting fish breeds consider some factors like market demand for fish, maintaining facilities, natural facilities for fish farming, a great source of sufficient amount of water, effective utilization of resources, and some other factors. Katla, Rui, Grass Carp, Silver Carp, Common Carp, Tilapia, Koi, Shrimp, various types of catfish, etc. are very suitable fish breeds for farming in a freshwater pond. For proper utilization of pond and water resources, numerous fish breeds can be raised together. For quality minnow contact fish breeders or the fisheries department.

Feeding: High-quality fish feed can maximize the overall production. Most of the farmers in our country depends on the natural feeds in the pond. But for Commercial Production, one must have to provide the fish with high quality and nutritious food and apply various types of integrated fish farming systems.

Highly profitable and most popular integrated fish farming systems are fish-poultry, fish-dairy, fish-duck, fish-pig, fish-paddy, fish-goat, and fish-vegetables.

Care & Management: Along with a good pond environment and high-quality feeding the farmer should also have to take good care of fish. Particularly fishes which are in the growing stage need more care and management. Farmers should always test the PH level of water. Pond water with PH levels 7 to 8 is best for suitable fish farming.

Further they should ensure preventing the entry of various types of predators. Hence farmers should always take necessary steps against various types of fish disease.

Marketing: Without proper marketing facilities we can't desire good production. The main facility of commercial fish farming in India is that, one can easily sell products at the proper Price.

Most Indian fish farmers are used to sell their products in the nearest local market. Indian fish also has huge demand in the international market. Hence to ensure more profit the farmers shall start exporting the fish to foreign countries. For international marketing from India, a farmers' association should be set up. So that they can easily sell our products in the international market for gaining more profit.

Model Scheme for Fish Culture (Pond Requiring 1.0 M Excavation)

A. Capital Cost (Unit Area: 1 ha.):

		₹
1.	De-weeding, dewatering, levelling etc.	2,500
2.	Cost of Excavation for 10,000 cubic mtrs. @ ₹.53.70/cmts.	5,37,000
3.	Equipment like nets hapas and hundies	4,000
	Total Cost	5,43,500

B. Recurring Cost:

1.	Mahua Oil Cake 2,500 Kg @ ₹.13.00 / kg	32,500
2.	Lime 500 kg @ ₹.8.00 / kg	4,000
3.	Cow dung 10,000 kg @ ₹.0.75 / kg	7,500
4.	Single super phosphate 500 kg @ ₹.6.00 / kg	3,000
5.	Urea 350 kg @ ₹.6.00 / kg	2,100
6.	Fish seed (Fingerlings 4-6 inches / 45-50 Nos/kg) 7,500 Nos @ ₹.2.00 each	15,000
7.	Fish feed 7,500 kg @ ₹.14.00 / kg	1,05,000
8.	Netting, Prophylactic measures etc.	4,400
9.	Labour for Watch and Ward	6,000
	Total	1,79,500

C. Project Cost:

1.	Capital Cost	5,43,500
2.	Recurring Cost for one cycle of Production	1,79,500
3.	Total Project Cost	7,23,000
4.	Margin 20%	1,44,600
5.	Bank Loan (Composite Loan)	5,78,400
	Or Say	5,78,000

D. Income & Surplus:

1	Income by sale of fish 6,000 kg @ ₹.80/- per kg (expecting 10% mortality and average weight of fish around 800 gms to 1 Kg.)	4,80,000
2	Recurring Cost per Cycle	1,79,500
3	Gross Surplus per Cycle	3,00,500

In India Fish farming business will never fade or vanish. The demand for fish is increasing with population growth and the demand will increase even more in near future. So, there is a good opportunity for earning and employment in the fish farming business. Fish farming in India can help greatly in eradicating poverty, hungry and unemployed problems in our country.

Indian fisheries and aquaculture are an important sector of food production by providing nutritional security to the food basket, contributing to the agricultural exports, and engaging about fourteen million people in different activities. With diverse resources ranging from deep seas to lakes in the mountains and more than 10% of the global biodiversity in terms of fish and shellfish species, since independence our country has shown a sustainable and continuous increase in demand and increments in fish production.

Resources	
Coastline	8129 km
Exclusive Economic Zone	2.02 million sq. km
Continental Shelf	0.506 million sq. km

Rivers and Canals	1,91,024 km
Reservoirs	3.15 million ha
Ponds and Tanks	2.35 million ha
Oxbow Lakes and Derelict Waters	1.3 million ha
Brackish waters	1.24 million ha
Estuaries	0.29 million ha

Constituting about 6.3% of the global fish production, the sector contributes 1.1% of the GDP and 5.15% of the agricultural GDP. The total fish production of 10.07 million metric tonnes presently has nearly 65% contribution from the inland sector and nearly the same from culture fisheries. Paradigm shifts in terms of increasing contributions from the inland sector and further from aquaculture are significant developments over the years.

With high growth rates, the different facets of marine fisheries, coastal aquaculture, inland fisheries, freshwater aquaculture, and cold-water fisheries contribute to food, health, economy, exports, employment, and tourism in the country.

Some Facts	
Present Fish Production	6.4 mmt.
Inland	3.4 mmt.
Marine	3.0 mmt.
Potential fish production	8.4 mmt.
Fish Seed Production	21,000 million fry
Hatcheries	1,070
FFDA	422
BFDA	39

Development Agencies (FFDAs) and 39 Brackish water Fish Farms Development Agencies (BFDAs) are established for promoting freshwater and coastal aquaculture. The annual carp seed production recorded as 25 billion and 12 billion that of shrimp with increasing change in the recent past. Along with food fish culture, ornamental fish culture and high-value fish farming are gaining importance in the recent past. With over 2.4 lakh fishing crafts operating on the coast, six major fishing harbors, 62 minor fishing harbors, and 1,511 landing centers, needs of over 3.9 million fisher folk are catered in the country.

In India, one of the largest group which is emerging in agricultural exports are Fish and fish products. The growth of the exports are recorded at nearly 10.51 lakh tones in terms of quantity and regarding value or cost it was recorded nearly Rs.33,442 crores.

This accounts for around 10% of the total exports of the country and nearly 20% of the agricultural exports. Nearly 50 various types of fish and shellfish products were exported to 75 countries throughout the world.

Pradhan Mantri Matsya Sampada Yojana: Under the Ministry of Fisheries, Animal Husbandry, and Dairying, the Department of Fisheries implements the Pradhan Mantri Matsya Sampada Yojana (PMMSY). This Pradhan Mantri Matsya Sampada Yojana scheme was implemented to bring the 'Blue Revolution' by sustainable development of fisheries sector in our country.

The government launched the PMMSY to address crucial gaps in the fisheries value chain of fish productivity, production, quality, post-harvest infrastructure, technology, and marketing. It aims to strengthen and modernize the value chain, establish a fisheries management framework, and enhance traceability while ensuring the socio-economic welfare of fish farmers and fishers.

This PMMSY scheme was approved by our government with an assessed investment of Rs.20,050 crore in order to improve the fisheries sector in India. This scheme is being implemented in all the States and Union Territories in India for five years, i.e., 2020-21 to 2024-25.

Objectives of PMMSY: The objectives of the Pradhan Mantri Matsya Sampada Yojana are:

- ⇒ Harnessing the fishery's potential in a responsible, inclusive, sustainable, and equitable manner
- ⇒ Enhancing fish productivity and production through diversification, intensification, expansion, and productive utilization of water and land.
- ⇒ Strengthening and modernizing the value chain, quality improvement, and post-harvest management
- ⇒ Doubling fish farmers' and fishers' incomes and creating employment opportunities
- ⇒ Enhancing contribution to exports and Agriculture GVA (Gross Value Added)
- ⇒ Physical, Economic and Social security for both fishers and fish farmers
- ⇒ Robust regulatory framework and fisheries management

Beneficiaries under the PMMSY: The beneficiaries under the Pradhan Mantri Matsya Sampada Yojana are:

- ⇒ Fish farmers.
- ⇒ Fishers.
- ⇒ Fish workers and fish vendors.
- ⇒ Joint Liability Groups (JLGs) and Self Help Groups (SHGs) in the fisheries sector.
- ⇒ Fisheries development corporations.
- ⇒ Fisheries federations.
- ⇒ Fisheries cooperatives.
- ⇒ Fish Farmers Producer Organizations/Companies (FFPOs/Cs).
- ⇒ Entrepreneurs and private firms.
- ⇒ SCs, STs, differently-abled persons, and women.

Impact of PMMSY: The Pradhan Mantri Matsya Sampada Yojana will have the following impact on the overall community of fisheries in India:

- ⇒ Enhancement of fish production to 22 million metric tons by 2024-25 from 13.75 million metric tons in 2018-19.
- ⇒ Sustained average annual growth of around 9% in fish production.
- ⇒ Increase in the contribution of fisheries sector GVA to the Agriculture GVA to about 9% by 2024-25 from 7.28% in 2018-19.
- ⇒ Double export earnings to about Rs.1,00,000 crore by 2024-25 from Rs.46,589 crores in 2018-19.
- ⇒ Improve productivity in aquaculture to about a national average of five tons per hectare from the current average of three tons per hectare.
- ⇒ Reduce the post-harvest losses from the recorded 20-25% to around 10%.
- ⇒ Improve the domestic fish consumption to about twelve kg from the current five kg per capita.
- ⇒ Creation of about 55 lakh direct and indirect employment opportunities in the fisheries sector along with the supply and value chain.
- ⇒ Amplifying the earnings of fishers and fish farmers.
- ⇒ Facilitation of growth of entrepreneurship and encouragement of private investment in the fisheries sector.

Implementation of PMMSY: The Pradhan Mantri Matsya Sampada Yojana is an umbrella scheme consisting of the following two separate components:

- ⇒ Central Sector Scheme (CS).
- ⇒ Centrally Sponsored Scheme (CSS).

The Centrally Sponsored Scheme (CSS) component is divided into non-beneficiary oriented, and beneficiary orientated sub-components under the following three heads:

- ⇒ Enhancement of production and productivity.
- ⇒ Fisheries management and regulatory framework.
- ⇒ Infrastructure and post-harvest management.

Central Sector Scheme (CS): The Central Government bears the entire unit cost or project, i.e., 100% central funding for this component of the PMMSY. Wherever the Central Government bodies including the National

Fisheries Development Board undertake direct beneficiary oriented (i.e., group or individual) activities, the central assistance will be as follows:

- ⇒ For the General category-up to 40% of the unit or project cost.
- ⇒ For SC, ST, or women category-up to 60% of the unit or project cost.
- ⇒ Centrally Sponsored Scheme (CSS).

The whole project budget of the CSS component and sub-components employed by the States/Union Territories for the non-beneficiary orientated is dispersed between the State and Centre as follows:

- ⇒ For the North-Eastern and the Himalayan states-90% central share and 10% state share.
- ⇒ For other states-60% central share and 40% state share.
- ⇒ For Union Territories-100% central share.

The whole project budget of the CSS component and sub-components employed by the States/ Union Territories for the beneficiary orientated (i.e., group or individual activities) the government financial assistance of both the State and Centre together is limited as follows:

- ⇒ For the General category-the government financial assistance is limited to 40% of the project or unit cost.
- ⇒ For SC, ST, or Women category-the government financial assistance is limited to 60% of the project or unit cost.

The governmental financial assistance for the beneficiary orientated, i.e., individual or group activities under the CSS is shared between Centre and State/UTs in the following ratio:

- ⇒ For the North-Eastern and the Himalayan states-90% central share and 10% state share.
- ⇒ For other states-60% central share and 40% state share.
- ⇒ For Union Territories-100% central share.

PMMSY Implementing Agencies:

- ⇒ Central Government and its bodies, comprising National Fisheries Development Board.
- ⇒ State/UT Governments and their entities.
- ⇒ State Fisheries Development Boards.
- ⇒ Any other end implementing agencies notified by the Department of Fisheries.

The **PMMSY** is still in the beginning stage because it is being implemented for five years, i.e., from 2020 to 2025. The state as well as central have undertaken various projects under this **PMMSY**. It will positively impact and develop the fisheries sector by 2025 in way of providing opportunities to the beneficiaries.

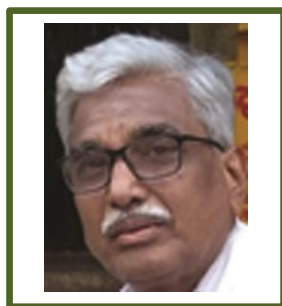
Conclusion: Indian peninsula is home to millions of people who are dependent on fisheries for their livelihood. Moreover, being a source of occupation and livelihood for millions of people, this Fishery sector contributes enormously to food production and in earning foreign exchange.

From past few decades, this industry has made rapid progress. It is one of the inexpensive sources of nutritious food and like the agricultural sector, fisheries sector is also a traditional contributor to socio-economic development of our country.

The government implemented various different schemes for several sectors through the Atmanirbhar package. One such package under the ambit of Atmanirbhar Package is the '**Pradhan Mantri Matsya Sampada Yojana (PMMSY)**', through which the government targets to enhance the fish production to 20 million tonnes by 2022-23 which currently stands at 13.4 million tonnes in 2018-19. To reach the government's target by 2022-23, the current annual average growth rate needs to be doubled.

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जलमूलमिदं जगत्



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- One of the most famous of all vedamantras, the popular “Mantra Pushpam”, has an inference that “Scorching sun - Air - Moon – Stars – Clouds” have WATER as their source. Thus, water is the basis of this universe. History says that economic prosperity happened on the banks of rivers that give abundant water. Predominantly agricultural activity depends upon the availability of water source. This natural resource is made available by GOD at free of cost. Thus only in times of scarcity – its value is being realised.
- In the state of my domicile the Telangana – I heard that nearly 30 lakh bore wells are in usage mainly for agriculture. Ever since Independence this region could not build in substantial gravity based irrigational facilities commensurating to its riparian area of Godavari River. Across river Godavari – the state had only “Sriram Sagar Dam” and “Sripada Yallampally Dam”. The prime reason for this is geographical topography.
- In regard to River Godavari - Telangana is at an elevation ranging between 300 metres to 650 metres above mean sea level while River Godavari flows at an elevation of 100 metres below mean sea level. Hence gigantic pumps have to be used for pumping water through suction and delivery mechanism. Thus the choice left is to LIFT the water and let the water flow to different areas and as well to enable refurbishment of the reservoirs. Though it appears to be a costly proposition – it is said to be an ESSENTIAL STEP without apparent recourse to conventional **cost benefit analysis**. Because जलमूलमिदंजगत्.
- The Government of Telangana conceived the Kaleswaram Lift Irrigation Project (KLIP) in the year 2016. With a scheduled capital outlay of Rs.1.20 lakh Crores the project involves Construction of three barrages downstream to Sripada yallampally Dam. These Three Barrages are now in action at Medigadda (known as Lakhmi Barrage), at Annaram (known as Saraswathi Barrage) and at Sundilla (known as Parvathi Barrage). In its journey the river Godavari is virtually made to flow in the **reverse direction** to reach Sripada Yallampally Dam. In the process - in varied directions the ayacut is provided with water resource. In the end the project is also expected to cater the water requirements of Hyderabad which is the fastest growing metro city in India with Head Count already crossing 1 Crore. Thus the project KLIS is supported by as many as 20 Lifts with gigantic pumps involving power requirement of nearly 5000 MW to drench the DHARANI.
- The river Godavari had its last leg in Telangana State at a popular temple town **Bhadrachalam** before entering the state of Andhra Pradesh. Just about 30 KM ahead of this holy temple town (near



Figure 1: Lakshmi Barrage at Medigadda (KLIP)

Dummugudem) – an anicut was built by **Sir Arthur Cotton** in the **pre-independence** era with perhaps the main intention to store the water and to provide irrigation facilities towards the eastern side of the River (which was under British Rule). The western side of the river perhaps had the elevation issues. Moreover it was also part of Nizam Rule. In the Post-independence era and in the Combined State of Andhra Pradesh – Brain storming took place in the year 2004 to cater the water needs of the western side of the River as well. Post formation of the 29th State of Independent India – THE TELANGANA – the proposal received much more attention and the project has also been redesigned and renamed as Sita **Rama Lift Irrigation Scheme (SRLIS)**.



Figure 2: Dummugudem Anicut Built 150 years back - now been improved to support SRLIS

- With an objective of strengthening the water availability for this **SRLIS** project and to augment the power requirement for the LIFTS that are envisaged ; another project by title **Sitamma Sagar Multi-Purpose Project (SSMPP)** is being constructed as a barrage across Godavari River at 200 meters downstream of the existing Dummugudem Anicut that was built 150 years ago. In the scheme a Hydro Electricity generation of 320 MW is also being constructed for. Thus Sita Rama Lift Irrigation Scheme (SRLIS) is all set to carry the Godavari water from Dummugudem to travel nearly 200 KMs to irrigate Khammam, Bhadradi Kothagudem and Mahabubabad Districts of Telangana State with the help of 4 to 5 lifts that require nearly 715 MW of power. Finally the waters from GODAVARI would reach **Palair Reservoir** in Khammam District which is about 170 KM from the Banks of River Godavari near Dummugudem.
- Well, I have narrated the main philosophy of these two projects. Efficient Project Monitoring activity is ensuring perfect Planning and effective implementation of these projects. Funding the CAPEX is taken care. The projects are positioned to support the future generations. But the main point I intend to drive is the **Operating Costs** which are going to form part of the State Government’s yearly Budget outlay. It can be a policy call whether to charge the user for the water that is served or not to charge. But the Water reaches the consumer only after accumulating certain **COSTS**. Thus the approach that is being put forward is to have a system for “**measuring and monitoring**” of the **operating Costs**.
- We are aware of the fact that the end product is the **WATER**. Though it is God’s gift – it costs to see to that the water reaches the destined users. Whether the user is charged or not the “**measuring and monitoring**” of the cost of providing the service is a religious activity that helps and prevents the unnecessary draining of water and in turn the money.
- The user says the farmer has to be conscious of the **costs** the water carry while entering into their Fields enabling of economic prosperity to the **FARMER**. We have also noticed that the water pumped is also scheduled to address the drinking water requirements of the public enroute including the One Crore thirsty throats of Hyderabad. Now a days public at large are aware that a mineral water bottle of one litre costs them Rs.20/- . In such case it is logical that they are to be made aware of the **costs** that are flowing from Lakshmi Barrage to their dwelling place in Hyderabad.
- The distance is about 270 KMs. अथ जलमूल्यगणनम् || (Atha jala-moolya- gananam).
- **Wishful Thinking** : It is my wishful thinking that Government of Telangana shall roll out an integrated **Cost management system** for all the Lift Irrigation activities across the states essentially to accomplish the following objectives :
 - I am aware that the yearly Government Budgets would take care of required financial support for the maintenance of these Lift Irrigation projects from the macro level – but the same may loose the perspective of affective **Management Accounting or Management audit** perspective at its micro level.
 - With **Water** as the “**Cost Object**” the mechanism should be in place to collect the **CLUSTER** wise costs been incurred by government towards “**Power, Man Power and Maintenance**” activities. Technically these clusters can be construed in the management accounting language as “**Cost Centres**”

- The Water travelling from these projects would carry “**different costs**” while reaching **varied destinations** in its journey. It is essential that enroute - people across the villages are made aware of the costs being incurred to make the water available for their villages. This awareness brings some amount of responsibility in its utility and thus the usage is optimised.
 - With the Government of Telangana ensuring abundant supply of water and providing few other incentives like “Rythu Bandhu” and Free Power incentives; farmers are excited to put their might and make cultivation as a viable and enjoyable occupation or way of life. In fact during last 2 seasons – the productivity of the farming community is so much - the paddy output established a record yield in the state. However - this in turn also increased the procurement burden of the paddy at Minimum Support Price (MSP) on the governments. Certain sections of agricultural scientists are also raising concerns about the Impact on the Environment and Sustainability in the long run if the LIFT IRRIGATION practices continue at such mega scale. Thus there is a necessity to optimise the total activity and that is possible only upon micro level “**Measuring- Monitoring and Optimising**”. The Government’s mission of “prosperity – inclusive growth and sustainable growth” can be accomplished if and only if the “Cost of water” is known to all the stakeholders from its “Cost benefit perspective”.
 - The DATA collection mechanism involving the relevant financial and Non-Financial aspects will lead to an effective decision making with reference to operating a specific Lift pump or not to. The water can be lifted to the required extent so as to minimise the ill effects of emissions.
 - Visualise a situation where every village carries a Display Board containing the Cost of water that is reaching their village – the logical mind of the human being acts sensibly and strengthens the effort of the Government.
 - Depending upon the consumption aspects vis-à-vis the output achieved ; suitable award or reward mechanism can be initiated.
 - All that I submit is that we should be conscious of the effective usage and avoidance of wastage of water at all levels or places of consumption
 - In the state of Telangana – when Mallanna Sagar an artificial Reservoir built with a storage capacity of 50 TMC Feet of water was in news – I read that the water is planned to reach this reservoir from a distance of almost 250 KM and after been lifted to 600 metre height from Mean Sea Level. Out of this - It is estimated that nearly 30 TMC water is been allocated to Hyderabad for both industrial and Domestic purposes.
 - In the conventional Industries - all along we are accustomed to value the TREATED WATER for Pharma companies. May be in future "plain water" has to be valued even. So it is the time that we put in focussed studies on water management
- Illustration :
- Let me illustrate with an example of Water reaching the destination which is at say 100 KM away from the river bed with the help of 3 lifts. Let the cost of lifting the water at starting point be say Re.1/- per Litre which flows down to say upto 20th KM of the total intended path.
 - The water enroute supports the CAUSE (Drinking and Irrigation) and is also subjected to second lift at 20th KM. There after the water that is subjected to second lift flows down to say upto 50 KM of the total intended path costing another Re.1/- per litre.
 - In simple terms if the public at large across the path of 50 KM come to know that the cost of water reaching them as Re.1/- upto 20th KM and Rs.2/- from 20th KM onwards upto 50th KM, it will help them to come in line with the thinking of government with respect to “Crop Colonies”. It will also reform the farmer into a more responsible stakeholder.
 - If water is further lifted from 50th KM to enable it to reach the destination of 100th KM – the stakeholders involve need to know that the water flows forward to their destination would also carry a Cost of Rs.2/- per litre.
 - Presuming that the third Lift which enables the flow of water between 50th KM to 100th KM would cost another Re.1/- per Litre; the cost of carrying the water to 100th KM would be Rs.3/- per litre.
 - If you refer to the Glossary of Management Accounting – this is nothing but **Step Ladder approach of costing**.
 - Hence a properly designed and implemented **Cost management** system with the objective of Measuring, Monitoring and Optimising the resource; plays a catalyst role in the thought process of the CITIZEN. It is good for the Natural Resource.

- Role of ICAI:
 - The Institute of Cost accountants of India can play a significant role in making a detailed study and designing the “operational cost collection mechanism” on scientific basis.
 - The Institute can also train the young graduates or under graduates (to be designated as **Cost Inspectors**) across the villages who may also be involved in agricultural activity. The young minds get to develop their inter personal skills and get habituated to creative thinking that can help their career. The youngsters need not be hired as full time employees but can be engaged as “Interns” say for 2 or 3 years .Thus so many batches of youngsters across the state get benefited. These Cost inspectors collect the DATA to establish the relevant Cost Information.
 - Consolidation and convergence of the information based on facts can take place with the help of technology and be useful for multiple analytical activities.
 - In the state of Telangana - the Institute of Cost accountants of India has its presence through its chapters at Karimnagar and Warangal in addition to the 50 plus year old chapter at Hyderabad.

- **Action Plan envisaged:** I intend to take up this concept to the door steps of Telangana Government. Without recourse to the outcome – I intend to take up the following action plan in the next one year. I am sure that the government of Telangana will atleast not have any objection If we intend to take up this sort of study.
 - Most of the information is in Public Domain and what is required is to collate the same in a structured manner.
 - Brain storming session would be conducted in varied forums of NGOs and Farmers to take up their views in regard to my wishful thinking.
 - I shall also share the thought to the like-minded CMAs and hopeful that the CMAs across Godavari Belt would join the movement.
 - With the support of near & dear and the learned officials – the details in respect of the segments or clusters of these two projects and the relevant quantitative data on water resources would be compiled for.
 - Tentative Data collection templates would be designed
 - जल-मूल्यगणन-विवरणम् (Jala-Moolyaganana-Vivaranam) will be formatted.
 - The final data flows would be reduced to a detailed document with the help of flow charts and Data Structures. All the above would be placed for open discussion.
 - Content to train and orient the probable “Cost inspectors” would also be developed for further scrutiny and approval by policy makers.
 - A Detailed Report would be submitted to the Policy makers.

- Finally... the intention of this write up is to bring awareness about the wishful thinking and to leave the forum open for further brain storming. I shall also make parallel efforts to implement the envisaged Action plan to the best of my capability. We all should realise that Water can neither be destroyed nor be CREATED. The utilisation has to be OPTIMAL to ensure the substance of the same for future generations.

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CHALLENGES IN FACILITATING STATUTORY COMPLIANCE AMONG FARMER PRODUCING ORGANISATIONS



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Abstract

Promoting a sustainable Farmer's Producer Organization (FPO) involves a host of factors. In addition to having a sound management and organizational structure observing legal formalities in establishing the FPO and ensuring timely compliance with statutory reporting, to the appropriate authorities are paramount. Statutory reporting and compliance could include periodic communication about the activities and the financial performance of the FPO. This paper examines the challenges that are faced by FPO's and provides a solution framework.

1. Introduction

A Farmer's Producer Organization (FPO) is a legal entity formed by farmers and registered with the appropriate authority. The aim of incorporating an entity is to ensure better income realization of the produce of individual farmers, most of whom are small and marginal land holders and hence unable to realize a reasonable value for their produce individually. The FPO as an entity is expected to bring the necessary economies of scale by pooling the produce of these individual farmers and taking them to market.

A FPO is owned by the individual farmers and can be registered as a Co-operative Society, Producer Company, Section 25 Company, Society or Public Trust. Since the primary objective of the FPO is to share the profits obtained by selling the produce of individual members the forms of legal entities that allow profit sharing are Co-operative Society and Producer Company. Hence registering a FPO either as a Co-operative Society and Producer Company is preferred.

The FPO when registered as a Producer Organization is registered under the Indian Companies Act. Entities registered under this act have an obligation to comply with regulatory filings.

A FPO in addition to its primary objective of aggregating the produce of individual farmer members can undertake the following activities:

- Disseminating information about the market
- Disseminating information about technology and innovations in the field of farming
- Facilitating funding of activities
- Branding and Marketing
- Selling and Exporting

Several of these activities require the individual farmer members to have a grasp of technology tools. The regulatory and compliance activities like book keeping and reporting require an conceptual understanding in addition to knowledge of the technology.

2. Regulations and Compliance

During the process of incorporation of the FPO the farmers need to have an understanding of various documents like the Memorandum of Association, Articles Of Association and various legal forms like Form-1, Form-18 and Form-32 in addition to the conceptual understanding of equity shares.

Once incorporated the FPO has to procure a PAN Number from the Income Tax Number, A TIN Number from the Commercial Taxes Department. So it is important that the FPO maintains a book of accounts diligently and accurately.

The FPO is taxed at par with other private companies and hence has to periodically file Income Tax returns.

Good governance keeping the interest of the member farmers is essential and the Board of Directors of the FPO must ensure that this is evident in their communication to the farmer members and in their regulatory filings.

The Board of Directors should be competent in the matters of preparing detailed project reports, Balance Sheet Analysis, Simple Financial Ratios. Hence the Board of Directors should have a good knowledge of Financial Management concepts like Ledgers, Vouchers, Trial Balance etc and should have adequate knowledge of Financial Statements like Balance Sheet, Income Statement, Directors Report etc.

3. Challenges in Training and Compliance

Since the primary members of the FPO are farmers, their main skill is in producing agro products. Hence member farmers do not have a grasp of technology beyond handling a mobile phone and a laptop. The usage of these devices is usually for phone calls, listening to music, watching movies and playing computer games.

Running an FPO requires member farmers to have a good grasp of technology tools. For example to prepare a Detailed Project Report knowledge of a Word Processor is essential. The members of the FPO should be competent in using spreadsheet to draw-up forecasts and charts that can be used in the Detailed Project Report so as to communicate the intent in a clear and concise form. Though its not required for the member farmers to be highly skilled in the use of spreadsheets to create financial wizardry it is essential that they know the spreadsheet functions for simple tasks. They should be able to navigate cells, use simple calculation functions like sum, Average etc. Similarly Member farmers need not be extensively skilled in the use of Word processors so as to generate Detailed Project Reports with very high visual appeal instead basic knowledge of using document templates, changing fonts size, type-face, orientation of the page would suffice.

Maintaining the books of accounts could be challenging to member farmers because knowledge of Accounting Software is required in addition to basic accounting knowledge so that they know which ledgers should be debited and which ledgers should be credited. In addition to these the member farmers especially those comprising the board of directors should be trained on the importance of various financial statements like:

- Balance Sheet
- Income Statement
- Directors Report
- Management Report
- Chairperson Statement
- Internal Auditors Report
- Statement of Financial Position
- Statement of Profit and Loss
- Changes in Members equity
- Statement of Cash Flows
- Notes to Financial Statements

Generating and Filing compliance reports requires the knowledge of using applications designed specifically for the purpose. Business applications these days run on Browsers so in addition to a good grasp of navigating the Operating System desktop to seek and invoke the browsers learning to navigate the application securely is essential. Browser's bring in additional challenges for the FPO as Browser based applications have vulnerabilities like Cross Origination Resource Sharing, Main In the Middle etc. members Farmers have to be imparted knowledge of threats that lurk in the cyberspace.

Since most applications have an international flavour the default language setting is English. However the challenge is in imparting training to member farmers on these technologies in vernacular languages. The challenge with Indian vernacular languages is that since it uses the Devanagiri script data algorithms that perform functions like filtering, searching, sorting etc process data differently compared to the way they process data that is in languages based on the Latin script.

Agricultural yield is subject to the vagaries of nature hence the financial performance of the FPO is subject to the vagaries of nature. Any computer application be it operating system or any functional computer application should be cost effective for the FPO so as not to have an undesirable effect on their expenses.

4. Proposed solution framework

Since the Technology Stack should be cost effective for the FPO's we suggest that mainstream open source operating systems and applications be the first choice for FPO's. In case of business applications FPO's can consider a Pay-As-You-Go model by subscribing to SaaS applications. SaaS applications are hosted on the cloud and are available for a monthly fee. That is the FPO has to pay a monthly fee (sometimes charges for the full year in advance) for using the application. The FPO stops paying the subscription if they do not want to use the application or find another application that offers better features.

The Ubuntu operating system can be considered by FPO's as their Operating System of choice. It supports several Indian vernacular languages and hence makes it suitable for FPO's in different states and union territories. Since it is based on the Linux/Unix architecture it doesn't suffer from vulnerabilities of being infected by computer trojans, virus and other fauna. The Ubuntu Operating System today has a library of software applications that covers several functions. The Open Office suite of applications includes a word processor, a spreadsheet and an application for creating presentation decks. This is available on the Ubuntu operating system by default. GNUCash a popular accounting package can be installed on Ubuntu from the software center and can be used to maintain the books of accounts of the FPO.

SaaS based applications that are hosted on the Cloud like Zoho Books and the AB Compliance can be used for Regulatory reporting. Zoho books is a fully functional accounting application and connect to bank API's for displaying balances etc. It can also be used to generate Invoices and Credit Notes. AB Compliance is a SaaS based regulatory reporting application that provides templates of all Financial Statements. FPO's can upload their trial balance from GNU Cash or Zoho Books or a Spreadsheet and generate the financial statements in an instant. It also aids auditors to pass journal vouchers to correct the state of finances to reflect the actual position of the FPO. SaaS systems can be made multi-lingual in India Vernacular languages to ease the learning curve of the member farmers.

For training the member farmers we suggest that Organisation's sponsoring the FPO's identify individuals in rural areas who have a flair for technology. The training to these individuals should focus on the following areas.

- Operating System installation
- Simple Backup and restore techniques
- Usage of Digital Signatures
- Creating documents based on templates using wordprocessors
- Creating spreadsheets
- Maintaining Books of Accounts using the Accounting Software package.
- Generating regulatory reports using the SaaS application on the browser.

These individuals can be provided training collateral like presentation decks, videos, workbooks and quizzes to further train and support the member farmers. This will ensure a sustained livelihood for these individuals and also provide technology support within reach to the FPO's.

5. Conclusion

As we have seen Technology plays an important role in the day to day operations of an FPO. However since the financial health of a FPO depends on the vagaries of nature we suggest that FPO's should adopt applications that are released under the open source licenses or should use software where the pricing is available on a Pay-As-You-Go subscription model.

We have also seen that imparting training to the member farmers is important to sustain the operations of the FPO and hence suggest that individuals with a flair for technology be identified in the areas where FPO's operate to provide technology support and training to the members. This will not only benefit member farmers but will also benefit the individual by providing a sustained income stream for a decent livelihood.

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MAKING AN ATMANIRBHAR BHARAT



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Introduction

India is the youngest country and the oldest civilization. It has a billion dreams. The young generation is an aspiring generation and are looking for opportunities.

If India is looking to be a \$ 5 trillion, Atmanirbhar Bharat, it needs to have a broad base in which the dreams are planted. And the dreams have to be nurtured carefully to convert it into a reality. The mission is achievable if the intent is constructive and process is free of bottlenecks. We need to build a sustainable, integrated and all-inclusive process where the last person can participate, contribute and reap the fruits of genuine and meaningful growth India is looking forward to. Only a broad based well-greased process can make this happen and we are going to discuss about this process that can make India a “sone ki chidiya” and a seat of learning for the world again.

Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas has to be driven deeper and deeper to unlock the real potential of Bharat as a whole and every Bharatiya as a basic unit at the core. The improving road, rail and air connectivity, smooth financial payment gateways, objective and quick disbursement of entrepreneurial loans, aspiring Indian dreams, improving entrepreneurial ecosystem and the young demography is breaking down many bottlenecks that were creating obstacles in our journey. Given this context, I would love to introduce you to Project Khushi which aims to bring in more smiles to every person and we do this with the help of USP Map of India, a process that will make India churn out unique products and services for the world.

What is USP?

USP is the Unique selling proposition or the strategic advantage that sets something apart from the others. Let me explain it to you with the help of a Rosogulla, which is commonly consumed sweet. The taste of Rosogulla is unmatched when it is made in the villages around Ganga in West Bengal. The same ingredient and the same cook will not be able to give the same taste anywhere else in India. And when I was curious to know about it, the reason given to me was it is the water and the moisture in the air that gives rosogulla a uniqueness which we cannot get it anywhere else. And No, I am not talking of canned sweets which is a poor cousin of actual



rosogulla. Now, if we build a cold chain, market and package it well we can increase the sale of rosogulla many folds and make Kolkata a major exporter for it.

Let me give another example in the field of sports. Uluberia is a small place in West Bengal which makes Shuttle cocks and polo balls and they are the only ones who do it in India. The manufacturers in these villages are facing a lot of problem as the Central or State Governments are unable to understand the issues and solve their problems. And therefore, it is dying. The synthetic cocks that are imported is eating away their market and we are unable to address this issue. Innovation and entrepreneurship in this area could have taken this to a different level altogether but we are unable to tap this potential.

Let me give you another example of Sundargarh. Every youngster in this village is a natural sports person and they love hockey as it comes naturally to them. This place has given the Indian Captain Dilip Tirkey and many players are being groomed to become international players. They need proper mentorship and sports infrastructure to bring out their full potential.

So, comes that every village and District is Unique and we need to bring out this uniqueness in them. And this can be extended to all other sectors too be it agri, manufacturing, service and so on. It's now time to identify USP and connect all the dots to build a process or a delivery mechanism where we can on board the last Bharatiya and enable him to participate in the growth journey.

The Process

I reiterate there are around 750 districts and 6 lakh villages in the country and every district or village has something unique. We need to identify this uniqueness and convert them into unique selling propositions (USP) and unlock that potential while simultaneously enriching their culture and tradition.

The delivery mechanism for a 5 trillion economy can be started by:

- 1 **Building USP Map of India:** The first step is to Identify 3 USPs of every village or district. We must engage villagers and respectable persons to identify this. The USPs may be agri or non-agri in nature. They are the historical USPs which are associated with this place for years. Thereafter, two more USPs must be identified and they must be futuristic USPs. This must be identified by a team of experts based on the demography, skill and ecosystem around. Thus, at every village level or district level we Identify 5 USPs. With this we build the USP Map of India.
- 2 **Connecting the Dots and Locking the Value:** We connect all USPs across the country to build a value chain and tap this network to unlock a lot of value. For instance, suppose village A has a USP to grow flowers and village Z has the USP to convert flowers into perfume. We connect the dots (point A to point Z) to unlock value that was trapped within. This connecting of the dots and locking of value will open up a lot of opportunities. It will even give rise to export potential for India and help us earn foreign exchange.
- 3 **Tapping the Local Talent:** All students and universities around the villages and districts must focus their research on the USPs in and around to unlock more value from it. This will lead to innovation and discovery. New products, manufacturing methods and services will develop. For eg. Mahua in Jharkhand, Orissa and Chattisgarh was used basically to make desi drinks but the ethanol content can be used to make hand sanitizers. And this really worked during the corona period. The Mahua oil can be used to make soaps and body moisturizers and so on and this can



increase the green economy. Research around the USPs holds a promise to unlock a lot of value.

- 4 **Entrepreneurship Support:** Entrepreneurship support around the USP will engage a lot of youth and will convert them from job seekers to job givers giving rise to creativity, innovation and demographic dividend. Agripreneurs, small scale enterprises and MSMEs will get created with a broad base network, giving rise to broad based participation in the growth story of India.
- 5 **Precision Governance:** This will give rise to precision governance. From blanket government policies, the government can move on to focus on precision government policies with the USPs in focus. With precision governance the value the government adds per rupee will go up many folds. From dole-based strategies to uplift people at the bottom of the pyramid we must gradually evolve to value added based strategies, lifting people at the bottom.

At present, there are certain clusters that have been built but we need to take it deeper, wider and faster. The USP map of India will help to make our growth journey more organized and process driven. The USP map of India at the village and district level will create an organized process where individuals and organizations can onboard and participate in the growth story. This will give more power to the people compared to the doles.

The way forward

The USP map will be dynamic in nature and depending on demand and supply and other market conditions it will keep evolving. With the help of technology, on ground initiative and hydrogen powered energy, Bharat would turn out to be a net exporter to the world if we organize and unlock value from the USPs. The stage of any civilization depends on the energy efficiency and once India becomes hydrogen powered the USP map of India will release a lot of sustainable value with per unit cost of distance travelled going down and supply chain becoming more and more integrated and efficient.

The USP map will be a great tool for buyers, suppliers, market and all stakeholders will be able to drive benefit from it. New entrepreneurs will take benefit and work as growth boosters. It will help us plan infrastructure, improve quality and plan better to take the economy and well-being to the new level. This will add more smiles per person, it will make India a deep-rooted economy with strong fundamentals and inclusive participation of all Indians.

May I, now, put forward that isn't this a practical process that will put our economy on track and add speed to achieve 5 Trillion in the next couple of years?

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Task Force on Agri Cost Management

In association with

Bangalore, Mysore & Hosur Chapters of Cost Accountants

Organizing

CMA Convention on Agri Value Management

21st May
2022

The Capitol Hotel
3, Raj Bhavan Road
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Karnataka - 560001

Registration Starts at
09:30 A.M.

Chief Guest



Kum. Shobha Karandlaje
Hon'ble Minister of State for
Agriculture and Farmers Welfare
Government of India

Topics of Discussion

- Agri Value Management
- Agri Cost Management - Key Success Factor for Agri Productivity
- Ways and Means of Reducing Cost of Cultivation
- Sustaining the FPOs beyond the Hand-holding Period
- Agri Startups - Emerging as backbone of Agri Value Chain
- Blockchain Platform for Agriculture
- CMAs Striding towards Value Creation of Farmers



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'Educate, Empower, Enhance and Enrich' the farmers

Behind every successful business decision, there is always a **CMA**

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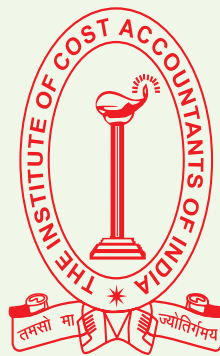
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