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### **Profitable Agri business techniques to increase marketing: A Way of Sustainable Income Generation to Small and Medium Farmers**

**Shivani Verma and Dr. K Vasanta**

#### **Abstract**

In India, millions of populations are engaged in the agriculture sector. The sector is not only a livelihood provider but also playing a key role in many agro-related activities. Even though high dependency on this sector, the number of small and medium farmers with small holdings in rural areas is still facing farm-related climatic, technical, irrigational, cultivational, and marketing problems. Therefore, it is always not possible to the farmers to get a good income from their farm activities. To overcome financial problems and to get sustainable income and improve their condition, here, a compilation of ideas or agri-buisness techniques has been given.

**Keywords:** Agri Business, small & medium farmers, techniques, sustainable income

#### **Introduction**

Agriculture sector is the mainstay of the Indian economy, contributing about 14 percent of national Gross Domestic Product (GDP) and 42 per cent of total employment and more importantly, about half of India's population is wholly or significantly dependent on agriculture and allied activities for their livelihood. Agriculture plays a vital role not only in generating employment but providing food to increasing population, a contributor to capital formation, supplying raw material to agro-based industries, earning foreign exchange, and so on. India achieved tremendous progress in production, marketing, consumption, and exports in the agriculture sector for since long. Therefore, the Agriculture of the Indian economy plays the most crucial role in the socio-economic sphere of the country. In fact, it is one of the most growing, vast, and demanding sectors in the economy which includes forestry, dairy farming, and fisheries. India with diverse soil and climate comprising several agro-ecological regions provide ample opportunity to grow a variety of horticulture crops. These crops form a significant part of total agricultural production in the country comprising of fruits, vegetables, root and tuber crops, flowers, ornamental plants, medicinal and aromatic plants, spices, condiments, plantation crops. It is an important segment of the agriculture sector, which, in turn, is one of the major components of the national economy along with manufacturing, and services sectors. The government plays a very significant role in boosting agricultural growth through its increased investment in this field and also inducing private investment in agriculture. India's agriculture and allied products occupied a significant place in the total export earnings of the country. These include Rice, wheat, cereals, pulses, tobacco, spices, sugar, fruits & Vegetables, processed vegetables and fruits, cocoa, oils and oilseeds, tea, coffee, rubber, dairy products, cereal preparations, poultry products, processed meat, floriculture products, fish, Ayush and herbal products, jute, tobacco, etc. Agriculture businesses that are growing rapidly. Many agribusinesses can be done in less capital. If an agriculture-related business is done with passion and commitment, one can earn a sustainable income from it. Increasing consumption, technological changes, and adequate awareness of biodiversity values among the public and at the decision-making levels are induced to agribusinesses. In this way, the agriculture sector strengthening the Indian economy by its potential growth. Opportunities in agriculture are not only limited to farming. There are various agro-based businesses that if pursued even on a small-scale, can give much profit. Growth in per capita income resulting in high demand for new products and opened new vistas to small businesses. Change in climate often disturbing farm activities

and farmers facing a lot of financial losses and with a high debt burden. To overcome these losses, agribusiness is one of the best ways to get sustainable income along with farm income. India has wide markets, huge production opportunities, and a high consumption rate. No doubt any kind of business will be benefiting from this industry as the local demand and consumption of farm products is high. Many business consultants are making effective strategies to do well in this sector. Therefore, tremendous opportunities are available to generate income if few production and business techniques are followed.

**Operational & Operated holding in India**

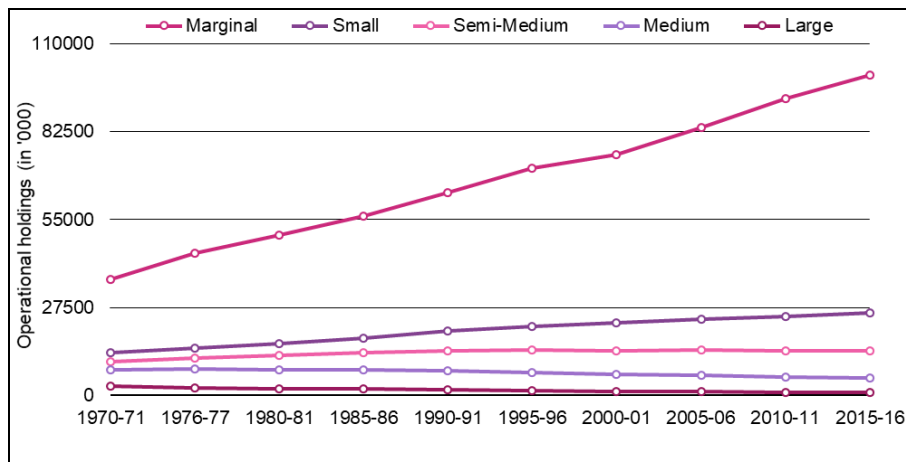
Ministry of Agriculture & Farmers Welfare announced

operational holding category on 5th February 2019 (Table 1) as follows:

**Table1:** Operational Holding Category in India 2019

S.No.	Category	Size-class
1	Marginal	Below 1 hectare
2	Small	1-2 hectare
3	Semi Medium	2-4 hectare
4	Medium	4-10 hectare
5	Large	10 hectare and above

Operational holding (Fig.1) is a land which is used for agriculture production purpose either fully or partially by a person or persons as one technical unit.

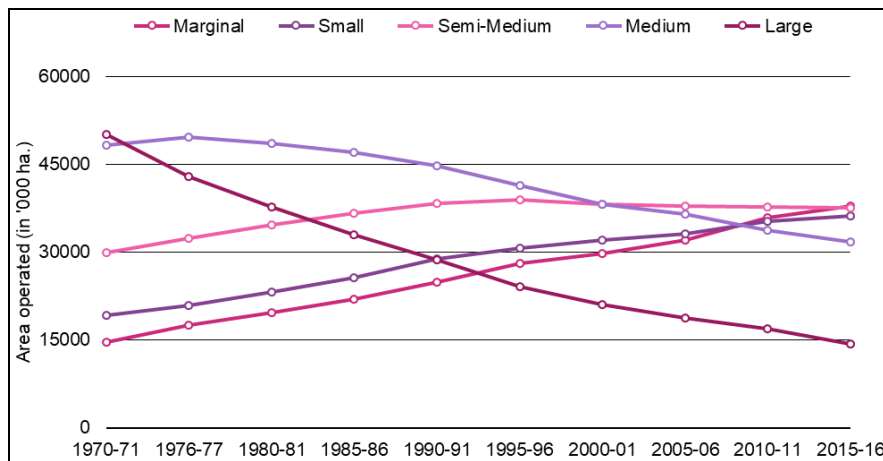


**Fig 1:** Operational Holdings in different years (in '000)

Source: Agriculture Census 2015-16

Operated area (Fig.2) includes both cultivated and uncultivated areas, where the whole or a part of land is

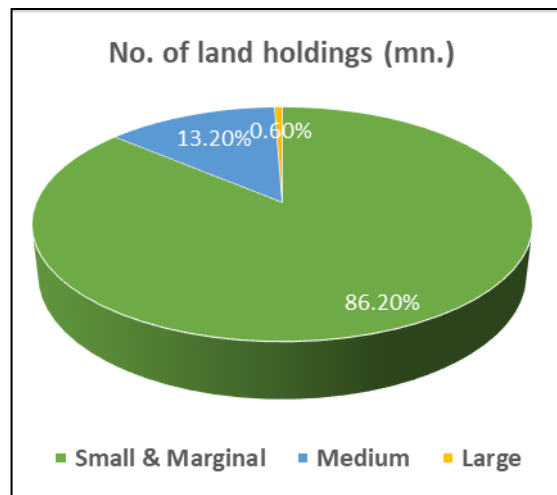
allocated to agriculture purpose.



**Fig 2:** Area Operated in different years (in '000 ha.)

Source: Agriculture Census 2015-16

10th agriculture census provisional estimate says that in India, small and marginal farmers having two or below two hectares of land is 86.2 per cent (Fig.3), semi and medium farmers having two to ten hectares of land by 13.2 per cent and large holdings above ten hectares by 0.60 per cent.



**Fig 3:** Percentage of landholdings covered by Small & marginal, Medium and Large farmers

Overall, Indian farms became more fragmented between 2010-11 and 2015-16, holdings continue to be inequitably distributed (Table 2).

**Table 2:** Number of Operational holdings & Area Operated by size class/group & gender-all social groups-All India (Number in ‘000) (Area in ‘000 ha.)

Sl. No.	Size class (in ha)	No. of Operational Holdings				Area Operated			
		Individual	Joint	Institutional	Total	Individual	Joint	Institutional	Total
1	Small (1.0-2.0)								
	Male	19097	3206	0	22303	26779	4507	0	31286
	Female	3099	370	0	3469	4290	523	0	4813
	Total	22196	3576	37	25809	31069	5029	52	36151
2	Medium (4.0 to 10) (included 4.0-5.0, 5.0-7.5 & 7.5-10)								
	Male	4016	979	0	4995	22854	5732	0	28586
	Female	433	110	0	543	2441	637	0	3078
	Total	4449	1089	24	5561	25295	6369	146	31810

Source: Source: Agriculture Census 2015-16

As per the NSO survey, the farm household income with landholdings of 0.01 to 0.4 ha is ₹4152 per month. Under such circumstances, access to capital, technology, and markets is a mirage for these categories of landholders. Therefore, to get more income, the former either increase production techniques or take up other business which is interlinked with agriculture and allied activity to increase income level.

**Agro Business Techniques**

While marketing the farm produce or starting an agro-based business, a few points are to be kept in mind by the farmer i.e. the demand of the crop or product of that particular geographical area, cost of the product, competition with others, price fixation, transportation, the supply of product in time, the freshness of the product, customer dealing, innovation, and package issues, etc. Increase in standard of living encouraging people towards luxury life and change in habits resulting in scope for innovations. Some old models, styles, equipment, and techniques are going famous and people are interested to purchase them. To improve the financial condition of the small and medium farmers, following business techniques are suggested:



**Agro Production Techniques**

**Organic Farming:** Organic farming is a system that avoids or excludes the use of synthetic inputs like pesticides, fertilizers, hormones, etc. and relying on techniques like crop rotation, organic wastes, farm manure, rock additives, and crop residues for plant protection and nutrient utilization. According to the World of Organic Agriculture

report 2018, India having the world's 30 per cent organic producers. Organic farming is a strength of India and can change the face of the agriculture sector. Now India is having 1.2 Mh of land under organic production which producing 1.24 MT of organic produce. Organic farmers are facing problems like marketing, finance, and other production-related issues. By the government intervention and its policies, now farmers are able to market these organically produced products through retail stores or through e-commerce platforms.

**Soil improvement and plant health:** Soil improvement means altering any of its properties to improve strength. This may be a temporary or permanent process. Healthy soil enhances plant health and it is a basic requirement to get good yield further. Healthy soil is a mixture of physical, chemical, biological properties that are helpful to plant growth.

**Fast-growing varieties and crop selection:** All vegetable crops are fast-growing nature. Therefore, a small farmer has to choose short duration crops according to their farm soil condition which will earn day to day income.

**The practice of Seasonal Soil Rotation:** Planting an alternating crop helps to diversify the demands on the soil. This results in crops that not only yield more but continually produce year in and year out.

**Crop rotation, intercropping, and mixed cropping system:** Crop rotation is the systematic planting of different crops in a particular order over several years in the same growing space. This process maintains nutrients in the soil, reduce soil erosion, and prevents plant diseases and pests. Intercropping is the practice of growing multiple crops in a closed distance row to grow together. The mixed crop can be grown in the farmland instead of one crop to get more yield of different varieties at a time. These are the sustainable cropping techniques by which farmers can gain good produce.

**Cropping system:** India has 3 crop seasons viz., Kharif, Rabi, Zaid, and farmer grow crops accordingly. Indian agricultural practices are still lacking by intensive planning because it has a diversified agro-climatic zone, which is unfortunately not giving sufficient production. The Indian farmer is still dependent on monsoon. Fluctuations in weather either flood or drought may worsen the financial condition. Therefore, the cropping system is according to the season and weather conditions.

**Seed varieties:** Seed is the primary input required for agriculture. Quality of seed is the basis for increasing crop yields. Using hybrid seeds that are naturally inclined to grow faster, stronger, and with greater efficiency is pivotal to the success of crops. Improved heat-tolerant varieties allow the plant to maintain yields at higher temperatures. Heat tolerant varieties could increase crop yields from up to 23 per cent. India's Seed Programme has a strong seed production base in terms of diverse and ideal agro-climates spread throughout the country for producing high-quality seeds of several tropical, temperate and sub-tropical plant varieties in enough quantities at competitive prices. For seed technology research, India has a national level Directorate

under the Indian Council of Agricultural Research as well as Status level research set up in the State Agricultural Universities.

**Co-operative Farming:** We all know that India is a highly populated country and most of the people depended on agriculture. Due to the high population, the agricultural land fragmented into smallholdings resulted in the birth of non-economic holdings. These holdings are not capable enough for farm mechanization, proper irrigation, and other developments. To get farm facilities in a collective manner, farmers adopted co-operative farming. In this farming, farm owners will remain the same and the profit gained will be distributed among farmers. In this way, farmers are getting profits from large scale farming.

**Transport Facilities:** Transport facilities are playing a major role to sell the farm produce in the markets. In order to get proper price for the yield, link roads and vehicle facility from villages to markets are necessary.

**Agricultural Education:** To guide and advise the farmers regarding the adoption of new technology on agriculture and extension services, ICAR coordinating agriculture research and imparting knowledge through education, exhibitions, workshops, etc. to improve agriculture and farmers' standard of living. Many universities are offering different courses and are running successfully on agriculture.

#### **Agro Marketing Techniques**

**Farm-direct Marketing:** It involves selling a product from the farm, directly to customers. This is profitable for both customers and growers. From the customer side, this method is useful to check the quality of the product and easy to bargain. From the buyer side, receives instant feedback and payment from customers on products and services. The grower can improve business through this input and increase farm profitability. To face marketing challenges like relations with customers, competition, dealing, advertising alone are threats to the grower.

**Roadside Markets:** These markets minimize transportation costs and risks involved in shifting production to the market. For example, the easiest way of selling fruits and vegetables by the mountain people is standing on roadsides with their fruits and veg baskets for sale. This practice benefits both consumer and seller because scattered people can't reach mandies and have no idea about prevailing market prices. Poor people living in forests of mount Abu are doing such practices.

**Farmers Markets:** It is an open market. Product is exposed to a higher volume of consumers in this competitive market. The primary function, however, is to bring together several producers who sell locally grown produce to consumers. Farmers can gain customer satisfaction and feedback to develop their business directly. Selling at the market requires a high level of customer interaction. The farmer needs to have proper transportation and storage, the ability to accept multiple forms of payment, and other requirements for this market.

**Pick Your Own:** This concept may be new to India but many countries following such practices. Farmers allow

customers into their fields to collect fresh fruits and vegetables at a reasonable price according to their requirements. Few counters also put in the farm for the sake of the consumers to collect farm-related fresh products to enable them to get at cheaper rates. The main drawback is public may damage crops at the time of picking.

**Contract farming:** This is not a new concept. It is an agreement between buyer and producer. Producer ready to deliver the specific product to the buyer at the specific price and time fixed by the buyer. The producer supplies the agreed quantity and maintains quality as promised to the buyer. Buyer, mostly a company in general ready to supply farm equipment, preparation of land for cropping, providing transportation, and financial support to the producer. This method reduces marketing risks and financial instability.

### Allied Agro Businesses

As already said, the agriculture sector includes many other allied sectors like forestry, fishery, and animal husbandry. India is turned up as a big start-up nation with huge scope in agriculture. Even though great opportunities are in the agriculture sector, lack of awareness and zeal are the basic obstacles. Allied sector start-ups are useful to reduce pressure and burden of unemployment on the agriculture sector, generates income, increase production.

**Dairy farming:** Livestock sector has grown at a compound annual growth rate of 7.9 per cent during the last five years. Livestock income has become an important secondary source of income for rural families and has assumed an important role in achieving the goal of doubling farmers' income. Dairy farming in India is an 'all-season' business. The efficient management of a dairy farm is the key to success. In India, cow farming and buffalo farming are the backbones of the dairy industry. Growing population, changing lifestyles, expanding urbanization are enhancing dairy farm business. As we know that many products are being prepared as allied products of milk. Dairy farming has been an age-old business in India passed down from generation to generation. The contribution made by Amul in the form of the 'White Revolution' played a very important role in transforming the dairy industry in India as a world leader. The dairy business includes purchase and selling of livestock, fodder business, animal husbandry, dung cake business, of course, selling of milk products like paneer, cheese, curd, buttermilk, butter, and so on.

**Fodder farming:** Livestock and animal husbandry practices require fodder. Different fodder varieties are available in India i.e., cereal fodder derived from millets, legumes fodder have high herbage protein, grass fodders are for grazing, fodder trees, shrubs, leaves, stems, etc. Anyone can start a livestock feed production business. But growing livestock numbers and evolving animal husbandry practices require a corresponding increase in fodder to meet livestock needs.

**Rabbit farming:** Rearing of rabbits has been started on a commercial level. It is one of the best business. Rabbit meat and fur have a huge demand in the market. The business may start with little investment and obtain good profit. Just a little space is needed and most rabbits could be kept in the backyard or the abandoned sheds.

**Fish Farming:** Fish farming is quite popular in India. The total fish production in the country was 13.42 million metric tonnes (MMT) during 2018-19. A well-maintained fish pond can give a handsome profit. Fish farming can be done in tanks, big pits, and even paddy fields as mixed farming where abundant water is stored. Fisheries are contributing a major part in agricultural exports. Overfishing resulted in a scarcity of fish. This has led to the establishment of fish farms or aquaculture wherein fish has grown artificially in man-made ponds or tanks. It is a very easy business and a high-income earner.

**Poultry Farming:** Poultry farming has great employment potential. Poultry products like eggs, chicks, chicken, etc. have great demand in India and even meat and meat preparations are exporting to the world. These products have endless demand and are preferred by non-vegetarians. The required initial investment is not too high. One can start with small scale production and elaborate it gradually. Bank loans are available throughout the country.

**Duck farming:** This is a profitable and easily manageable business. No exclusive feeding stuff is required to Ducks. They can survive on agro wastes, aquatic weeds, snails, small fish, green legumes, algae, and insects. No huge investment is required. Ducks can normally survive in homes also like pigs and hens. Duck eggs, ducklings and meat have a good market.

**Snail Farming:** Land snail raising process is called snail farming business. Apart from beef, ham, and meat, it is also demanded by many people because of its inherent amino acids, proteins, low fat, and iron. Snail is useful for food, pharmaceutical industry as well as the fishing industry too. A small entrepreneur can easily start with low initial capital and acquire high profit with the help of modern technology.

**Beekeeping and Honey Production:** It is one of the oldest practices in India but has gained vast popularity in recent few years. Often people used to see beehives hanging in various places especially on the branches of trees. This nectar is nature's gift to humanity. But now it has become a business due to its higher market demand. In rural and forest areas the business can be started to enhance income. Beekeeping is not only for honey but also for bee wax, royal jelly, pollen, propolis, and bee venom are also marketable at a good price.

**Quail egg Farming:** Requires low investment, early age quail can be marketed, its egg-laying rate is also high, its meat contains low fat and tastier. Keeping the benefits of quail and its egg in view, it is a good business for small businessmen or rural people.

**Hatchery:** Another very good business for young entrepreneurs is starting a hatchery for eggs and selling day-old chicks to poultry farmers.

**Pig Farming:** In India, pig farming is an old business-like cattle rearing. Commercial farming of pigs is profitable. Having a sufficient landholding, an entrepreneur can start this business. Several pig breeds are available which give quality meat. Years back this farming is only done by downtrodden people but now it has commercialized and not

limited to a set of people. To be successful in this business, one must have a basic idea about pigs and their management.

**Goats and Sheep Rearing:** After cows and buffalos, sheep and goats are important species of livestock in India. Rearing goats and sheep have even done by drylands where green grass is not available and these species survive by consuming a little bit leaves and small branches, give milk and support the small and marginal farmers to earn their livelihood. Goats and sheep meat are consumed in all parts of the world and in fact, it is a good source of protein. Goats and sheep buying and selling, milk, wool, meat are highly profitable businesses.

## AGRO BUSINESSES

**Floriculture Business:** Indian floriculture industry comprises of flowers such as rose, tuberose, glads, anthurium, carnations, marigold, gypsophila, chrysanthemum, piminella, china aster, cornflower, larkspur, sweet sultan, etc. These are also commercially grown cut flowers. Apart from this, there are hundreds of varieties of flowers which are grown in summer, rainy and winter season. Growers may undertake both open farm conditions as well as poly or greenhouses to cultivate flowers. As we know that flowers have a great role in decoration and so many other rituals, the business is flourishing. It is a good business for young entrepreneurs.

**Mushroom farming:** Mushrooms are important microbes used as food. Around 2,000 microbes are edible and rich in source of nutrition. Nowadays people are becoming more health-conscious. Keeping the need of people into account, mushroom production business is most viable and can be set up with some initial investment on refrigeration, mushroom seeds, fertilizer, sawdust, dark or shedded room, polythene bags etc. and get huge profits by selling them to restaurants, exporters, and pharmaceutical companies.

**Grapes wine production business:** Grape is a deciduous crop. There is a huge demand for this wine in the entire world because it's easy availability, reasonable price, and best quality. In India, wild grapes are grown in Himachal Pradesh are being used for local wine preparation. Also, India is having the largest production and market demand for grape wine. The fastest-growing wine business is suitable to the businessmen where grapes are produced in abundance.

**Fruits and vegetable farming:** Amaranth, Ash gourd, Asparagus, Baby corn, beetroot, Bitter Gourd, Bottle Gourd, Brinjal, Cabbage, Carrot, Cucumber, Okra, Onion, Potato, Pumpkin, Spinach, Tomato, Apples, Citrus, Guava, Lychee, Coconut, Bananas, Mango, Pineapple, Grapes, Dates, etc. are profitable for fruits and vegetable business.

**Aloe Vera farming:** Aloe Vera is a stemless plant and is an herbal species found anywhere in the globe. Aloe Vera farming in India is gaining popularity as aloe vera production profit per acre is much higher than normal agriculture and it can be done by using much less water and effort. The plant has pulpy thick leaves. By cutting the green leaves one can find juice and pulp in it which is being used for medicinal purposes. Many cosmetics also prepared by its

pulp. Aloe Vera is much popular among the people who are interested to gain healthy skin, reduce blood sugar, good digestion, and filling the deficiency of vitamins like A, C, and E. Huge business opportunities are in this farming in India.

**Medicinal Herb Farming:** India is known for its herbs and spices and has the immense potential to treat incurable diseases through Ayurveda (through herbs) which is a very old and traditional method. Herbs are naturally found, not made by chemicals, therefore, attracting the health-conscious people. By this demand, excellent business opportunities are there in this farming. Even the entrepreneur exports the herbs if so, he interested. Many companies are manufacturing ayurvedic medicines, cosmetics, and different items which we use in our daily life.

**Nurseries:** people love to live a life in beautiful surroundings. People love to live in beautiful surroundings. At the blooming time of flowers, one feels its beauty. Whether a small house or a big garden, without flowers and plants, it is incomplete. People prefer to grow plants in small pots, window boxes, hanging baskets for interior decoration. Not only flower plants but many other kitchen gardening plants are also easily available through nurseries. It is quite relevant to mention here that Kadiyam nurseries, East Godavari district of Andhra Pradesh are famous for thousands of plant varieties, marketing, and exports. The process of maintaining a nursery is extremely simple and not require much of raw material or expensive machinery.

**Bamboo Farming:** Especially for rural India, weaving is a profitable and popular business. A bamboo farm once started could continue to exist for years on and give some form of residual income and enhances employment opportunities for artisans. There is scope to do business with a wide variety of bamboo baskets, decorative items, farm tools and implements, bamboo furniture, pulp and paper, biofuel, bamboo flooring, bamboo homes, etc.

**Jaggery production:** Jaggery is an unrefined natural sugar that is produced without adding any chemicals and around 70 per cent of the world's jaggery is produced in India. The mineral content of jaggery includes calcium, phosphorus, magnesium, potassium, and iron and traces of zinc and copper. The vitamin content includes folic acid and B-complex. As jaggery has many health benefits, its consumption is high in India. The industry is fast growing and a good source of income for local producers.

**Jatropha farming:** Jatropha oil is derived from the seeds of *Jatropha curcas* which is used as bio-diesel. This is helpful to curtail the overutilization of limited availability of natural resources like coal, petrol, etc. It is largely cultivated in the wastelands of India. It is generating employment opportunities for the rural poor. Jatropha planting is an easy and good business.

**Vermicompost Production:** Vermicomposting is a managed process of worms digesting organic matter to transform the material into a beneficial soil amendment. Vermicompost is rich in all essential plant nutrients and

minimizes the incidence of pests and diseases. Commercial units can be developed based on the availability of cow dung locally. If some big dairy is functioning then such a unit will be an associated activity. Furthermore, it requires no special area. Vermicompost is a major part of the agro-business model with low initial investment capital and high returns.

### Agro Technology

**Irrigation and water use (Micro-irrigation) techniques:** Rain-fed farming is the natural application of water to the soil through direct rainfall. Watering through tubes, sprays, and pumps is called irrigation. Artificial water application is useful in drylands and drought areas. The said irrigation is being done through various methods according to the need. The methods are drip irrigation, localized irrigation, sprinkler irrigation, manual irrigation, and center pivot irrigation, etc. Small and Medium farmers may follow any of the above-said practices to irrigate farms.

**Manufacturing of agricultural machines/equipment's and related spare parts:** Small business units can be established with bank credit to manufacture farm equipment like sprayers, agricultural implements, agricultural machinery, agriculture machine parts, greenhouse shading, post hole diggers, agricultural shredder, agricultural cutting machine, nursery shade net, farm equipment, disc harrow, agricultural plough, land leveller, hand sickle, power weeder, mulching fabric rolls, fertilizer spreader, pipes, power tiller parts, farm tillers, grain cleaners, seed grader, agricultural tools and so on.

**Oil extraction plant for edible oils:** India has a traditional and old method of extracting edible oil. Because of false or fake oils are prevailing in the market, for pure oil, consumer wants to go years back model of oil extraction by 'Chakki'. The modern form of the old chakki is a traditional oil extracting machine which is available in different models in the markets. Groundnut, sunflower, coconut, mustard, sesame oils are preferred by Indians and the method of oil extraction from the above said oil seeds is easily done even at home for personal use or in a small oil extracting unit for business purpose.

**Flour Milling:** Flour (wheat, rice, chickpea, corn, maida) is the main ingredient for different delicious dishes. Milling of cereal grains into flour is a good business because flour is required to prepare roti, snacks, biscuits, bread, sweets, and many food items. Simple domestic grain mills are also available in the market. The milling process is easy and this business can be done on a small scale.

**Dal Milling:** Pulses like green gram, red gram, black gram, chickpea, lentils, peas are enriched with proteins. Dal is used almost every day in the Indian diet. Dal milling is the third-largest food processing industry after rice and wheat. Businessmen may directly purchase pulses from farmers and process them for further marketing. Depending upon the availability of raw material, a dal mill can be established nearby the farm to reduce transportation expenses. A mini dal mill is a financially feasible and profitable business.

**Rice Milling:** Rice is a food grain consumed by 70 per cent of the global population. In India, rice is also a staple food

like wheat. The crop is grown in almost every country in the world. Milling includes separating husk, bran from the paddy, de-stoning, polishing and grading rice. The husk is used to feed cattle and for fuel. In south India, boiled rice is used widely in dishes like idly, dosa, etc. Therefore, many boiled rice mills are developed over there. Modern machinery is available to establish such a business in a small and large scale.

**Food processing business:** The food processing industry is responsible for the diversification of agriculture, improvement of value-added opportunities, and creation of excess that can be exported. The Indian food and grocery market are the world's sixth-largest in terms of volume and the food processing industry account for 32 per cent of the country's total food market. Initiating a food business is easy to start. As the population is high in our country, there is always a market for products like wafers, biscuit making, bakery items, bread production, cashew nut processing, cheesecake making, chocolate making, coconut water and milk, condensed milk production, custard powder production, dalia production, energy drinks, ginger garlic paste processing, corn processing, noodles, pickles, honey, namkeen, sauce, potato chips, spices powders and so on. Financial institutions including banks provide different types of loans and subsidy to the food entrepreneurs.

**Cold storages and warehouses:** Ministry of Food Processing Industries provide excellent financial aid for the setup of a cold chain in India. Cold storage and warehouse business are quite profitable. One of the problems of the producer is the disposal of farm produce. If it is not done for any reason in time, the whole produce will go in vain without proper storage. Even people observe that sometimes thousands of bags of wheat and rice or other farm produce laying down in the fields without any shelter or proper storage system, finally they destroyed by rats, rains, etc. That is why cold storage and warehouse has great importance. Even to get better prices also farmer stores his produce for the future. Some perishable items have to be kept in cold storage. For all these reasons the importance of cold storages and warehouses is increased. Entrepreneurs can start this business by taking loans from banks.

**Soil Testing:** Soil testing plays a major role in estimating fertilizer contamination, pH levels, crop production optimization, nutrients deficiencies, etc. in the soil. National Mission for Sustainable Agriculture is promoting local soil testing opportunities to generate employment to the rural youth through the Soil Health Management program.

**Linking Internet of Things to Agriculture:** IoT in agriculture uses robots, drones, remote sensors, and computer imaging combined with continuously progressing machine learning and analytical tools for monitoring crops, surveying and mapping the fields and provide data to farmers for rational farm management plans to save time and money. It is estimated that over 30 million devices could be connected to the Internet of Things by this year i.e., 2020. Weeding robots, machine navigation, harvesting robotics, drones, crop monitoring, weather condition monitoring, etc. are well managed by the use of such latest technology. To operate these techniques, technically skilled persons are required. This is a highly profitable business for

operators of digital equipment.

**Mulching:** The use of organic mulching is one of the suitable methods which could help the horticultural growers to increase production with good quality of produce. Looking at the water scarcity and the challenges that arise due to climate change, the adoption of organic mulching at a large scale by the Indian farmers would help the farmers to overcome several problems considering the advantages of organic mulching. Mulching practices also help to restore the soil health with its physical, chemical, and biological properties create a suitable atmosphere for earthworms and other beneficial micro-organisms to grow on the soil. Weed seedlings cannot survive under the mulched condition. Mulch selling business is a source to get an extra income.

**Greenhouse Farming:** Climatic change is a significant challenge for the farmer. More than 95 per cent of farmer uses traditional farming techniques in India. To earn more profit from agriculture, farmers have to adopt modern farming techniques such as Greenhouse farming (polyhouse farming), hydroponic farming, aquaponic farming.

**Mechanization in Agriculture:** With the shrinking land and water resources and labour force, the onus of increasing productivity rests on mechanization of production and post-harvesting operations. The government aimed to enhance farm power supply by the end of 2030. This is in conjunction with India being the largest tractor industry in the world. Under the Sub-mission on Agricultural Mechanization scheme, assistance is provided to State governments to impart training and demonstration of agricultural machinery, assist farmers for the procurement of various agricultural machinery and equipment.

**Cyber-Agro Physical Systems:** This system envisages integrating the use of sensors with computers, satellite imagery, and supercomputing in agricultural operations along with artificial intelligence by the Department of Agricultural Research & Education (DARE).

**Development of Cottage and Small-Scale Industries:** In rural areas, more emphasis is being made to set up the cottage and small-scale industries. This encourages rural youth, small and medium farmers to become self-reliant during the offseason.

### Institutional Credit

Nationalized banks increased attention on agriculture credit.

This credit was expanded to farmers through cooperative and commercial banks. NABARD has an immense role in credit-related concerns, planning, policy, operations for agriculture, and is a provider of funding for agriculture-related activities for rural development.

**Kisan Credit Card Scheme:** This is a scheme launched by the Indian banks back in 1998, as a way to fulfil the financial requirement of the agricultural sector. The quantity of loans is identified by several aspects like cultivation expenses, farm maintenance costs, etc. The scheme in question is more profitable to the farmers who are unaware of bank credit facilities. The scheme is also helpful to reduce the intervention of informal local financiers and save the farmers from the clutches of rural moneylenders.

**Agri-Business Centres:** These are commercial units of agri-ventures established by trained agriculture professionals. Such ventures may include maintenance and custom hiring of farm equipment, sale of inputs and other services in agriculture and allied areas, including post-harvest management and market linkages for income generation and entrepreneurship development. The scheme covers full financial support for training and handholding, provision of loan, and credit-linked back-ended composite subsidy. NABARD is also extending its finance under the scheme of self-reliant India.

**Marketing initiatives by NABARD:** exhibitions, melas, rural haats, and marts to support rural artisans to market their products effectively NABARD provides financial assistance for setting up rural haats and rural marts (Table 3).

**Table 3:** Funds sanctioned and disbursed for Rural Marketing Initiatives (in ₹lakhs)

Marketing Initiative	Sanction		Disbursement	
	Target	Achievement	Target	Achievement
Rural Haats	570	604.36	324	315.73
Rural Marts	244	254.66	175	143.37
Exhibitions/Melas	396	527.58	355	517.23

Institutional Credit to Agriculture and Allied Sectors During the year 2018–19, banks disbursed ₹12.55 lakh crore (Table 4) as ground-level credit to agriculture (agriculture and allied activities, agri-infrastructure, and ancillary activities), and surpassed the yearly target of ₹11 lakh crore.

**Table 4:** Agency-wise Ground level Credit flow to Agriculture & Allied Sectors (₹crore)

Agency	2014-15	2015-16	2016-17	2017-18	2018-19(p)
Commercial Banks	6,04,376	6,42,954	7,99,781	8,71,080	9,49,622
RRBs	1,02,483	1,19,260	1,23,216	1,41,216	1,51,258
Cooperatives	1,38,469	1,53,295	1,42,758	1,50,321	1,53,882
Total	8,45,328	9,15,509	10,65,755	11,62,617	12,54,762

Source: NABARD (as reported by banks) (p)=Provisional

### Govt. Initiatives

To improve the production and productivity of various crops, the Government is promoting the latest technology practices like different farming systems (inter, multiple, and integrated). India Rural Development Report 2012-13 observed that for labour-intensive techniques, small farms

are more effective but landholdings are too small to generate sufficient household income. Intending to improve the conditions and to double the income of Small and Marginal farmers by 2022, the government is reorganizing its interventions from a production-centric approach to farmers' income-centric initiatives, with a focus on a better



and new technological solution. These include the implementation of schemes like Pradhan Mantri Krishi Sinchai Yojana, Paramparagat Krishi Vikas Yojana, Soil Health Card, etc. Doubling of farmers' income by 2022 is the most important agenda of the government of India. With this in view, ICAR has intensified efforts towards farmers' participatory research to develop and scale-up location-specific, cost-effective, and climate-resilient technologies to enhance agricultural production, productivity, and profitability in the agriculture sector and increase farmers' income. The welfare of farmers has been the top priority of the government.

**Pradhan Mantri Kisan Samman Nidhi Yojana:** In this Yojana, 120 million small and marginal farmers with less than two hectares of land will get up to ₹ 6,000 per annum as income support and this is made available to them in three installments.

**Pradhan Mantri Kisan Maandhan yojana:** Hon'ble Prime Minister Shri Narendra Modi launched a pension scheme for the small & marginal farmers of India. Under this pension scheme, about 5 crores of marginalized farmers will get a minimum pension of ₹ 3000 per month on attaining 60 years ago. 18-40 years farmers are eligible to apply but the condition is that their monthly contribution would be between ₹ 55 to 200 according to their age. The government contribution would also be equal in the pension fund that they contribute.

**Pradhan Mantri Fasal Bima Yojana:** This is an actuarial premium based scheme where a farmer has to pay a maximum premium of 2, 1.5 and 5 per cent for kharif, rabi food and oilseed crops and commercial or horticultural crops respectively. The remaining part is shared by central and state governments. The Yojana is meant for quick claims settlement.

**Soil Health Card Scheme:** The Scheme is promoted by the Department of Agriculture and Co-operation. The Scheme is beneficial to get the information that which type of crops should be grown to gain optimum yield. The card consists of an advisory, based on the soil status of the farmer's holding. It will show the nutrient status of soil along with recommendations on the appropriate dosage of nutrients to be applied for improving soil health and its fertility.

**Paramparagat Krishi Vikas Yojana:** The objective of this Yojana is to promote organic farming to improve soil health. Adopting eco-friendly, low cost, latest technologies, and utilization of expert's services, etc. are the main areas of this Yojana.

**Pradhan Mantri Krishi Sinchai Yojana:** This Yojana was launched with the motto 'Har Khet Ko Paani' to provide end-to-end solutions in assured water supply and protective irrigation technology to save water by collecting and utilizing rainwater at micro-level through 'Jal Sanchay' & 'Jal Sinchan'.

**Dairy Entrepreneurship Development Scheme:** To enhance milk production and its quality, procurement, processing, preservation, transportation, and marketing and to generate self-employment opportunities in the dairy

sector, the department of Animal Husbandry, dairying and fisheries is implementing Dairy Entrepreneurship Development Scheme. The scheme is financed by commercial banks, state cooperative banks, regional rural banks, and NABARD.

**Rainfed Area Development Programme:** The program aims to improve the life quality of small and marginal farmers by providing a total package to maximize farm returns and minimize productivity risks caused by climate variations. The program also helps in increasing farmer's income & livelihood support for the reduction of poverty in rainfed areas.

**Livestock insurance Scheme:** Due to uncertainties in the farm production, livestock rearing is an important financial support to farmers in rural areas. The scheme aims to protect poor and landless farmers from the losses by animals (death, diseases, etc.), and to promote the livestock sector, improve the genetic quality of animals.

**National Agriculture Market (e-NAM):** It is an online electronic trading platform to market agricultural commodities. It is helpful to producers and buyers for trading. Many agricultural commodities are listed in this platform for trade.

**Integrated Scheme for Agricultural Marketing:** The ISAM has six sub-schemes namely (i) Agricultural Marketing Infrastructure (AMI) (ii) Marketing Research and Information Network (MRIN) (iii) Strengthening of Agmark Grading Facilities (SAGF) (iv) Training, Research and Consultancy through Choudhary Charan Singh National Institute of Agricultural Marketing (NIAM) (v) Agri-business Development through Venture Capital Assistance (VCA) and Project Development Facility (vi) National Agriculture Market (e-NAM).

**Research:** Government of India making endless efforts to uplift and develop the financial status of small and marginal farmers through several schemes and they are being implemented by the cooperation of the ICAR (is the premier research organisation for coordinating, guiding and managing research and education in agriculture, including horticulture, fisheries, and animal sciences), Ministry of Agriculture, Ministry of Finance, etc.

#### Other Businesses

- Tie-ups with Supermarkets
- Small mandies near farms
- Farm products business according to local demand
- Marketing and display of farm products near shops/stores
- Juices, jam, jelly, pickles, juice, squash
- Taking dealership of agricultural implements, tractors, seeds, pesticides, etc
- Fruits and vegetable export business
- Starting a call center helpline for farmers
- The rental business of agricultural equipment/tractors etc
- bulk foodstuff wholesaling
- Urban agriculture business like farming on the terrace
- Egg processing
- Frozen chicken products
- Raisin production
- Seed selling shops

Milk collection

Dry fruits business

### **Conclusion**

Empowerment of the small and marginal farmers through technology, reforms, and development will ensure a better, efficient, and strengthened Indian agriculture. Motivation, new models in production, and marketing along with creating awareness and imparting education to small farmers will help in the development of the sector and improve the economic status of poor farmers. India needs to shift from basic farming to more efficient, sustainable, and productive farming. The matter of farmers committing suicide was brought up as an important concern. Development of agriculture will not only be helpful in the upliftment of the farmers but also beneficial to the larger section of the rural poor who are directly engaged in agriculture or indirectly linked with agriculture. The efficient way of production, stabilized prices, higher income from agriculture would create a more conjugative environment in the country for the development of the economy as a whole and rural population in particular.

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