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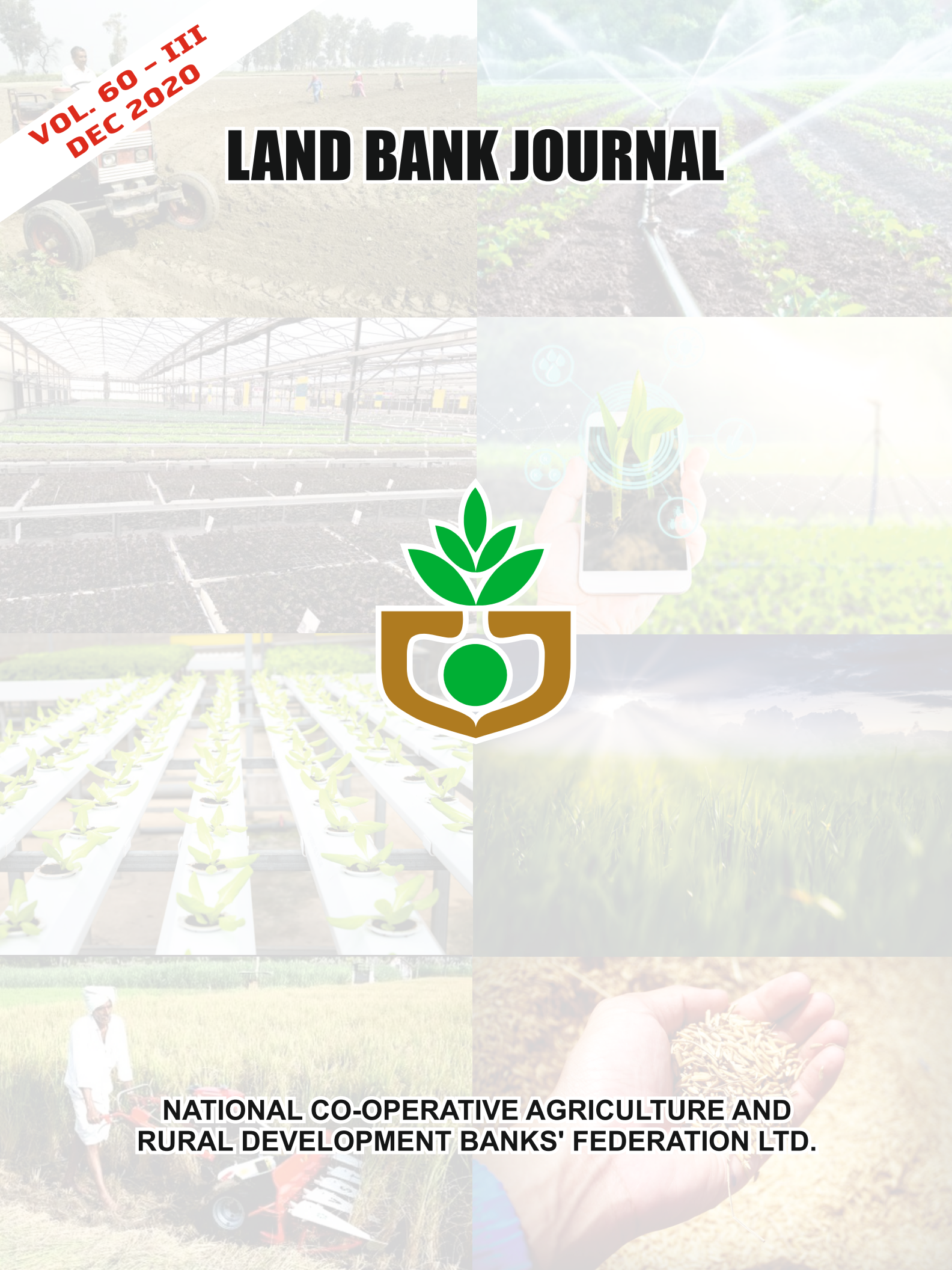

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• Paid up Share Capital & Reserves :	14024.91	15038.30
• Deposits :	265676.69	281298.91
• Loans & Advances :	135333.27	167119.44
• Investments :	97978.97	91537.06
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• Net Profit :	1025.24	1127.57
• Working Capital :	321797.64	337352.27

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- *Children Education Deposits*
- *Crop Loans for Agriculture through KCC/SHG/JLG/ Cooperatives*
- *Term Loans for Agriculture & Allied Agriculture*
- *Aquaculture Development / Meghalaya State Aquaculture Mission*
- *Loans for Housing*
- *Loans for SRTO*
- *Consumer Durables Loans*
- *Loans to Technocrats & Professionals*
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- *Loans for Children's Education*
- *Loans for Women through WDC Cell*
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- *Safe Deposit Lockers & Other Ancilliary Services*
- *Loans to Tribal under NSTFDC Schemes*
- *Loans to Physically Challenged under NHFDC*

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Contents

Resurrecting pandemic hit economy which suffered an unprecedented contraction of 7.7% during 2020-21 on the back of below 5% growth in the preceding year was the main challenge for this year's budget. Budget proposals to address this challenge, according to Finance Minister rest on six pillars – health and well-being, physical and financial capital and infrastructure, inclusive development, reinvigorating human capital and minimum government & maximum governance. The budget proposes massive investments in infrastructure with an allocation of Rs.5.54 lakh crore which is 34.5% more than the previous year. Borrowings, monetization of operational public assets and disinvestments are the major sources of funding new investments. Monetization of public assets offers vast scope to finance public capital investments by recycling resources on the one hand and avoiding the burden of operating such assets on the other. The budget proposes to set up a new Development Financial Institution to raise long term funds for infrastructure investments by attracting private corporate funds and even global patient capital. The new DFI is expected to have a lending portfolio of Rs.5 lakh crore in three years. Introducing Agriculture Infrastructure and Development Cess (AIDC) is a significant initiative in the budget to support agriculture sector. AIDC is designed in such a way that it does not result in extra burden on people. The Cess as applicable to petrol and diesel will be counter balanced by equal reduction in basic excise duty and special additional excise duty. The AIDC also applies to gold and silver bars @ 2.5% which will also be more than absorbed in 5% reduction in customs duty on gold and silver imports proposed in the budget. Though AIDC applies to certain items of farm produce, such items are not in the most essential category for consumers by and large. Upgrading infrastructural facilities in APMCs and strengthening the MSP system are thrust areas in the proposals relating to agriculture for obvious reasons. 1000 more mandis are planned to be integrated with the electronic national market and AIDC funds will be made available to APMCs to augment infrastructural facilities. The budget proposes to strengthen MSP regime which assures 1.5 times of cost of production by enhanced procurement of grains, cotton, pulses and oil seeds.

The target for agricultural credit has been increased by 10% from Rs.15 lakh crore to Rs.16.5 lakh crore. Allocation for RIDF which is meant to finance State Govts for developing rural infrastructure has been enhanced to Rs.40000 crore from Rs.30000 crore last year. Similarly allocation to Micro Irrigation Fund has been doubled from Rs.5000 crore to Rs.10000 crore. The crop loan interest subvention scheme will continue with an allocation of Rs.19,468 crore. However, the gross allocation of Rs.1,48,301 crore for agriculture and allied sectors in this year's budget shows a decline of 4.2% from Rs.1,54,775 crore during 2020-21.

This budget marks the beginning of next phase of reforms in financial sector. Finance Minister announced strategic divestments in two nationalized banks and one insurance company in 2021-22, setting the trend of privatization of public sector banks. The proposal to set up a 'bad bank' like structure is an important initiative to remove NPAs from the books of banks. The new Asset Reconstruction Company and Asset Management Company will take over the bad loans of banks and manage recoveries. The total NPAs of banking companies at present are estimated to be 13.5%, equivalent to about Rs.14 lakh crore. According to govt sources, the new structure will deal with NPAs of both public sector and private sector banks. Proportion of non-performing loans is even higher for rural cooperative banks and credit institutions which finance mainly agriculture and allied sectors. Moreover, NPAs of financial cooperatives are likely to increase further when loan repayments become due again after moratorium. There is a strong case for setting up a similar structure to deal with the bad loans of cooperative banks and credit institutions, as well. Development of Multi State Cooperative Societies is an important announcement in the budget. Suitable schemes with adequate allocations are yet to be prepared to implement this announcement. Multi State Cooperative Societies apart from their direct contributions to production, supplies and services also support the working of State level cooperatives in a big way. This announcement is important in terms of the impact it can create in the growth of economy, by leveraging the unique advantages of equity, stability and inclusiveness of cooperative business model.

K. K. Ravindran
Editor

ROLE OF MEDICINAL PLANTS IN AQUACULTURE

Anurag Semwal[1], Akansha Khati[2] and Ujjwala Upreti[3]

INTRODUCTION

Medicinal plants have been found and utilized in conventional medicine practices since prehistoric times. Plants secretes many chemical compounds for functions as well as defence against fungi, insects, disease and herbivorous mammals. From ancient time, civilizations throughout the world take advantage of medicinal plants to cure variety of diseases. Nowadays, traditional medicinal plants continue to be the main source of healthcare in several developing countries and rural regions (Calixto, 2005). Ethnobotanical researches have proved to be very helpful in distinguishing bioactive plants, and various research studies have been conducted on the biological activities and chemical properties of medicinal plants (Ayyanar *et al*., 2011; Banskota *et al*., 2003).

Involvement of medicinal plants for human and aquaculture sector has been powered by the endless side effects and rising expenses of recommended drugs. Medicinal plants have a complex chemical composition which exhibits different biological activities, making plants capable for the treatment of multiform diseases, and makes plants a best substitute to antibiotics (Gostner *et al*., 2012; Srivastava *et al*., 2014). Aquaculture is the rapidly expanding animal food-producing industry, with an average annual increment of 6.2% every year from 2000–2012 (FAO, 2014). However, aquaculture is related to the intensification of fish species, resulting overpopulation and awful water quality, encouraging the spread of microbes and increasing disease outbreaks and mortality (Bondad-Reantaso *et al*., 2005). To avoid expenses related to sanitary shortcomings, veterinary drugs are generally used in aquaculture sector to cure disease outbreaks (Rico *et al*., 2013).

Why medicinal plants required in Aquaculture?

As aquacultural intensification was increasing the case of disease including various infectious diseases also raised simultaneously, as a result of it leading to financial misfortune. In fish hatcheries, regular use of antibiotics in prophylactic treatment has prompted the development of the resistant strains. The antibiotics also may lessen the larval development and repress immune system of the hatchlings. Numbers of antibiotics and manufactured drugs have demonstrated sensitisation reaction and other unwanted side effects. Vaccines, considered as the best strategy to prevent disease outbreaks in aquaculture sector, are too costly for widespread use by fish farmers and since it is very hard to build up multiple strain vaccines, most immunization are just successful against one kind of pathogen (Pasnik *et al*., 2005; Sakai, 1999). Considering the various impediments of synthetic drugs, there is an increasing need for the advancement of alternative methods in fish culture disease management. Moreover, disease explosion in aquaculture are often associated with animal health and strength, most microbes being opportunistic and exploiting immunocompromised or stressed fish. In this manner, alternative solutions should enhance fish immunity and strength as a strategy to face microbe contaminations. Medicinal plants can therefore provide less expensive and more economical option in contrast to chemotherapy in aquaculture, since they have been reported to show various bioactivities for example antistress, immunostimulant and antiparasitic (bacterial, fungus, virus and ectoparasites) properties (Reverter *et al*., 2014).

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Advantages of medicinal plants:

- They are abundant and economical
- Their action is efficient
- No or very low adverse effect on natural ecosystem
- They act as alternative method for antibiotics and drugs in aquaculture
- They act as a growth promoter and immune-stimulant
- They have anti-bacterial, anti-viral anti-microbial, anti-fungal and anti-parasitic properties

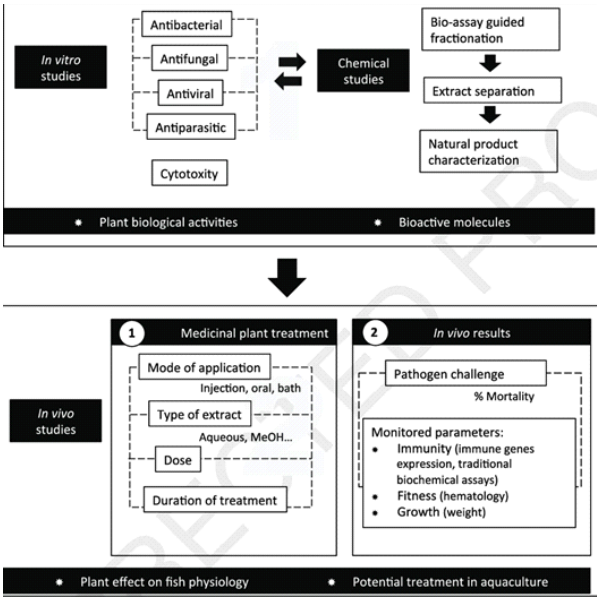

Fig 1. Research steps of medicinal plant use in aquaculture

Biological activity of medicinal plants in Aquaculture:

Medicinal plants have been investigated and showed various effects such as antistress, growth promotion, appetite stimulation, immunostimulation, aphrodisiac. Antipathogen properties in fish and shrimp culture because of their active components such as tannins, terpenoids, saponins alkaloids and flavonoids (Chakraborty and Hancz, 2011; Citarasu, 2010). Studies have demonstrated that application of plant extracts enhance digestibility and nutrients availability, give rise to increase in feed conversion and directing to higher protein synthesis (Putra *et al*., 2013; Talpur *et al.*, 2013). Nile tilapia (Oreochromis niloticus) fed with an eating routine containing mistletoe (Viscum album) for an experimental period of 80 days showed higher respiratory burst, lysozyme, alternative complement and phagocytic activity, which resulted in 42% increased survivability when they were tested against bacterial pathogen Aeromonas hydrophila (Park and Choi, 2012). Antifungal and antiviral properties of medicinal plants are capable to minimize and prevent high mortality rates in fish culture. Medicinal plants are also an effective substitute for treating ectoparasites. Different studies on medicinal plants have demonstrated antiparasitic activities of plants when added to water or administered orally. Indian major carp (Labeo rohita) fed with diets having chaff flower (Achyrantes aspera 0.2%) and Indian ginseng (Withania somnifera 0.5%) resulted reduction in death rate 41% and 49% respectively when fish were tested against pathogen (A. hydrophila) (Vasudeva-Rao *et al*., 2006; Sharma *et al*., 2010). Methanol and ethyl acetate extracts of golden larch (Pseudolarix kaempferi), aqueous and methanol extracts of cinnamon (Cinnamomum cassia), methanol extract of bupleurum root (Radix bupleuri chinensis) and methanol extract of Chinese spice bush (Lindera aggregata) was 100% successful in case of monogenean Dactylogyrus intermedium in affected goldfish (Carassius auratus) (Ji *et al*., 2012; Wu *et al*., 2011). In a research by Ahmad and Tawwab (2011), tilapia (Oreochromis niloticus) fish fed with cumin-containing feeds showed protein efficiency ratio, specific growth ratio, apparent energy utilization and apparent protein utilization were increased. Shalaby et al. (2006) found that tilapia (Oreochromis niloticus) fed with garlic supplemented feeds caused an increase in the protein efficiency ratio and specific growth ratio. Suzuki *et al*. (2006) reported that the crude concentrate of the green tea (Camellia sinensis) had a powerful impact in controlling of flagellate fish parasite Ichthyobodo necator in chum salmon (Oncorhynchus keta) and salmon (Oncorhynchus masou). Defence mechanism regulating activity of the medicinal herbs Ocimum sanctum, Azadirachta indica and Curcuma longa were found effective against A. hydrophila in goldfish (Harikrishnan and Balasundaram 2008).

Application of medicinal plants in Aquaculture:

Medicinal plants can be used as a part (seed, leaf, fruit, root) or whole plant and can either be utilized fresh or as herbal extracts with various solvents (water, ethyl acetate, chloroform, methanol). Chemical composition and biological activity of plants and extracts can fluctuate enormously relying on the part utilized and type of extract, and thus knowledge of the plant's bioactive compounds is required. Appropriate dosing is crucial to acquire the ideal impacts, since inappropriate doses can show harmful impacts in fish. Treatment duration is another main parameter in medicinal plant administration in aquaculture, since it directly affects treatment effectiveness. Medicinal plants extract can be applied to fish and shellfish by injection (intraperitoneal and intramuscular), oral administration and through immersion or baths (Ji *et al*., 2012; Putra *et al*., 2013; Wu *et al*., 2010).

In spite intraperitoneal injection has determined to be the most instantaneous and productive strategy of administration, it is costly, laborious and painful for fish, particularly for very young specimens. Baths are broadly used for the treatment of ectoparasites but this strategy is also costly and relentless and involves the secretion of exogenous particles in the marine environment and thus, can introduce some undesired natural results. Hence, oral administration method seems to be the most satisfactory for aquaculture, since medicinal plants can induce physiological changes in fish to improve their fitness and strengthen their protection from microbes.

Plant species most widely used in Aquaculture:

The plant species that have shown the intense potential for use in aquaculture sector are garlic (Allium sativum), Bermuda grass (Cynodon dactylon), pomegranate (Punica granatum), ginger (Zingiber officinale) Indian ginseng (Whitania somnifera). Studies have shown the effect of the unadulterated garlic components ajoene and allicin in aquaculture and demonstrated their immunostimulant ability and adequacy against pathogenic fish protozoa Spironucleus vortens, Ichthyophthirius multifiliis and the microorganism A. hydrophila (Millet *et al*., 2011). Pomegranates contain various phytochemicals like bioactive polyphenol ellagitannins which shows antioxidant and anti-inflammatory effects. The chemical composition of C. dactylon incorporates phenolic compounds (gallic acid), tannins (cathechins), anthocyanins (cyanidin) and flavonoids (quercetin). Bermuda grass (C. dactylon) shows immunostimulant, antiparasitic, antibacterial, antiviral and growth-regulating activities in fish and shellfish (Balasubramanian *et al*., 2008; Kaleeswaran *et al*., 2011). W. somnifera has different properties like antibacterial, antiviral, immunostimulant and growth-promoting activities (Sharma et al., 2010). Ginger comprise a mixture of shogaols, zingerone and gingerols along-with some sesquiterpenoids and zingiberene as the major component (Ali *et al*., 2008).

SI. No.	Scientific Name (Family)	Common Name
1	*Aegle marmelos*	Bel
2	*Asparagus curillus*	Safed Musli
3	*Asparagus racemosus*	Satawari
4	*Datura metel*	Dhatura
5	*Hydrocotyle sibthorpioides*	Brahmni
6	*Phyllanthus emblica*	Amla
7	*Viscum album*	Mistletoe
8	*Achyranthes aspera*	Prickly chaff flower
9	*Withania somnifera*	Ashwagandha
10	*Radix bupleuri*	Chaihu
11	*Cinnamomum cassia*	Cinnamon
12	*Lindera aggregata*	Chinese spice bush
13	*Pseudolarix kaempferi*	Golden larch
14	*Camellia sinensis*	Green tea
15	*Curcuma longa*	Turmeric
16	*Ocimum sanctum*	Holy basil or Tulsi
17	*Azadirachta indica*	Neem
18	*Eclipta prostrata*	Bhringraj
19	*Allium sativum*	Garlic
20	*Urtica dioica*	Stinging nettle
21	*Zingiber officinale*	Ginger
22	*Lonicera japonica*	Japanese honeysuckle
23	*Rheum officinale*	Indian rhubarb
24	*Isatis tinctoria*	woad
25	*Nymphaea alba*	Water lily

Table 1. List of commonly used medicinal plants in Aquaculture

Other plants and perspectives:

Some algae and some mushrooms have also been researched for their competancy in aquaculture because they are considered as a rich source of bioactive molecules; the vast majority of algae showed high antibacterial properties, and some showed immunostimulant, antiparasitic, antiviral and antifungal properties (Choudhury *et al*., 2005). Red alga Asparagopsis taxiformis, famous to secrete variety of halogenated metabolites, showed antifungal, antibacterial and antiparasitic properties

against several fish pathogens (Genovese et al., 2012, 2013). Also, A. taxiformis improved immune system of Penaeus monodon and was successful in the therapeutics of vibriosis in P. monodon (Manilal et al., 2012, 2013).

Mai et al, (2015) found fascinating properties of different marine organisms such as sponges, which can repress quorum sensing of marine pathogenic bacteria such as Vibrio harveyi.

SI. No.	Scientific Name (Family)	Common Name
1	*Swertia chiraita*	Chiraita
2	*Gymnema sylvestre*	Gudmar
3	*Commiphora wightii*	Guggul
4	*Tinospora cordifoliaFam*	Guluchi / Giloe
5	*Lawsennia iermis*	Henna/Mehdi
6	*Plumbago zeylanica*	Swet chitrak
7	*Plumbago indica*	Rakta chitrak
8	*Terminalia chebula*	Harida
9	*Andrographis paniculataFam*	Kalmegh/ Bhui neem
10	*Saraca asoca*	Ashok
11	*Solanum nigrum*	Makoi
12	*Santalum album*	Sandal wood
13	*Casia augustifolia*	Senna
14	*Terminalia bellerica*	Bahada

Table 2. Medicinal plants that are not yet used in Aquaculture

Conclusion:

Medicinal plant extract has the potential to restrict the production of oxygen anions and scavenge free radical, hence decreasing stress impacts. Medicinal plants (including mushrooms and algae) show promising potential for use in aquaculture as an alternate for chemotherapy in the therapeutics of disease outbreaks. Ethnobotanical studies have been very important in the discovery of bioactive medicinal plants and natural products with interesting utilization in aquaculture. However, there is still little idea about the mode of action of most bioactive plants, as well as the most appropriate form for successful and safe administration. More research is required to get knowledge about plant products and their modes of action (to extract out the bioactive parts of the plants), and to test plant impact on the organism's physiology in order to develop a suitable treatment procedure (route of administration, dose and length).

REDUCING MALNUTRITION THROUGH CREATING AWARENESS ON NUTRITION SENSITIVE AGRICULTURE

Dr. L. Nirmala[1], Dr. A. Vijayakumar[2] and Dr. A. Sumithra[3]

Our country is moving towards attaining self-sufficiency in food grain production. India is second largest producer of food grains globally and have Exported 273.38 million tonnes food grains in year 2016-2017. But, the burden of malnutrition which is not fully addressed. Malnutrition is the main factor that retards improvements in human development and hindering factor for reductions in infant mortality in India. Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. WHO (2009). The term malnutrition covers 2 broad groups, 'undernutrition' which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals) and other is overweight, obesity and diet-related non communicable diseases (such as heart disease, stroke, diabetes and cancer). According to WHO (2012) on average malnutrition causes 4.39 per cent of death rate /year as the micronutrient deficiency causes 20 leading health risk factors and 5 million children die before their fifth birthday every year, and that a third of these deaths are associated with undernutrition. One in three of the developing country children under the age of 5 (178 million children) are stunted due to chronic undernutrition and 148 million children are underweight. Micronutrient malnutrition or “hidden hunger” affects around 2 billion people (over 30% of the world population) with serious public health consequences. Micro nutrient deficiencies such as Fe-deficiency anemia led to the loss of over 46,000 Disability Adjusted Life Years (DALYs) in 2010 alone and Zn-deficiency leads to estimated annual deaths of 433,000 children under the age of five (WHO, 2009). Copenhagen Consensus Conference 2008 ranked the alleviation of iron and zinc deficiencies as a top priority for the developing countries.

With the help of implementation of 'Harvest Plus' by CGIAR in mid-eighties, the researchers and the policy makers have started giving more attention for alleviating the malnutrition in India. The National Nutritional Strategy of India targets to achieve a 40% reduction in the number of stunted children under-5, to achieve a 50% reduction of Anemia in women of reproductive age, to achieve a 30% reduction in low birth weight and to reduce and maintain childhood wasting to less than 5% by 2025. Continuous efforts of Researchers and the Policy makers helped Cut down Population with ill effects of under nutrition from rate of 1.02 billion (2009) to 925 million people (2010). Strategies followed to eliminate malnutrition in global level were are Diversification in diets, Industrial and commercial fortification, Pharmaceutical supplementation, Agricultural bio fortification, Supply of Nutrient Rich Supplements were formulated to overcome the ill effects of malnutrition. The Government of India and State Government of Tamil Nadu are implementing numerous developmental intervention programmers to combat nutritional insecurity. Some of the programmers were found be successful only at Earlier Stage and later on there was seen a continuous decline. Some of the Reasons where are lack of holistic Approach, lack of Sustainability, lack of Supervision etc. These Programmed Aimed at Healing the Effects but not treating its underlying Cause. People begin to expected continuous assistance from external agencies inform of Money, Foods and Supplements. Implementing nutrition specific intervention alone not yield will not yield sustained impact on improving nutrition. Nutrition specific intervention alone even if implemented with care may not yield sustained impact on improving nutrition to the targeted population. Interventions are needed throughout the entire food system from production to processing, consumption, transport and waste management. Improvements will also be needed in complementary

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sectors such as health, education, water, and sanitation to eliminate the spread of infectious diseases and to share the knowledge on successful nutritional practices. Sectors like agriculture can potentially influence the underlying determinants of nutrition outcome. Effectively addressing the causes of malnutrition requires an integrated and coherent set of nutrition-sensitive interventions addressing all functions of the food system, combined with investments in other relevant sectors (e.g. water, sanitation, health, education and social protection). Governments too must integrate the nutritional sensitive strategies into their agriculture development policies to ensure nutrition sensitive programmers that were funded and implemented. Strategies and interventions should be formulated how agriculture can improve availability of food basket at the household level and offer diet diversity? how income generated and accumulated if any was spent or reallocated towards the access to range of food acquisition? And lastly how well women in farm household apportion ate their timing between work and family care and its effect on nutritional security of the household.

NUTRITION SENSITIVE AGRICULTURE:

Nutrition-sensitive agriculture is an approach that seeks to maximize agriculture's contribution to nutrition. It involves seeking causes of malnutrition, namely education, health and social protection, so that FAO promotes agriculture through a variety of partnerships and capacity development initiatives. Nutrition-sensitive agriculture is a food-based approach to agricultural development that puts nutritionally rich foods, dietary diversity, and food fortification at the heart of overcoming malnutrition and micronutrient deficiencies. It aims to ensure the production of a variety of affordable, nutritious, culturally appropriate and safe foods in adequate quantity and quality to meet the dietary requirements of populations in a sustainable manner. Making agriculture and food systems nutrition-sensitive necessitates taking action to address input quality, production, post-harvest handling, processing, retailing and consumption, in order to deliver safe and nutritious foods all year round to the consumer. The important strategies to improve the nutrition security are by promotion of fortified products, homestead gardening practices, snacks-based supplements, diversified production, empowerment of rural women, strengthening the links between the agriculture - nutrition and health sectors, providing nutrition education etc. which needs to be addressed to achieve both food and nutrition security. This approach stresses the multiple benefits derived from enjoying a variety of foods, recognizing the nutritional value of food for good nutrition, and the importance and social significance of the food and agricultural sector for supporting rural livelihoods. The overall objective of nutrition-sensitive agriculture is to make the global food system better equipped to produce good nutritional outcomes. Several pathways have been identified showing how nutrition sensitive agriculture interventions can more directly impact nutrition and food security. Interventions should be designed considering the pathways most relevant to the value chain and the most relevant underlying causes of malnutrition. The important principles were are, increasing agriculture income, increasing food production and making more nutritious, Women's empowerment. Increasing agriculture income includes food purchase and for health care and education expenditure. Food Production through reduced food prices, own consumption, and processing and storage. Women's Empowerment through women's decision -making in the household; women's time use and the impact on their ability to care for themselves and their children's; women's workload and the impact on maternal energy use; and women's control of income, participation in markets, and resource allocation. Nutrition sensitive agriculture is a holistic approach which aims at increasing food production, Making the food more nutritious, making the diet with diverse range of foods (such as fruits, vegetables, nuts, greens). The main components were, diversification and sustainable intensification of agricultural production, promoting nutrition-sensitive livestock and fisheries, promoting urban and peri-urban agriculture, promoting nutrition-sensitive post-harvest handling, storage and

processing, promoting food fortification, promoting trade for nutrition, promoting food price policies for healthy diets, promoting nutrition education and behavior change communication, promoting school food and nutrition, promoting nutrition-sensitive humanitarian food assistance. Diversification approaches refers to increasing the availability and affordability of diverse foods. Sustainable intensification refers to simultaneously improving productivity and environmental sustainability, through ecosystem-based strategies. It is defined as the growing of plants and the raising of animals within and around cities. It includes crop production, small animal rearing, growing of non-food crops (e.g. medicinal herbs) and trees managed for producing fruits and fuel wood, including within integrated systems (e.g. agro forestry, tree-aquaculture systems). A balanced diet is needed throughout the year to maintain good health and nutrition. Post-harvest handling, processing and storage contribute to: maintaining a secure supply of food preserving the quality reducing losses and making fresh produce available in local markets as well as in distant locations. Post-harvest handling includes all the steps that a harvested crop has to go through to get from the producer to the, Storage helps to store the foods thus increasing its shelf life. Micronutrient deficiency is a very widespread form of malnutrition, due to inadequate intakes of fruits, vegetables, animal-source products and other micronutrient-rich foods. Food fortification is (WHO) as “practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health”. Fortification programmers can be mandatory and implemented on national scale via mass fortification or voluntary, whereby the decision to fortify is taken by food manufacturers within the regulatory limits set by the government (e.g. fortification of porridge and other complementary foods for infant feeding).

Nutrition education consists of a variety of educational strategies aimed at helping people to achieve long-lasting improvements in their diets and eating behaviors. Nutrition education and behavior change communication to consumers can be delivered through multiple venues and activities, and may include health and nutrition counselling during pregnancy, education on breastfeeding or improved complementary feeding of children under two years of age, nutrition education in schools and hands-on learning to enable families to practice good nutrition behaviors. Nutrition education activities should target, and be adapted to, both men and women, in order to ensure that their respective roles and responsibilities in household nutrition are recognized and harnessed. The school food and nutrition approach is the portfolio of activities benefiting the nutrition of school-aged children. It encompasses several elements – from provision of nutritious meals to nutrition education, from school gardens to school environments that support nutrition and health – for addressing the immediate food and nutritional needs of school children. Good nutrition is key to children's physical and mental development.

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NEED, CONCEPTS AND PRINCIPLES OF ORGANIC FARMING

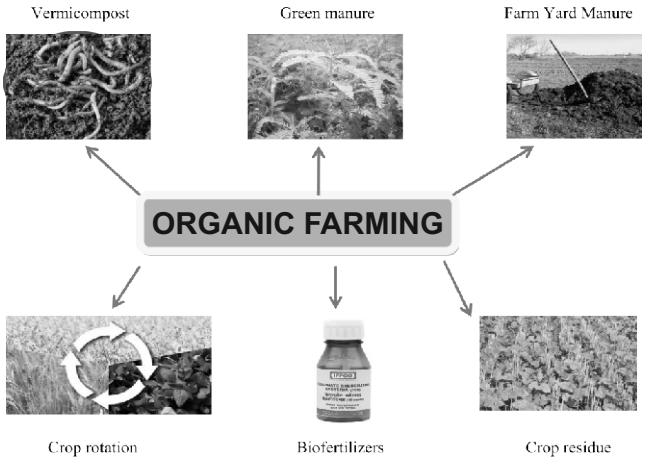
Vinod Kumar[1], Ashok Deshwal[2] and V.P.S.Yadav[3]

INTRODUCTION:

It is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for increased sustainable production in an eco friendly pollution free environment. Organic farming system in India is not new and is being followed from ancient time. As per the definition of the United States Department of Agriculture (USDA) study team on organic farming "organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection". According to FAO "Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs".

NEED OF ORGANIC FARMING

With the increase in population our compulsion would be not only to stabilize agricultural production but to increase it further in sustainable manner. The scientists have realized that the 'Green Revolution' with high input use has reached a plateau and is now sustained with diminishing return of falling dividends. Thus, a natural balance needs to be maintained at all cost for existence of life and property. The obvious choice for that would be more relevant in the present era, when these agrochemicals which are produced from fossil fuel and are not renewable diminishing in availability. It may also cost heavily on our foreign exchange in future.



CONCEPTS:

Organic farming endorses the concept that the soil, plant, animals and human beings are linked. Therefore, its goal is to create an integrated, environmentally sound, safe and economically sustainable agriculture production system.

- The concept of organic farming is based on following principles:
- Nature is the best role model for farming, since it does not use any inputs nor demand unreasonable quantities of water.
- The entire system is based on intimate understanding of nature's ways. The system does not believe in mining of the soil of its nutrients and do not degrade it any way for today's needs.
- The soil in this system is a living entity.
- The soil's living population of microbes and other organisms are significant contributors to its fertility on a sustained basis and must be protected and nurtured at all cost.
- The total environment of the soil, from soil structure to soil cover is more important.

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Principles of organic agriculture

Organic agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements (IFOAM), an international umbrella organization for organic organizations established in 1972. The four principles of organic agriculture are as follows:

1. Principle of health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health of ecosystems - healthy soils produce healthy crops that foster the health of animals and people. Health is the wholeness and integrity of living systems. It is not simply the absence of illness, but the maintenance of physical, mental, social and ecological well-being. Immunity, resilience and regeneration are key characteristics of health. The role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings. In particular, organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being. In view of this it should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

2. Principle of ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops this is the living soil; for animals it is the farm ecosystem; for fish and marine organisms, the aquatic environment.

Organic farming, pastoral and wild harvest systems should fit the cycles and ecological balances in nature. These cycles are universal but their operation is site-specific. Organic management must be adapted to local conditions, ecology, culture and scale. Inputs should be reduced by reuse, recycling and efficient management of materials and energy in order to maintain and improve environmental quality and conserve resources. Organic agriculture should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. Those who produce, process, trade or consume organic products should protect and benefit the common environment including landscapes, climate, habitats, biodiversity, air and water.

3. Principle of fairness

Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings. This principle emphasizes that those involved in organic agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties - farmers, workers, processors, distributors, traders and consumers. Organic agriculture should provide everyone involved with a good quality of life, and contribute to food sovereignty and reduction of poverty. It aims to produce a sufficient supply of good quality food and other products. This principle insists that animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behavior and well-being. Natural and environmental resources that are used for production and consumption should be managed in a way that is socially and ecologically just and should be held in trust for future generations. Fairness requires systems of production, distribution and trade that are open and equitable and account for real environmental and social costs.

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Nutrient Requirement And Fertilizer Application In Aquaculture

Priyanka Arya[1], R.S. Chauhan[2] and Akansha Khati[3]

Biological productivity of ponds depends largely on the nutrient status of pond bottom. Pond sediment acts as reservoir for primary nutrients. On microbial decomposition of organic sediment, released nutrients dissolve in overlying water and become available to fish food organisms. The main sources of organic matter for nutrient recycling are incoming water, metabolites of the organisms residing there in and carcass. Nutrients like nitrogen, phosphorus and potassium are known as primary nutrients essentially required for the growth of fish food organisms. Phosphorous followed by nitrogen are most important among them while requirements of potassium are very low and usually fulfilled by the pond sediment itself. Over the period, pond bottom often becomes nutrient deficient due to constant utilization of nutrients by phytoplankton and plant forms. Thus, it becomes necessary to supplement the deficient amount of primary nutrients in the form of fertilizers and manures to obtain sustained fish production.

Types of fertilizers:

Fertilizers used in fish ponds are of two categories:

a) Inorganic fertilizers: Inorganic fertilizers have definite amount of nitrogen, phosphorus and potassium either alone or in various combinations. Concentrations of nutrients in different grade of fertilizers are represented by the percentage (by weight) of nitrogen (as N), phosphorus (P2O5) and potassium (as K2O; called potash). Selection of these fertilizers is made on the basis of its composition and the deficiency of specific nutrient in fish ponds.

b) Organic fertilizers: Wide variety of materials is used as organic fertilizers in fish ponds but excreta of various domesticated animals are commonly used. Concentrations of primary nutrients vary greatly among different organic fertilizers. Organic fertilizers are applied in the points either in dried / semi dried form or liquid form. The application rates of organic fertilizers vary according to the quality of excreta and the types of animals raised. The main difference between inorganic and organic fertilizers is that inorganic fertilizers readily dissolve in pond water and instantly provide the required nutrients while organic fertilizers require some time to decompose by microbial activity thereby releasing inorganic nutrients at sustained rates.

Fertilizers Doses:

Fertilizer application rates are decided on the basis of nutrient and productivity status of ponds as given in Table 1. A combination of inorganic and organic fertilizers is applied in fish ponds to fulfill the nutrient requirement. About 50% of the nutrient requirement of ponds should be met through organic fertilizers.

Table1: Nutrient requirements of different types of fish ponds

Pond type	Soil condition			Nutrient requirement (Kg/ha/year)		
	pH	Organic Carbon (%)	Available nutrients (mg/100 gm)	Nitrogen	Phosphorous	Potassium
Low productive	5.5	0.5	N below 25 P_2O_5 below 3	275-300	120-130	35-40
Medium productive	5.5-6.5	0.5-1.5	N 25-50 P_2O_5 3-6	200-225	80-90	25-30
High productive	6.5-7.5	1.5-2.0	N above 50 P_2O_5 above 6	150-170	50-60	15-20

Application rates of various inorganic fertilizers for different types of ponds are presented in Table 2. Quantity of organic fertilizers applied in fish ponds vary with the types of animals and concentrations of nutrients therein. Standard dose of organic fertilizers depend on types of and number of livestock raised (Table 3).

Table 2: Different animal excreta, their application rate and number of animals required for manure

Animal excreta	N	P	Application rate (Kg/ha/yr)			Number of animals		
			Low	Medium	High	Low	Medium	High
Cattle	1.2	0.4	15000	12000	10000	10-12	8-10	6-8
Pig	1.8	0.5	10000	8000	6000	40-50	30-40	20-30
Chicken	1.9	0.5	10000	8000	5000	500-600	400-500	300-400
Duck	2.2	0.6	8000	7000	5000	300-400	200-300	150-200

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Period of fertilizer application:

Initial dose of organic fertilizers should be applied in fish ponds 10 to 15 days before fish seed stocking and inorganic fertilizers after 4 to 5 days of organic fertilizers. Recommended doses of both inorganic as well as organic fertilizers should be repeated at fortnight intervals until a sechi disk transparency reading of approximately 30-40 cm is obtained. Requirement of fertilizer could also be assessed by estimating plankton volume by filtering pond water through plankton net. Plankton volume less than 1cm/5 liters shows the need of fertilizers. Nutrient concentrations in pond water should never exceed 0.5 mg per liter for phosphorus and 2 mg per liter for nitrogen.

Methods of fertilizer application:

Inorganic fertilizers should be broadcast over the pond surface and should not be applied in deeper water because the granules will sink in the mud thus becoming unavailable to phytoplankton. Liquid manure from the dairy, piggery, duckery etc., made over or near the embankments, falls directly in to the ponds with the washing of sheds. The liquid organic fertilizers should be applied in deeper layers to prevent undesirable ecological consequences. Dried or semi dried organic fertilizers should be applied in heaps at the corners of ponds in such a way that only a part of heap should be in water which will dissolved slowly in water to release the nutrients constantly without deteriorating water quality.

Precautions:

- Fertilizer applications should be stopped if a heavy plankton or algal bloom appears.
- Requirement of nutrients reduces in winters; therefore, fertilizer doses may be ceased or reduced during December and January.
- Fertilizer doses should also be regulated according to the water quality characteristics.
- As far as possible fertilizers should be applied in split doses.

Conclusion:

It is often seen that majority of fish farmers do not resort to pond fertilization in proper way due to lack of technical knowledge and thus face problem of low fish production. The state of art of pond fertilization discussed above will certainly help the fish farmers in formulating fertilizer doses for their fish ponds to

Table 3: Nutrient concentrations and application rates of various inorganic fertilizers for different types of ponds

Fertilizers	Nutrient concentration (%)	Application rates (Kg/ha/yr)		
		Low productive	Medium productive	High productive
Nitrogenous	**N**			
Calcium ammonium nitrate	25.0	540-600	400-460	300-340
Urea	46.0	295-320	215-220	160-185
Ammonium sulphate	20.0	520-575	385-440	290-325
Ammonium sulphate nitrate	26.0	520-575	385-440	290-325
Ammonium chloride	25.0	540-600	400-460	300-340
Phosphatic	**P**			
Single super Phosphate	18-20	300-325	200-225	125-150
Triple super phosphate	46.0	130-140	90-100	55-65
Rock phosphate	20-38	240-260	160-180	100-120
Basic slag	15-18	375-400	250-280	160-185
Potashic	**K**			
Muriate of potash	60.0	60-70	40-50	20-30

Return Of Indigenous Practice Helps In Doubling The Income Of Turmeric Farmers Of Erode

D. Udhaya Nandhini[1] and E. Somasundaram[2]

Turmeric is a tropical rhizomatous crop grown for its medicinal and culinary preparations. Turmeric is widely grown under the western agro climatic zone in the semi arid tropical region of Tamil Nadu, India and Erode is regarded as "Turmeric city" of the state and has geographical indication (GI) tag. Turmeric is grown using inorganic and chemical fertilizers fetched low price and the quality was also compromised for export value. Chemical farming led to many issues such as land deterioration, decline in crop production, biodiversity loss, increased vulnerability to climate change, desertification, erosion of traditional agricultural knowledge and decline in human health and livelihood. Concerning these issues, farmers of this Erode region have switched over to organic farming to obtain superior quality and premium prices for their produce. The farmers of this region are having a commendable knowledge of the indigenous farming practices. Particularly the turmeric farmers possess the vast wisdom of soil and land management. This knowledge is now stated to regain due to health concerns over chemical farming. Organic turmeric is gaining momentum in the international market for its products viz., dry rhizomes, powder, curcumin and oleoresin. India accounts for about 80 per cent of world turmeric production and 60 per cent of world exports.

Indigenous practices bear hope

To move from this situation, innovative farmers have planned to abandon the use of chemicals and return to their own traditional cultivation practices. The organic inputs (Panchgavya, fish amino acid, egg amino acid, 5 leaf extract, jeevamirtham, enriched compost, buttermilk solution, vermicompost, archae bacterial solution, biofertilisers) was shared among the farmers with the objective of conserving indigenous practices, restoring soil quality and local ecosystem. The tradition of exchanging indigenously prepared Inputs has become a part of their life. Soil building is enhanced by crop rotations, cover crops and organic fertilizers. These organic manures improves organic matter content in the soil, improves soil physical properties, allows the water to infiltrate into the soil more quickly rather than run off the surface, increases water holding capacity of the soil, reduces soil erosion, restores and improves the soil quality, increases crop yield, maintain the soil pH, organic carbon and nutrient contents, etc. Green manures help in mobilizing nutrients, suppressing soil-borne pathogens, avoiding soil acidification, supporting crops to out-compete weeds and preventing soil erosion. Carbon dioxide emissions are 40-60% lower per hectare than conventional systems. CO_2 emissions and non-renewable energy use associated with the production of synthetic inputs is also prevented. Traditional farming significantly reduces methane emission as well. The soils of organic system gradually become looser, more porous and hold more water and are more capable of withstanding drought and flood conditions. It also promotes tourism as it has already been started in the north-east where resorts are marketing themselves as completely organic where tourists can pluck, cook and relish fresh organic food from their kitchen gardens. Farmers can reap huge income as there is demand for organic food and stops the serious health hazards caused due to chemical fertilizers & pesticides. Indigenous practices support vulnerable species in the following ways:

- Promotion of habitat heterogeneity ·
- Intorduction of a variety of seeds and breeds for greater resistance to diseases, climate, and pests.
- Employment of diverse combinations and rotations of plants and livestock.
- Maintenance and planting of natural areas within and around organic fields

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- Creation of suitable habitats important pollinators and beneficial insects.
- Reduction of toxic influences from synthetic inputs.

Indigenous practices of Erode farmers

The organic farmers adopt farm own made inputs and not relying externally and sometimes exchange the farm inputs between the certified farms. The practices adopted by the farmers found to possess high value on soil health and some of them are acting as a plant growth regulator. Summer ploughing is being practiced by the farmers for moisture conservation, reducing runoff and soil loss, improving soil tilth and keeping field free from weeds, pathogens and alternate hosts so that crop escapes major pests and disease attack.

After each crop the multi varietal seeding (MVS technique) was followed by the organic farmers. In all the organic farms, 2 months before taking up the main crop, MVS (consists of pulses, cereals, nitrogen giving plant species, spices @ 4 kg/ha of each) is being sown and incorporated into the soil before flowering. Some organic fields were incorporated only with, green manures or cumbu or mothbean. The crop was sown immediately to avoid the land exposing to direct sunlight and increase the carbon content. Raised beds of about 30 cm height and 1m width were formed to avoid water stagnation during the rainy season and a spacing of 40 cm was adopted between the beds. Small pits at a distance of 20–25 cm apart on either side are dug on the beds and the rhizome is placed in the pits. It has been noticed that rhizomes were treated with cow urine, bio-fertilizers, bio control agents, Panchagavya and Beejamrutha for about 30 minutes before planting to avoid pest and seed and soil borne diseases. In between the rows of a bed, mothbean is taken as an intercrop.

Farmers opined that mulching is an essential feature of tropical regions like Tamil Nadu. Mulching was done by pruning the mothbean leaves (grown as intercrop) as well with the leaf litters in order to conserve the moisture and to improve the soil organic matter perhaps weed control.

Turmeric is an exhaustive crop which requires heavy manuring. To replenish the soil nutrients, organic inputs were added to turmeric fields every year. Most of the farmers believed that EFYM addition has great impacts on soil fertility and subsequent growth and yield of turmeric. Farmers opined that quantity of FYM application could be reduced when it was enriched with microbes and other liquid formulations. FYM, though not available with most of the farmers, is being outsourced from neighbours or nearby places. Farmers used to collect and utilize all the waste available in the field and made as valuable compost. The farmers also applied 25-50 kg of neem seed cake for one acre of turmeric crop at the time of last ploughing to ensure pest and disease free crop for higher yield. The mixture of pungam, neem, ground nut, iluppai cake was also practiced. In addition, application of a mixture of bio-fertilizers and bio-control agents were also a desirable practice by the turmeric farmers. Sheep penning, one of the indigenous methods of enhancing soil fertility, getting popularized in the field of organic farming as a best soil management practice.

The crop was watered through drip irrigation as and when required and the frequency was less compared to chemical farming. For augmenting the soil microbial activity, archae bacterial solution was given through the drip system after sowing the crop. Various liquid organic formulations (Panchagavya, buttermilk solution, fish amino acid, egg amino acid, vermiwash, fermented plant extract, effective microbe's formulation, treated cow urine, 5 leaf extract) were being prepared in the farm itself and applied to crop for boosting the growth and to control various pests and diseases. The nutrient composition and different

properties of various organic inputs used by the farmers were analyzed and are given in table 1.

Crop rotation is being followed to arrest the weed seed bank development and to cut off the pest and disease incidence. In general, crop rotation was followed as the common agronomic practice among the farmers of Erode region and varies from 1-3 years. Tapioca, fodder sorghum, cumbu, banana and were grown in rotation. Spraying of T.viridie, B. subtilis, Metarhizium, Verticilium, T. harzianum, B. basiana, Paecilomyces lilacinus and Pochonia reduces the disease incidence and promotes natural resistance. These practices need to be scientifically validated for other crops, which can be produced by organic farming.

Success story of organic turmeric cultivation in Tamil Nadu

The Erode District belongs to Western Agro-Climatic zone of Tamil Nadu was purposively selected as the study area, since number of farmers practicing organic farming and certified organic area are high in this region. An investigation has been conducted to study the cost effectiveness, soil status and productivity of organic turmeric cultivation in Erode district. The farmers of the region are using indigenous technical knowledge, bio inputs and compost for turmeric cultivation.

Soil samples collected from the farmers who has been practicing organic farming for more than 10 years was analyzed. Soil organic carbon content (1.58%) and organic matter (2.72%) of the organically grown soil is higher compared to conventional. Replenishing with organic manures on a regular basis will have the greatest impact on soil organic matter. The nutrients are very rich with pH (7.32), EC (0.26 dS/m). Productivity of turmeric was approximately 55-65 quintals per 2 acres, which contributes a B:C ratio of 3.21. The net income, ranges from Rs. 334,400 to 542,900 ha^{-1} in the organic turmeric fields holding 180% higher compared to conventionally grown turmeric, which is the indicator of an additional premium price obtained for the organic turmeric.


Mothbean as intercrop


Turmeric field ready for rhizome harvest


Enriched composting yard


Input preparation shed


Vermicompost bed


Ventury system used for fertigation of inputs


Collection of information

Figure 1: Indigenous inputs used by the farmers and Interviewing

Turmeric from organic farming is of high quality with big fingers and better aroma than conventional farming that fetched premium price for the produce. The curcumin and oleoresin content was high in organic turmeric 4. 8.1 % and 16.5 %, respectively. Organic farmers get a yield of up to 5-10 quintals more than chemical farming. This could be possible due to the availability of quality seeds, improved soil health by various organic inputs, multivarietal seed technique and mulching practices. Marketing of organic produce is a typical issue for the farmers. Under this situation, like minded organic turmeric growers gathered to establish farmers producing organization at Erode through which all the turmeric is collected and exported by meeting out all the standard certification demands. The members were benefited with this concept as their produce is being exported to European countries with premium price. In fact, for the past seven years, this farming network has been exporting nearly 160 tones of organic turmeric annually, which fetches around 12000 -12500 per quintal, compared to chemically-grown turmeric which has barely sold at around 6000 to 7000 per quintal. Ultimately the farmer income is doubled by adopting the indigenous cultivation practices.

Farmer's perception

With adherence to the above turmeric study, farmer's perception was also conducted in the Erode district, Tamil Nadu, which revealed that 65% of respondents had a positive perception towards organic farming. The farmers were interested in converting their cultivation practices to organic farming in the near future due to low production cost, premium price for produces and reduced risk of chemical exposure and increased health benefits. The farmers have claimed that during the initial days of conversion (for a period of 1 to 2 years) there was a fluctuation in yield and the investment was higher. Later on, they have identified their own flaws and sustained in a lucrative manner. However, this will not affect the large-scale farmers, but increased the risk of small farmers with major concern in yield reduction. Changes in the policy of organic farming during the conversion period with subsidy and incentives from the government can improve the conversion ratio. Facilities from the government for marketing and export can increase the produce movement with a reduction in the charges for quality analysis can fetch higher profit to the farmers. Demand for the organic turmeric is increasing due to the high quality and changes in taste and aroma among conventional turmeric. Availability of quality seed material for new organic farmers is the major concern in the initial days of conversion, since the local organic farmers share their seed material through their organization. This would be of greater impact if the Government would facilitate the availability of quality organic seed material at affordable price.

Reasons for adoption of organic farming as evinced through interaction with farmers were:

- Use of locally available farm waste
- No labour intensive activities except weeding
- Easy to manage
- The taste of organic products
- Satisfaction in producing ecosafe food.
- Service motto for saving environments
- Premium price for export
- **Constraints noticed were**
- Inadequate domestic market facilities for sale of Organic products.
- No assurance / guarantee price in the local market
- Weed is a menace in organic farming which a occupies a major share in the production cost and this is a limitation for organic farming in areas with the shortage of labour that increases the production cost. Thus required effective organic weed management technology with adequate training that can reduce the major risk faced by the farmers in the labor dependent practices and can increase the B:C ratio.
- Lengthy procedure, long duration for organic certification and record maintenance

Table 1. Relevant attributes of the organic inputs used by the turmeric farmers of Erode

Organic inputs	OC	N	P	K	Fe	Zn	Cu	Mn	TCB x 10^6 ml^{-1}	TCF x 10^3 ml^{-1}	ACT x 10^5 ml^{-1}
	Percentage		mg/kg or mg/L								
Farmyard manure	10.80	0.50	2000	5000	14.9	0.30	BDL	0.40	132	4	139
Enriched vermicompost	17.90	0.22	7500	8000	16.2	4.90	0.04	0.40	182	12	161
Panchagvaya	2.60	0.38	5.04	56	378	232.70	4.93	13.27	196	11	203
Archae bacterial solution*	0.52	280	1.62	10	47	3.43	0.93	2.87	176	8	223
Amudham solution*	0.30	0.08	1.53	26	29	2.57	1.73	1.40	42	19	56
*Agniasthara**	2.64	0.09	0.23	25	16	3.30	1.03	0.73	174	7	59
Jeevamirtham	8.54	0.13	0.49	107	53	30.47	5.63	1.93	121	9	148
Buttermilk solution*	1.63	0.03	0.88	96	42	3.40	2.40	1.70	138	4	97
A. amara leaves + Buttermilk solution*	5.94	0.04	0.45	118	73	11.70	0.87	2.87	265	17	158
Fish amino acid	8.20	0.02	8.48	97	118	38.20	3.07	4.83	226	10	198
Egg amino acid*	10.80	0.18	8.53	109	8	7.90	0.30	0.17	197	15	323
Vermiwash	24.10	0.89	7800	900	3	0.14	0.47	0.07	141	7	121
Fermented plant extract (FPE)*	17.08	0.03	0.73	28	36	4.27	3.33	2.43	72	11	61
Effective microbes formulation (EM2)	0.30	0.03	0.33	6.5	85	54.63	1.57	1.90	80	9	167
Goat *Panchagavya**	6.74	0.18	0.95	92	59	5.17	0.57	2.00	92	13	111
Treated cow urine*	1.63	0.20	0.73	91	18	2.17	0.63	0.50	194	10	113
Five leaf extract*	1.04	0.04	2.27	29	106	30.43	2.90	2.03	230	13	176

*First report; Abbreviation of the attributes is given in Materials and methods; BDL, Below detectable level

From pg. 11

4. Principle of care

Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. Organic agriculture is a living and dynamic system that responds to internal and external demands and conditions. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being. Consequently, new technologies need to be assessed and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken. This principle states that precaution and responsibility are the key concerns in management, development and technology choices in organic agriculture. Science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound. However, scientific knowledge alone is not sufficient. Practical experience, accumulated wisdom and traditional and indigenous knowledge offer valid solutions, tested by time. Organic agriculture should prevent significant risks by adopting appropriate technologies and rejecting unpredictable ones, such as genetic engineering. Decisions should reflect the values and needs of all who might be affected, through transparent and participatory processes.

RECESSION AND COOPERATIVES IN INDIA

India entered the period of economic recession on 27th November, 2020, as its GDP(Gross Domestic Product) contracted by 7.5% in the July-September quarter, when compared to the same period last year, according to National Statistical Office. It was reported that the country's GDP contracted by 23.9% when compared to 5.2% growth in the same period a year ago i.e., April-June. Two consecutive quarters of contraction in GDP growth (23.9%, and 7.5%) is considered as recession, technically.

A recession occurs when the growth of the economy falls below zero. The growth is the change in the value of goods and services produced in a year of a quarter. A recession is due to slowdown in the velocity of money, decrease in investment, a drop in demand for firms' products, lowering of returns on investments, limited access to credit, shutdown of industries or business houses, no alternatives or substitutions, etc. Agriculture has always been the backbone of the Indian economy. It has been providing employment to around 65% of the total workforce in the country. Indian agriculture has not been much impacted by recession. It has shown growth of 3%.

When tsunami occurs one cannot remain un-wet. Likewise, cooperatives too have to face the impact, even if not severely. According to Cornforth and others, 1988, financial crises may threaten cooperative values, hinder democratic principles in favour of market interests, and foster a degeneration process, which may lead to the failure of such democratic organizations in the long run. But the cooperatives in India can reverse these statements as culture and ethics of people are unique. Further, we have to recall the basics strength of cooperatives as felt by Raiffeisen.

During agricultural depression in 1860s in Germany, a social reformer, Friedrich Raiffeisen, provided emergency food aid to hungry farmers and their families, but then realized that what they really needed was credit to help them to modernize their methods and gain access to markets for their procude.

He designed a new type of savings and credit cooperative which was enthusiastically taken up by the farmers. The idea of rural cooperative band spread throughout mainland Europe, and led to promotion of supply and marketing cooperatives. Together, they helped develop the modern farm economy.

Recession can do real damage to banks via credit losses, declines in the value of other investments, reductions in new business revenues, etc. Even worse, the situation can spiral downward as damage to bank cuts into credit availability. Cooperatives have to prepare themselves to get ready to reduce its impacts, especially the cooperative banks, i.e., urban cooperative banks and state cooperative banks. Though viable projects should be funded; strict financial discipline is a must. The banks may reduce interest rates on deposits and emphasize on quick and timely implementation of government schemes. The cooperative banks have to cut the operational costs as they cannot cut the fixed costs. No new recruitments shall be invited, rather these institutions have to depend more on technologies to increase operational efficiencies. The PACS have to find more new business avenues and initiate local based multi-services.

The housing cooperatives shall not go for risky venture. Historically, in times of a recession, households attempt to preserve cash, postpone travel plans, and delay big-ticket purchases such as automobiles or large electronics, instead of adopting a 'wait and watch' approach which, ultimately, perpetuates the negative cyclical effect. As the members of the housing cooperatives, they try to keep funds in reserve, and they do not have a tendency to spend for huge investments. They rather concentrate on daily needs.

In Sweden, after the price collapse of 1930, instead of cooperatives giving way to state marketing boards, cooperative federations took control of farm credit, dairy, forestry, eggs, meat and fruit, presided over by a strong National Union of Swedish Farmers. Another example is that of USA and Canada. During depression

Source - The Co-operator Jan - 2021

when the farm prices in the US and Canada fell, a new type of cooperative was devised that aligns farmer share ownership to delivery rights, thus enabling farmers to go into food processing. There are around 200 of these 'new generation' cooperatives, and they have raised the incomes of farmers dramatically and revitalized the local economies of North Dakota, Minnesota and neighbouring states.

The severe recession experienced in Finland in the early 1990s after the Soviet Union collapsed led in part to unemployment reaching more than 20% of the population. The response was a 'new wave' of worker cooperatives promoted and supported by the Ministry of Labour and the Finish Cooperative Movement which led to over 1200 labour cooperatives designed to get unemployed people back into work. The same thing may be replicated in India also where the labour force has faced the problems during COVID-19.

There will be less impact on agricultural based cooperatives as they are fulfilling the basic needs of people. Cooperative businesses stabilize communities because they are community-based business organizations. They distribute, recycle, and multiply local expertise and capital within a community. The cooperatives by nature pool in limited resources to achieve their simple objectives for which they exit. The Cooperative enable their owners to generate income, create jobs, accumulate assets, provide affordable goods/services, develop human capital, and create social capital for economic independence.

Agricultural cooperatives shall go for processing and value addition, where they can earn more profits and can reach new markets. Labour contract cooperatives are mostly affected by recession. The labour cooperatives have to give training to their members on different skill-based activities so as to take contracts easily. Not in the recession, even in the non-recession period also, labour cooperatives have not shown much interest on skill development. They remained unskilled most of the time. Efforts are required to use skill development institutions set up by Government of India. Based on a study, the following table indicates whether there is positive or negative impact on various types of cooperatives.

The Atmanibhar Bharat stimulus package announced by Government of India was referred by financial experts as 1% of GDP which is less when compared to other countries. In the centre's original stimulus package, provisions were made for food rations and some monetary support was provided to the nation's worst-affected communities, but the absence of a dedicated social welfare net means that the actual slump in GDP growth could be even higher than that predicted by the World bank.

However, the cooperatives have to use this package effectively, especially agriculture and marketing cooperatives by setting up processing units which increase more returns to the farmers. An action plan of all the cooperatives is indispensable for their preparedness in taking up suitable action in the wake of changes that are taking place in the activities of the societies. The cooperatives have to find innovative opportunities which suit the local needs of the members of the cooperatives. The cooperative model provides comparative advantages, but there is no magic formula for success. The hard work out in by the cooperatives, made the Green Revolution and White Revolution successful which was made possible with a vast network and reach of the cooperatives in India. Likewise all the cooperatives have to work hard, change business models, diversify their activities to make the movement surge ahead.

Table

Urban cooperative Bank (UCBs)	Marginal negative impact
Tribal Cooperatives	No negative impact
Toddy Tappers Cooperative society	No negative impact
State Cooperative Marketing Federations	No negative impact
Sheep and Goat Cooperative society	No negative impact
Rural Irrigative Cooperatives/water users Cooperatives	No negative impact
Rural Electric Cooperative Society	No negative impact
Primary Dairy Cooperative Societies	No negative impact
Primary Agriculatural Cooperative Societies (PACs) (Short Term Lending Function)	No negative impact
Primary Agricultural Rural Development Cooperative Soceities (Long Term Lending Function)	Marginal negative impact
Mandala Mahila Sahakata Samakya	Marginal negative impact
Labour contract Cooperative society	Negative impact
Industrial Cooperative Society	Negative impact
Handloom Weavers Cooperative Societies (HWCS)	Negative impact
Fruit and Vegetable Cooperative Societies	No negative impact
Fishery Cooperative Societies (FCS)	No negative impact
Farmers Producers Organization (FPOs) registered Under Cooperative societies Act	No negative impact
Employees Cooperative society	No negative impact
District Cooperative Milk Unions	No negative impact
District Cooperative Marketing Society (DCMS)	No negative impact
District Cooperative Central Bank (DCCB)	Marginal negative impact
Cooperative Joint Farming Society	No negative impact
Consumer Cooperative society	No negative impact
Washerman Cooperative society	No negative impact
Handicraft Cooperatives	Negative impact
Housing Cooperative society	Negative impact

THE KARNATAKA STATE CO-OPERATIVE AGRICULTURE AND RURAL DEVELOPMENT BANK LTD.

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RECIPIENT OF FIRST EVER INDIRA PRIYADARSHINI VRIKSHA MITRA AWARD PROUDLY ANNOUNCES JUST A FEW OF ITS RESPLENDENT ACHIEVEMENTS

Advances (From inception to 31-12-2020)	Over ₹6345.80 crores
No. of loan cases sanctioned as on 31-12-2020	₹18.76 lakhs
Share of Small & Marginal Farmers in Bank's financial assistance.	₹68.82%
Fixed Deposits outstanding as on 30-09-2020	**₹424.17 Crores**

Strikingly Innovative Programmes Introduced By The Bank

- Non-Farming Rural Enterprises, Rural Housing, S.R.T.O.
- Sericulture, Integrated Horticulture/ Floriculture, Medicinal Plants, Individual Dairy Development and Sheep / Goat rearing / Poultry / Piggery / Rabbit Rearing / Fisheries and Fishing Boat
- Big and Small Lift Irrigation Schemes
- Rural Godowns / Agri Clinic & Agri Business Centres
- Purchase of Agriculture Lands
- Solar Lights / Solar Pumps
- Purchase of Two Wheelers
- Rain Water Harvesting Structures
- Vermi Compost Units
- Bio-digester
- Farm Mechanisation
- Combined Harvester
- JCB/Dozers
- Coffee curing, Drying yards (Paddy, Areca, Coffee etc.)
- Agricultural Implements
- Gold Loans, Salary Loans etc.

Our Bank Accepts Fixed Deposits

1. For 91 days 6%
2. For 181 days 7%
3. One year and upto 2 years 8.40%
4. Two year and above 8.50%
5. 0.25% additional Interest to senior citizens

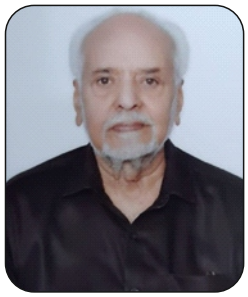
- Bank Advances Gold loan (11%), Vehicle loan(12%), Salary loan(14%), House Mortgage loan(13%), at attractive rate of interest.
- Safe Deposit Locker Facility is available.
- House and Site mortgage loan in Urban area.

Strengthen The Farmers' Bank

FOR DETAILS, PLEASE CONTACT US OR OUR BRANCH OFFICES OR ANY PRIMARY CO-OPERATIVE AGRICULTURE AND RURAL DEVELOPMENT BANK IN THE STATE.

D. Krishna Kumar President	**K.N Nanjundegowda K.C.S** Secretary	**Dr. K C Yathish Kumar, K.C.S.,** Managing Director

DR. B.S. VISHWANATHAN



Dr. B.S. Vishwanathan, the living legend of cooperative movement is completing six decades of service to people through cooperatives. Starting his association with the cooperatives at the grass roots, he occupied leadership positions in a number of State and National level Cooperatives as well as in International Cooperative Alliance for many decades. He was Chairman of our Federation for 18 years since 1973. On this momentous occasion we present here a brief account of his inspiring life and accomplishments.

Dr. Vishwanathan is a multi-faceted personality and his varied interests encompass many spheres of life. While being a man of principles, he is notable for his dedication to public service, discipline in conduct, enthusiasm towards life, concern for farmers and compassion for the poor. The soft spoken veteran has also no lesser interest in literature, music, dance and other fine arts. Born in a respectable agricultural family on 6th January 1934 in Shimoga district Tirthahalli of Karnataka, Shri Vishwanathan had his primary education at his native place and did his graduation in Commerce from St. Joseph's College in Bengaluru. Shri Vishwanathan imbibed his concern and compassion for farmers from his father. The year 1963 was a turning point in his life when he got elected as a Director to the local Primary Agricultural Development Bank, Thirthahalli. The very next year, he became the President of the Bank and remained in that position for 14 years. Shri B.S. Vishwanathan was elected as President of the Karnataka State Cooperative Union in 1981. He guided the destiny of this organization which was later on converted as Cooperative Federation, making cooperative education, training and publicity a powerful tool to develop the movement and became instrumental to attract a large number of youths and women to the movement. After getting elected to the Governing Council of National Cooperative Union of India, Shri Vishwanathan became its President in the year 1978 which marked the beginning of a new era of all round growth of cooperative movement in the country and its dominant presence and enhanced role in regional and global movements. He occupied the position of President NCUI for 14 years in two spells. He was elected to the Board of Directors of Karnataka State Cooperative Agriculture & Rural Development Bank in 1973. He was in the Board of the bank continuously for 50 years since then and was President of the Bank for 23 years. During this period, he became the Chairman of National Cooperative Agriculture & Rural Development Banks' Federation Ltd. for 18 years and made tremendous contributions to strengthen institutions in the Long Term Cooperative Credit Structure. He represented India in the International Cooperative Alliance for a record period of 27 years without interruption and also rendered appreciable services as President of Asia Pacific Regional Assembly and Chairperson of Regional Cooperative Banking Association during this period. His association with International Raiffeisen Union as a Member on its Board for 27 years and his 42 years long tenure as the Director on the Board of Indian Farmers Fertilizer Cooperative Ltd. (IFFCO) are rare achievements for any individual cooperator. He is the founder of National

Institute for Rural Banking with the funding support of Rabobank, Netherlands and the Long Term Cooperative Credit Structure. He continues to be its Chairman for 30 years making it a prestigious and successful organisation in developing human resources of cooperative credit and banking institutions. Dr. Vishwanathan is an eminent legislator who served as the Member of Legislative Council of Karnataka for two terms, for a period of 12 years. He was also a member of the Senate and Syndicate of the Mysore University. Likewise a visionary leader, he is also the founder of a number of institutions in the Cooperative Sector. National Institute of Rural Banking, Bengaluru; National Film and Fine Arts Cooperative, New Delhi; Karnataka State Film and Fine Arts Cooperative, Bengaluru and CICOPA, Bangalore which is affiliated to International Organisation of Industrial, Artisanal and Service Producers' Cooperatives, are among institutions which came in to being at his initiative. Dr. Vishwanathan continues to patronize and foster these institutions even today. His interest in music made him to organize a number of musical events and to work with eminent musicians like R.K. Padmanabha to reinvent and preserve the great contribution of Purandaradas in music for future generations. Dr. Vishwanthan was conferred with a doctorate by Kuvempu University in recognition of his outstanding contributions in various fields. We wish Dr. Vishwanathan many more years of active public life.

SHRI KONDURU RAVINDER RAO ELECTED AS CHAIRMAN, NAFSCOB

Shri Konduru Ravinder Rao, President, Telangana State Cooperative Apex Bank Ltd. and Vice Chairman of National Cooperative Agriculture & Rural Development Banks' Federation Ltd. (NAFCARD) has been elected as Chairman of National Federation of State Cooperative Banks Ltd. (NAFSCOB), Mumbai in elections held on 29 December 2020. Mr. Rao who started his career as a Journalist, later on worked as an Executive in TATASONS for a few years before returning to his native place as a full time farmer and social worker.

He soon became active in cooperative movement through his association with local primary agricultural credit society. Mr. Rao was elected as President of Karimnagar District Central Cooperative Bank in 2005 and still holding that position through consecutive re-elections. He is the President of Telangana State Cooperative Apex Bank Ltd. since 2015. Under his leadership, Karimnagar DCCB achieved a remarkable turn-around from heavy accumulated losses to one of the financially strongest DCCBs in the country. Mr. Rao was also instrumental in converting Primary Agricultural Credit Societies across the State of Telangana as Multi Service Centres providing almost every type of credit and non credit services to farmers at their doorstep. Shri Rao was also elected as a Member on the Board of International Cooperative Banking Association in 2019.

161st Meeting of the Board of Management

The 161st Meeting of Board of Management of the Federation was held on 12th October 2020 in virtual mode. Shri K. Sivadasan Nair, Chairman presided over the meeting. Vice Chairpersons Shri K. Shadakshari and Shri K. Ravinder Rao, also participated in the meeting. The Board decided to reorient the lending policies of ARDBs to meet the credit needs of members adequately on the background of covid crisis.

Annual General Meeting of the Federation

The Annual General Meeting of the Federation was held on 26th October 2020 through video conferencing. Shri K. Sivadasan Nair, Chairman chaired the meeting. The meeting approved the Annual Report 2019-20, Audit Report and Annual Accounts 2019-20 and other statutory business.

Online Training programme for ARDBs Officers on Reorienting Operations of the ARDBs during 9th to 11th November 2020

The Federation in collaboration with the National Institute for Rural Banking, (NIRB) Bangalore organized a three day Online Training Programme for Junior/Middle level Officers of ARDBs including Secretaries of PCARDBs and Managers In-charge of Branches of Unitary SCARDBs during 9th to 11th November 2020. The objective of the Training programme was stepping up the pace of functional reforms in the sector and reorienting the operations of ARDBs in the context of Covid 19 pandemic. 28 Officers from 7 member banks actively participated in the online training programme.

Meeting with Chairman and Dy. Managing Director, NABARD

Shri K. Sivadasan Nair, Chairman and Shri K.K. Ravindran, Managing Director met NABARD Chairman Dr. G.R. Chintala and Dy. Managing Directors Shri K.V. Shaji and Shri P.V.S. Surya Kumar for discussions on policy reforms relating to ARDB sector. Suggestions made by the Federation included grace period for repayment of refinance, funding support for sanctioning cash credit limit to long term borrowers and support for capacity building of staff in States where JLTCs are not functional.

162nd Meeting of the Board of Management

The 162nd Meeting of the Board of Management of the Federation was held on 30th December 2020 at Hotel Courtyard by Marriott, Mumbai. Shri K. Sivadasan Nair, Chairman, presided over the meeting. Vice Chairperson Shri K. Ravinder Rao also participated in the meeting. An important decision in the meeting was to organize State Level Seminars to finalise action plans for stepping up lending and recovery which have suffered serious setback due to lockdown and loan moratorium declared by RBI.

National Seminar on Reorienting Lending Policies of ARDBs

The Federation organized National Seminar on Reorienting Lending Policies of ARDBs on 30th December 2020 at Hotel Courtyard by Marriott, Mumbai. The objective of the seminar was to frame guidelines to reorient lending policies of ARDBs to facilitate business diversification and expansion according to the needs of members.

Constitution of High Level Expert Committee to revamp the functioning of Tamil Nadu CSARDB

Government of Tamil Nadu vide its communication No. G.O(Ms) No.133 dt. 12.11.2020, has constituted a High Level Expert Committee to revamp the functioning of Tamil Nadu CSARDB with experts from

various fields. M.D. Federation had interacted with the Committee on 9th January 2021 regarding Federation's views on the terms of reference of the Committee.

Appointments/Elections

1) Shri K. Sivadasan Nair, Chairman was elected as Vice-President of NCUI in the Elections held on 23rd November 2020.

2) Shri Dileep Sanghani, Ex-MP was elected as new President of NCUI in place of Dr. Chandra Pal Singh who completed two terms as President.

3) Shri Konduru Ravinder Rao, President, Telangana SCAB and Vice-Chairman of NCARDB Federation was elected as Chairman of National Federation of State Cooperative Bank Ltd. (NAFSCOB) in Elections held on 29th Dec. 2020.

4) Shri Waibha K. Kyndiah is elected as Chairman of the Meghalaya Cooperative Apex Bank Ltd., 29th December 2020.

5) Shri D. Krishna Kumar was elected on 8th January 2021as new President of Karnataka SCARDB

MoS for agriculture Parshottam Rupala launches 'Ayushman Sahakar'

The minister of state for agriculture Parshottam Rupala, launched 'Ayushman Sahakar' scheme to help cooperatives contribute to creation of healthcare infrastructure in the country under National Cooperative Development Corporation (NCDC), which would lend Rs 10,000 crore for the purpose. NCDC, set up in 1963 for promotion and development of cooperatives, has extended around Rs.1.60 lakh crore as loans to cooperatives. “The ongoing pandemic has brought into focus the requirement of creation of more facilities. NCDC's scheme will be a step towards strengthening farmers welfare activities by the centre,” he said. Ayushman Sahakar specifically covers establishment, modernization, expansion, repairs, renovation of hospital and healthcare and education infrastructure encompassing hospitals, medical and nursing colleges, yoga centres, diagnostic centres, health insurance services and other medical and health related services authorised by the government. The managing director of NCDC Sundeep Nayak said that there are about 52 hospitals across the country run by cooperatives having cumulative bed strength of more than 5,000. “The NCDC fund would give a boost to provision of healthcare services by cooperatives. In line with National Digital Health Mission, Ayushman Sahakar would bring transformation in rural areas due to its strong presence,” he said. Nayak said that any cooperative society with suitable provision in its byelaws to undertake healthcare related activities would be able to access the NCDC fund. “The scheme also provides working capital and margin money to meet operational requirements. The scheme provides interest subvention of one percent to women majority cooperatives,” he said.

Atmanirbhar Bharat 3.0: Fresh allocation to help fertiliser cos clear dues

The fertiliser industry said it expects major gains from finance minister Nirmala Sitharaman's announcement of a Rs 65,000 crore stimulus for the sector in the upcoming crop season. Satish Chander, director general of the Fertiliser Association of India, said the additional allocation will easily take care of the industry's pending payments as well as this year's subsidy amount. “There is an outstanding of around Rs 47,000 crore. The subsidy this year is likely to be over Rs 80,000 crore. The industry will be needing some additional funds to fulfil banking arrangements also. We are grateful to the government for this much-needed stimulus,” said Chander. The FM said stimulus of Rs 65,000 crore will help 140 million farmers get increased supply of subsidised fertiliser.

Bharat Financial Inclusion Ltd ties up with the Maharashtra government to provide livestock care

IndusInd Bank said its subsidiary firm Bharat Financial Inclusion Ltd (BFIL) has signed a pact with Maharashtra government to enhance doorstep delivery of livestock care to farmers in the state. The joint initiative 'Maha Pashudhan Sanjeevani' -- to be implemented under the Mukhyamantri Pashu Swasthya Yojana -- will also ensure all veterinary services available for farmers at just a phone call and the toll-free number 1962 will be operational from January 2021, it said in a statement. BFIL signed the agreement to offer its support for 'Maha Pashudhan Sanjeevani' as part of its corporate social responsibility in the presence of Maharashtra Animal Husbandry Minister Sunil Kedar, Sports and Youth Minister Anoop Kumar and officials of the state government and IndusInd Bank. The first phase of the initiative will

serve farmers in 81 talukas located in 31 districts of Maharashtra, which has a total cattle population of 1.96 crore. The field veterinary services of the state government will be deployed through an integrated telemedicine and service management platform developed by BFIL. The doorstep veterinary services will have curative treatment, vaccination, artificial insemination, preventive care and all animal husbandry related information, it added.

185 sugar mills, distilleries get nod for Rs 12,500 crore loans to set up ethanol units

The Food Ministry said it has given in-principle approval to 185 sugar mills and standalone distilleries to avail Rs 12,500 crore of loans for capacity addition of about 468 crore litre of ethanol per annum as part of its efforts to achieve 20 per cent blending with petrol. In the last two years, 70 ethanol projects were sanctioned loans of Rs 3,600 crore. Apart from promoting ethanol production from sugarcane, the ministry is making efforts to manufacture ethanol using surplus rice with state-owned FCI as well as maize. The move is aimed at boosting ethanol blending with petrol, which currently stands at nearly 5 per cent. "Under the ethanol interest subvention scheme for molasses-based distilleries, the government in September 2020 has opened a window for 30 days to invite more applications from sugar mills/ distilleries, which were examined by DFPD... "about 185 applicants (85 sugar mills and 100 molasses-based standalone distilleries) are being granted in-principle approval for availing loan amount of Rs 12,500 crore for capacity addition of about 468 crore litres per annum," the Food Ministry said in a statement. These projects would be completed in another 3-4 years, thus help in achieving the desired blending target, it added. In the normal sugar season, about 320 lakh tonnes of sugar is produced against domestic consumption of 260 lakh tonnes. This 60 lakh tonnes of surplus sugar which remains unsold, blocks funds of sugar mills to the tune of about Rs 19,000 crore every year, thereby affecting liquidity positions of sugar mills resulting in accumulation of cane price arrears of farmers, the ministry said. To deal with surplus sugar stocks, the government is providing financial assistance to mills for the export of sweetener. However, India being a developing country can export sugar by extending financial assistance for marketing and transport only up to 2023 as per WTO arrangements, the statement said. For long term solution to deal with surplus sugar, the government has been encouraging diversion of excess sugarcane & sugar to ethanol for supplying to Oil Marketing Companies (OMCs) for blending with petrol. The move would not only reduce import dependency on crude oil but will also enhance the income of sugarcane farmers. The ministry said that the government had earlier fixed a target of 10 per cent blending of fuel-grade ethanol with petrol by 2022 and 20 per cent blending by 2030 but now it is preparing a plan to pre-pone achievement of 20 per cent blending target. The government is encouraging sugar mills, distilleries and entrepreneurs to set up new distilleries and to expand their existing distillation capacities. It is extending financial assistance by way of interest subvention for 5 years at 6 per cent maximum rate of interest against the loans availed by sugar mills/distilleries from banks for setting up their projects. The existing installed capacity of molasses-based distilleries has reached to 426 crore litres. As the blending targets cannot be achieved only by diverting sugarcane/sugar to ethanol, the food ministry said that the government is

encouraging distilleries to produce ethanol from other feedstocks like grains. "Therefore, concerted efforts are being made by Government to enhance ethanol distillation capacity in the country by 720 crore litre for producing ethanol from 1st Generation (1G) feedstocks like sugarcane, molasses, grains, sugar beet, sweet sorghum etc," the statement said. However, in 2020-21, the target is to supply 325 crore litres of ethanol to OMCs for achieving 8.5 per cent blending. In the ethanol supply year 2021-22 ending in November 2022, the target is to achieve 10 per cent blending. "In next few years with 20% ethanol blending with petrol, Government will be able to reduce import of crude oil, a step towards being Atma Nirbhar in the petroleum sector and this will also help in increasing the income of farmers and creating additional employment in distilleries," the statement said.

Cotton arrival hits decade-high of 3,10,000 bales after domestic prices jump 25 percent

Raw cotton prices have increased about 25% to Rs 5,000-6,000 per quintal in two months following a rise in international prices. This has led to farmers rushing to the markets, taking the daily arrivals to 310,000 bales , highest in a decade, said the Cotton Association of India (CAI). Total cotton arrivals in the market till November 21 amounted to seven million bales, one million bales more than in the year-ago period, according to the CAI. “After having a sluggish market for three years, there are many positive indicators that support a firm trend in cotton prices. Cotton supply will not be surplus this year, as demand is reviving while supply will be smaller than expected earlier," said Pradeep Jain, president, Khandesh Ginning and Pressing Association. Cotton prices also received support from the increase in prices of cotton seed used to produce oil, which moved upwards in tandem with prices of the edible oil complex. “Along with other reasons, increase in prices of cotton seed by about 10% has supported the increase in cotton seed prices,” said Atul Ganatra, president, CAI. The government agency Cotton Corporation of India has begun cotton procurement in 10 states, which led to an increase in open market prices. The minimum support price for long staple cotton is Rs 5,825 per quintal for kharif 2020. Increase in prices may hit exports in the short term. “India shipped 7 lakh bales in October. We were expecting to export 8-9 lakh bales in November which may decline to about 5-6 lakh bales as our prices have increased,” said Ganatra. However, Bangladesh, the biggest buyer of Indian cotton, will continue to buy Indian cotton. “Thanks to the shortest lead time due to the proximity of the two countries, Bangladesh will continue to import Indian cotton," said Sultan Riaz Chaudhury, president Bangladesh Cotton Association.

Govt's ethanol push prompts sugar mills to raise production

The Centre's push for ethanol seems to have encouraged the sugar factories to increase cane crushing, as 149 mills in Maharashtra have produced 109 lakh quintal sugar within a fortnight of the beginning of the crushing season this year, an official said. The Centre had, in 2018, allowed sugar mills to produce ethanol directly from sugarcane juice, unlike earlier when there was a restriction on using molasses as base. Recently, the Union government had decided to allow use of old stock of wheat and rice for ethanol production that can be blended with petrol and diesel. "The mills this year have decided to produce certain

quantity of ethanol to be sold in the domestic market. It means that there will not be any glut of sugar in the market. There will be limited surplus stock of it this year," Maharashtra Sugar Commissioner Shekhar Gaikwad said. The Centre has floated tenders seeking supply of 350 crore litres of ethanol to be blended with vehicle fuel. So far, sugar mills across the country have expressed willingness to produce 322 crore litres of ethanol. As per the figures, by the end of the season last year, 147 mills- 79 cooperative and 68 private- had crushed 545.26 lakh tonnes of sugarcane and produced 66.61 lakh tonne sugar. This year, 79 cooperative and 70 private mills have started cane crushing and produced 109 lakh quintal sugar from 131 lakh tonne crushing till now, the data showed. "The cane crushing and sugar production figures will jump in December as more mills join. Once these factories start operations, sugarcane crushing will go up further," Gaikwad said.

Interest subvention on MSME loans extended till end of March 2021

The 2% interest subvention scheme for micro, small and medium enterprises (MSMEs) on loans extended by co-operative banks has been extended till March 31 next year, the Reserve Bank of India said. The terms of the scheme have also been tweaked. The government had announced the 'Interest Subvention Scheme for MSMEs 2018' in November 2018 for scheduled commercial banks for two financial years 2018-19 and 2019-20. It has been extended for the financial year 2020-21. Co-operative banks also became as eligible lending institutions effective from March 3, 2020. The coverage of the scheme is limited to all term loans and working capital to the extent of Rs 100 lakh. The scheme provides for an interest relief of two percent per annum to eligible MSMEs. In notification, the RBI said certain operational guidelines for the scheme have been further modified by the government. The validity of the scheme has been extended till March 31, 2021. "Accordingly, fresh or incremental term loan/ working capital limit extended by co-operative banks with effect from March 3, 2020 will be eligible for coverage under the scheme," RBI said. Further, requirement of Udyog Aadhaar Number (UAN) may be dispensed with for units eligible for GST. Units not required to obtain GST may either submit Income Tax Permanent Account Number (PAN) or their loan account must be categorised as MSME by the concerned bank, the RBI said. RBI has asked co-operative banks to take appropriate action as envisaged in the operational guidelines and issue necessary instructions to their branches or controlling offices for successful implementation of the scheme. As per the scheme, the loan accounts on the date of filing claim should not have been declared as non-performing assets (NPAs). No interest subvention would be admissible for any period during which the account remains NPA.

Create aggregation points for farm & MSME items, do minimal inspections: Piyush Goyal to states

Commerce and industry minister Piyush Goyal has asked all states and Union Territories to create aggregation points for farm produce and products from micro, small and medium enterprises (MSMEs), move towards minimal inspections and truck stoppages, and establish logistics parks with truck parking and warehousing facilities. Goyal also asked all states and UTs to develop state logistics plans and create cells, besides identifying the top five challenges in the logistics sector. “In the backdrop of Aatmanirbhar Bharat- building a self-reliant India and in response to supply chain disruptions during the Covid-19 pandemic, there is now increased focus on

Continued on Pg 44

NABARD to refinance Rs.3000-cr. to SCARDBS

The National Bank for Agriculture and Rural Development (NABARD) has allocated Rs.3,000/- crores to State Coop. Agriculture & Rural Development Banks under long term refinance during F.Y. 2021 which includes refinance under Long Term Rural Credit Fund @2.9% p.a. and Special Liquidity Facility to enable the SCARDBs to continue their lending in agriculture and allied sector and hide over the fund crisis due to loan moratorium.

Fertilizers to be delivered at the doorstep of farmers

Farmers now can get the fertilizers purchased from their nearest Rythu Bharosa Kendras (RBKs) by sending SMS delivered at their doorsteps as Chief Minister Y.S. Jagan Mohan Reddy, along with Union Minister for Fertilizers Sadananda Gowda and Agriculture Minister K. Kanna Babu, launched the initiative in virtual mode. A Point of Sale (POS) 3.1 software and an SMS Gateway were also launched on the occasion. “Farmer can place orders for seeds, fertilizers by sending SMS to their nearest RBKs through digital kiosks. The fertilizers will be delivered at the doorsteps of farmers within 24 to 48 hours,” said the Chief Minister after launching the initiatives. The smart TVs at the RBKs are being used to impart training to farmers. A special call centre with number 155251 has been launched and the call centre has received 46,500 calls till date. I am happy that the RBKs are functioning as market intelligence centres, providing information to the farmers about MSPs among other things, he said. “Farmers will be the biggest beneficiaries if quality seeds and fertilizers are provided at their doorstep. As many as 10,641 RBKs across the State are functioning as the single point of contact for agriculture and allied activities. Each RBK has a digital kiosk, smart TV, white board, digital library and the equipment necessary for soil testing,” said Mr. Jagan Mohan Reddy.

Farm budget increased 11-folds to Rs 1.34 lakh cr from FY10 : Santosh Gangwar

Labour Minister Santosh Gangwar said budget of the agriculture ministry has been increased 11-folds to Rs 1.34 lakh crore from Rs 12,000 crore in 2009-10. The increase in the agriculture ministry budget indicates a considerable rise in government spending on procurement of foodgrain and other farm produce at crop support price. The MSP insulates farmers from market fluctuations. "The budget of the agriculture ministry was just Rs 12,000 crore in 2009-10, which has been increased 11-folds to Rs 1.34 lakh crore because of the commitment of the Prime Minister towards farmers and agriculture," the minister said. He was speaking at 4th Annual Convention - Virtual on Capital Market & Commodity Market: Role of Financial Markets in Building Aatmanirbhar Bharat by PHDCCI. He appealed to the industry leaders to provide support to the government for economic progress for achieving ultimate goal of making India a USD 5 trillion economy.

Rajasthan govt extends interest waiver scheme for agriculture traders till December 31

In a relief to agriculture traders in Rajasthan, Chief Minister Ashok Gehlot extended the interest waiver scheme till December 31 for the recovery of outstanding amount towards the committees. Gehlot has agreed to the proposal of the Department of Agricultural Marketing in view of the COVID-19

pandemic. According to the proposal, till September 30, a total amount of Rs 68 crore were outstanding dues, including mandi and allocation fees and other arrears from the various agricultural committees of the state. Under the interest waiver scheme, 75 per cent exemption was given on the deposit of the entire principal balance and 25 per cent of the interest due on it till March 31, 2020. The duration of the scheme has been extended on the demand of various trade associations. This decision will provide relief to traders of fruits and vegetables and agricultural produce markets, a statement said. Gehlot also approved the proposal to waive mandi and farmers welfare fees for the purchase of pulses and oilseeds at the minimum support price in the upcoming Kharif season 2020-21. He has given approval to issue a notification in this regard. According to the guidelines issued by the central government, approval has been given to waive these charges for purchase, transportation, storage and sale of moong, urad, groundnut and soyabean at support price in the Kharif season in the state.

Govt asks agro-chemicals industry to come out with new molecules

The government asked the agro-chemicals industry to come out with new molecules of global standards for the farmers' benefit, while industry body CropLife India pitched for stable policy and regulatory regime to boost the growth of the sector. Addressing a digital conference, Minister of State for Agriculture Parshottam Rupala said: "The crop protection industry should share propositions to make crop protection products which are newer, safer and more effective, for the benefit of the farmers". Rupala said the government is also looking at a cluster approach for imparting quality education and extension services for the farmers and asked the industry to support this initiative. Going forward, globally accepted policy incentives such as data protection, digital technology (drones and services solutions) from industry and channel partners will help achieve the goals, he added. India needs new molecules, which are safe and effective. The industry needs to come forward and submit the list of such molecules, including higher active ingredients aligned with international standards, Agriculture Commissioner S K Malhotra noted.

India takes up cultivation of Heeng for the first time, the move will be game changer in cold desert region

Heeng (asafoetida) is being used in Indian cuisine since time immemorial, but one of the most valuable spices of the world could not take its root, literally, in the country till last week when it was taken up for cultivation for the first time by farmers of the remote Lahaul valley in Himachal Pradesh with the help of agro-technology developed by a Palampur-based CSIR institution. The first seedling of asafoetida was planted in village Kwaring of Lahaul valley on October 15 to mark initiation of its cultivation in India. Heeng is one of the top condiments and is a high value spice crop in India which last year imported about 1500 tonnes of raw asafoetida from Afghanistan, Iran and Uzbekistan and spent Rs 942 crore. Since lack of planting material of Ferula asafoetida plants in India was a major bottleneck in cultivation of this crop, the CSIR's Palamur-based Institute of Himalayan Bioresource Technology (IHBT) had brought in its seeds and developed its agro-technology. “The plant prefers cold and dry conditions for its growth. So, it can be cultivated in cold desert areas of Indian Himalayan region -- Ladakh and certain areas of Himachal Pradesh, Uttarakhand and Arunachal Pradesh. The cultivation of Heeng has potential to change the

economic condition of people in these areas," Sanjay Kumar, director, CSIR-IHBT, told. Asked about cost of cultivation and net returns to farmers, Kumar said, "It'll cost farmers nearly Rs 3 lakh per hectares over next five years and give them a net return of minimum Rs 10 lakh from fifth year onwards. We will in collaboration with state government provide support to farmers with finance and technical know-how. It'll be a game changer for farmers in cold desert region of the country." The IHBT has introduced six accessions of Heeng rom Iran through the National Bureau of Plant Genetic Resources (NBPGR), New Delhi, and standardized its production protocols under Indian conditions. It's a perennial plant and it produces oleo-gum resin from the roots after five years of plantation. It can be grown in unutilized sloppy land of cold desert region. Raw asafoetida is extracted from the fleshy roots of Ferula asafoetida as an oleo-gum resin. Kumar said the IHBT has organized training programmes on asafoetida cultivation and laid out demonstration plots in villages of Madgran, Beeling and Keylong in Lahaul valley of Himachal Pradesh for establishment of seed production chain and its cultivation at commercial scale. The Institute has initially identified 300 hectares for cultivation of asafoetida. It can be expanded to more areas once farmers would successfully complete a cycle of five year and see its results. Although, there are about 130 species of Ferula found in the world, but only Ferula asafoetida is the economically important species used for the production of Heeng. "In India, we do not have Ferula asafoetida. Other species are reported from the western Himalaya (Chamba, HP), and from Kashmir and Ladakh. But, these are not the species that yield asafoetida," said Kumar.

Govt asks FCI to tie up with rice mills to boost supply of fortified rice

The government said state-run Food Corporation of India (FCI) has been asked to tie up with rice mills for increasing supply of fortified rice via ration shops and other welfare schemes. Currently, out of the 15 states identified for 'Central scheme on fortified rice and its distribution via public distribution system (PDS)', five states are implementing it in one district each. Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu and Chhattisgarh have started distribution of fortified rice in their respective identified districts. The way to scale up the central scheme was discussed in a meeting held between NITI Aayog CEO Amitabh Kant and Department of Food and Public Distribution Secretary Sudhanshu Pandey and other stakeholders like Tata Trust, World Food Programme, Nutrition International, among others, the Food Ministry said in a statement. It was felt that "there is a need to scale up the supply of Fortified Rice Kernels (FRK), whose availability currently is at a meagre quantity of 15,000 tonnes per annum," it said. The operational readiness of FCI would help in successfully scaling up procurement and supply of fortified rice in a phased manner from 2021-2022 onwards, it added. It was observed that covering 112 aspirational districts for PDS, ICDS and MDM scheme would mean a requirement of nearly 130 lakh tonnes of fortified rice for which FRK supply capacity in the country needs to go up to nearly 1.3 lakh tonnes. If the entire rice supplied through PDS, which comes to 350 lakh tonnes, is to be fortified, there has to be an uninterrupted supply pipeline of FRK from the industry of about 3.5 lakh tonnes, the statement said. Further, there are nearly 28,000 rice mills in the country which need to be equipped with blending machines for mixing FRK with normal rice. Food Minister Piyush Goyal had also reviewed the scheme twice recently and laid emphasis on scaling up supply of fortified rice in the country. Food Minister Piyush Goyal had also

reviewed the scheme twice recently and laid emphasis on scaling up supply of fortified rice in the country. The pilot scheme is being implemented with a budget outlay of Rs 174.6 crore for a period of three years beginning 2019-20.

50-fold gains from investments on Monsoon Mission, computing facilities of MoES: Survey

Investments of nearly Rs 1,000 crore on the National Monsoon Mission and the High Performance Computing programme of the Ministry of Earth Sciences (MoES) over the past five years have generated economic benefits worth Rs 50,000 crore for farmers, livestock rearers and fishermen, a survey has shown. The study conducted by the National Council of Applied Economic Research (NCAER) was based on a face-to-face survey of 6,098 respondents -- 3,965 crop farmers, 757 marine fishermen and 1,376 livestock owners. Responses from over 2 lakh farmers were also collected from through interactive voice response system. "The report provides an estimated income gain of nearly Rs 13,000 crore per year for agricultural and livestock farmers and an incremental benefit of nearly Rs 48,000 crore," the ministry said. A total of Rs 551 crore was spent on the National Monsoon Mission while Rs 990 crore was incurred on the High Performance Computing programme to better weather forecast. For every rupee invested in the National Monsoon Mission and high-performance computing facilities of the ministry, the country has gained benefits worth Rs 50, resulting in fifty-fold gains, it said. "On adding the economic gain accruing to agricultural households and fisher households, the present value of benefits accruing to the BPL households to rain-fed areas works out to be Rs 50,447 crore. "The current level of investment is far less in comparison to the realisable benefits over the period of five years," the report said. The information through these projects helped farmers at various levels -- from ensuring early or delayed sowing, changing the irrigation schedule, vaccination of livestocks and better fodder management for them.

Hybrid rice: Corteva slowly making inroads into Bihar, Jharkhand; trains 90K woman farmers

Global agriculture firm Corteva Agriscience is slowly making inroads to push its hybrid paddy seeds and other products in Bihar and Jharkhand, where it has trained about 90,000 women pravaktas or village leaders on growing hybrids along with agronomic practices and post-transplantaton care. These rural women were growing inbred rice, a self-pollinated home-grown rice, in a traditional way. Now, they are trained to grow hybrid seeds even by using the Direct Seed Rice (DSR) technique. Now, they have become ambassadors of early adopters of the new technology and advocating the same in their villages to have a multiplier effect, thereby creating demand and market for hybrid seeds and crop protection products. In fact, there has been about 15-20 per cent rise in the acreage under hybrid paddy from the previous kharif season when the company first rolled out the training programme. Corteva Agriscience Marketing Director (South Asia) Aruna Rachakonda told "We worked on two hybrid paddy seeds 27P37 and 27P31 in these two states (Bihar and Jharkhand). We have received good response," adding that Corteva had launched hybrid paddy seed 27P37 four years ago, while the other one seven years ago in India. She added that growing hybrids is different from inbred rice, as it requires training in proper transplantation

technique, agronomical practices and post-transplantation care. The second technological intervention was introducing them to the Direct Seed Rice (DSR) technique with hybrid seeds which is basically Corteva's technology, she said. In Bihar and Jharkhand, woman farmers are being trained separately for a period of three years. The company is holding similar training programmes in other rice-growing belts of Uttar Pradesh, Madhya Pradesh, Punjab and Haryana where both man and woman farmers are being trained. Companies are vying for a huge potential market of hybrid seeds in India, which still cultivates inbred seeds in about 95 per cent of the country's total paddy area of around 45 million hectare. Inbred paddy seeds are self-pollinated seeds that can be saved and used for the next few years unlike hybrids.

Indo-Dutch centre of excellence for vegetables, flowers opens in Kerala

An Indo-Dutch centre of excellence (CoE) for vegetables and flowers has been opened in Kerala's Wayanad district, according to an official statement issued. The centre will be organising activities such as open-field precision farming of vegetables and flowers, production and distribution of quality planting materials to farmers, and also training programmes for farmers, entrepreneurs, and extension officers in the first phase, it said. "A tissue culture laboratory has been set up as part of the project for producing good quality planting materials. The centre will also explore possibilities in agri-horti tourism in the district. The idea is to transform Wayanad into a hub of floriculture," the statement issued by the Indian Embassy at The Hague said. The CoE is a showcase and knowledge repository of the best Dutch technical practices as relevant to the Indian context, it said. It will be based in the Regional Agricultural Research Station of the Kerala Agricultural University at Ambalavayal in Wayanad district, according to the statement. Speaking after inaugurating the CoE, Vijayan said the centre would help rejuvenate the agriculture sector in Kerala and will complement the many innovative technologies in floriculture and vegetable cultivation the Netherlands has developed, according to the statement. Union Minister for Agriculture and Farmers' Welfare Narendra Singh Tomar presided over the function. Tomar said the centre will not only benefit Kerala but the entire nation. "This centre will mainly showcase the technological achievements of the Netherlands by activities such as production and distribution of quality planting materials and seeds to farmers. It will showcase post-harvest handling, storage and marketing of produce for farmers. It will offer training programmes for officers for enhancing income of farmers. The inauguration of this centre has much relevance in the Indian context," he said. The centre was set up at a cost of Rs 13 crore provided by the central and state governments, and technical assistance from the Dutch government, the statement said. This will be the second CoE being set up under the Indo-Dutch Joint Action Plan, it said. This CoE is set up as part of the Indo-Dutch Action Plan and in follow up to the letter of intent signed by the ambassador of the Netherlands to India and the minister for agriculture, Kerala, during the occasion of the Royal visit of His Majesty, King of the Netherlands, to Kerala in October 2019, the statement added.

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Vice President Venkaiah Naidu calls for use of innovative technology in agriculture

Vice President M Venkaiah Naidu called for multi-pronged efforts to make the country's agriculture sustainable and profitable. He said the country will be able to produce more in less area by changing its approach and practices. Inaugurating the 120th birth anniversary celebrations of Acharya N G Ranga, Naidu described him as a great freedom fighter, a farmers' leader, a social reformer and an outstanding parliamentarian. Referring to the new wave of technology in agriculture, he said it was more than just the shift to mechanisation like the use of tractors. While basic mechanisation should further expand to all corners of the country, people should not lose sight of the cutting-edge technologies that are changing the way agriculture is practiced the world over, the vice president said. Calling for developing more climate-resilient seed varieties, Naidu stressed the need to adopt precision-agriculture practices, which have become the order of the day now with the use of drip irrigation, drones and sensors that cater to the needs of each individual plant.

More Kisan Rails in the offing to help farmers get better prices

The government is planning to increase the number of Kisan Rail trains, which transport vegetables and fruits to different parts of the country, to help farmers get better prices and reduce wastage, which is to the extent of 15%. “Currently, we are running four Kisan Rail trains. There has been more demand for running such trains as farmers are getting benefits. The railways, in close coordination with the agriculture ministry, is planning to introduce more trains and routes,” said a senior agriculture department official. At present, Kisan Rail trains are ferrying fruits and vegetables, connecting Devlali in Maharashtra to Muzaffarpur in Bihar, Ananthpur to New Delhi, Bengaluru to Hazrat Nizamuddin and Nagpur to Delhi. The Nagpur-Delhi train carried oranges from Nagpur and the iterinary is yet to be regularised. “The travel time of these trains has been cut more than 50% due to less traffic on routes. The railways is currently running a lesser number of passenger trains, facilitating swifter movement of goods trains. People are getting fresh fruits and vegetables. Wastage has also come down significantly,” said the official. Railways minister Piyush Goyal, who also handles food and consumer affairs portfolio, recently said that the government was planning to introduce Kisan Rail trains in Kashmir to transport apples to various parts of the country. “We have decided to procure 12 lakh tonnes of apples in Kashmir this year through our agency Nafed. I feel bad people having imported apples when we have quality produce in Kashmir. We want these apples to be transported all across the country,” Goyal had said.

India favours 'support-per-farmer' rule at WTO farm subsidy negotiations

India has countered a proposal by the US, EU, Australia and others that seeks to reduce the farm subsidies given by countries with higher potential to distort global markets. On this “proportionality principle”, it said the new negotiations on domestic support must be based on a “support per farmer” basis and not be defined in aggregate terms. Besides, the first step of the negotiations at the World Trade Organization (WTO), India said, is to create a level playing field by getting rid of the aggregate measurement of support (AMS) or trade-distorting farm subsidies given by the developed countries. The 47-member G-33 coalition supported India's ideas. As per the official, India also said a level playing field can be created by getting rid of

the aggregate measurement of support (AMS) or trade-distorting farm subsidies given by the developed countries. The 47-member G-33 coalition supported India's ideas. As per the official, India also said a level playing field can be created by getting rid of AMS entitlement beyond de minimis and that it is a form of reverse special and differential treatment. De minimis or the threshold caps the domestic support at 10% of the value of production but many developed countries have entitlements to provide domestic support well over 10% of the value of production. The US, EU and Canada give $160 billion of trade-distorting form of farm subsidies to products including cotton, wool and tobacco, according to a submission by India and China. India has maintained that AMS above de minimis has had a more severe impact on market uncertainty compared to de minimis entitlements. Therefore, its elimination is necessary to enable all members to start on an equal footing before talking about proportional contributions. It said agriculture reform is not only an import and export issue but also a food security issue. "India will work with other interested members to put forth a technical submission on domestic support based on per farmer terms," said the official. India also suggested that an analysis of the cumulative per farmer agriculture support that has been provided by WTO members from 1995 to the present be done, with those responsible for the biggest distortions in the past making the biggest contribution.

Government allows Hyderabad's ICRISAT conditional usage of drones for agricultural research

The government said that they have, in a first, granted a crop research institute to use drones for research. "(The) Ministry of Civil Aviation (MoCA) and Directorate General of Civil Aviation (DGCA) have granted conditional exemption to the International Crops Research Institute (ICRISAT), Hyderabad, Telangana for the deployment of drones for agricultural research activities," the government said in a statement. This approval is part of a bigger endeavour of the government to maximise use of drones to conduct various jobs across the country, especially rural India. "Drones are poised to play a big role in agriculture sector in India especially in areas like precision agriculture, locust control and improvement in crop yield. The Government is encouraging young entrepreneurs and researchers to look at ruggedized low-cost drone solutions for the over 6.6 lakh villages in India," Amber Dubey, Joint Secretary, Ministry of Civil Aviation, was quoted in the release. The conditional exemption is valid for six months from the date of issue of the letter or until the full operationalization of Digital Sky Platform (Phase-1), whichever is earlier. About 18 conditions and limitations to ICRISAT include data Acquisition for agricultural research activities within the ICRISAT research field using Remotely Piloted Aircraft Systems, the government said.

Government's MSP paddy procurement rises 20.25% so far this kharif season

The government's paddy procurement has increased by 20.25 per cent to 281.28 lakh tonnes so far in this kharif season, Punjab contributing the most, the Union Agriculture Ministry said Paddy procurement commenced in Punjab and Haryana from September 26 due to early arrival of the crop, while in other states from October 1. More than 80 per cent of the country's paddy crop is grown in the kharif season. The government through Food Corporation of India (FCI) and state agencies undertakes procurement of paddy

paddy at the minimum support price (MSP). "Out of the total purchase of 281.28 lakh tonnes, Punjab alone has contributed 196.13 lakh tonnes which is 69.73 per cent of the total procurement," the ministry statement said. Total procurement rose by 20.25 per cent till November 15 of the ongoing kharif season from 233.89 lakh tonnes in the year-ago period, it said. For the current year, the Centre has fixed the MSP of paddy (common grade) at Rs 1,868 per quintal, while that of A grade variety has been fixed at Rs 1,888 per quintal. According to the ministry, MSP procurement of paddy in this kharif 2020-21 marketing season is "continuing smoothly" in Punjab, Haryana, Uttar Pradesh, Telangana, Uttarakhand, Tamil Nadu, Chandigarh, Jammu and Kashmir, Kerala, Gujarat and Andhra Pradesh. In case of cotton, state-run Cotton Corporation of India (CCI) has procured 14.65 lakh bales worth Rs 4,187.05 crore from 2,86,547 farmers till November 15. Till November 15, about 58,623.22 tonnes of moong, urad, groundnut pods and soyabean have been procured at MSP value of Rs 325.78 crore from 34,149 farmers in Haryana, Tamil Nadu and Maharashtra, Gujarat and Rajasthan. About 33,976.48 tonnes of these commodities were procured in the year-ago period. Similarly, 5,089 tonnes of copra at MSP value of Rs 52.40 crore has been procured from 3,961 farmers in Karnataka and Tamil Nadu in the said period. The Centre has given nod for procurement of 45.10 lakh tonnes of kharif pulses and oilseeds this year under the Price Support Scheme (PSS) to 10 states as well as 1.23 tonnes of Copra in Andhra Pradesh, Karnataka, Tamil Nadu and Kerala. Approval for other states will be given on receipt of proposals for procurement as per PSS norms, the ministry added. Unlike before, the government is releasing the daily procurement data to send a message to farmers protesting against new farm laws that it has no intention of scrapping procurement at MSP.

Crop insurance: Agriculture ministry seeks DGCA nod for taking drone-based crop images in 100 districts

The agriculture ministry has sought civil aviation regulator DGCA's nod for allowing shortlisted private agencies operate drones to capture images of rice fields in 100 districts to assess crop yields at gram panchayat level under the Pradhan Mantri Fasal Bima Yojana (PMFBY), according to a senior government official. This is the second year the ministry has hired private agencies for a pilot study of unmanned aerial vehicle (UAV) based remote sensing data collection in agricultural areas of 100 districts for assessing gram panchayat level under the PMFBY. "Since harvesting in selected 100 rice growing districts is in full swing currently and will be completed shortly as per the crop season, we have requested the Directorate General of Civil Aviation (DGCA) to give approval for flying drones over selected regions," the official told. A letter in this regard has been written to the DGCA seeking permission for agencies such as AMNEX, Agrotech, RMSI Pvt Ltd and Weather Risk Management Services Private Ltd to operate drones for two months till December 31, he said. The official mentioned that the drone-based images are one of the important inputs in the models for crop yield estimation and validation. The shortlisted agencies have already started the study in their assigned regions as per the time schedule. The drone-based images will be captured in 10 states - Andhra Pradesh, Bihar, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Tamil Nadu, Telangana and Uttar Pradesh. On benefits of using drones for the PMFBY, the official said crop damage valuations have traditionally been difficult to make as it is carried out manually after an insurable event such as floods, drought or pest infestation. However, the remote sensing data captured through drones will help get the accurate information on crop conditions and losses to farmers, and shorten timelines for crop

insurance claims, he explained. "After the success of pilot studies, it will be scaled up," the official added. As per the official data, about 241.7 lakh hectare farm land has been insured in the 2020 kharif season.

Govt okays subsidised loans worth Rs 3,971.31 cr for micro-irrigation projects

The Union Agriculture Ministry said it has given nod for subsidised loans worth Rs 3,971.31 crore for implementing micro-irrigation projects, and maximum loan has been approved for Tamil Nadu. The interest subvented loans are being offered under Micro Irrigation Fund (MIF) created with National Bank for Agriculture and Rural Development (NABARD) for implementing micro-irrigation projects. This fund with a corpus of Rs 5,000 crore was operationalised in the 2019-20 fiscal with an objective to facilitate states in availing subsidised loans for expanding coverage of micro irrigation. In a statement, the ministry said the steering committee of MIF has approved projects for loan worth Rs 3,971.31 crore. Out of this, maximum loan of Rs 1,357.93 crore has been approved for Tamil Nadu, followed by Rs 790.94 crore for Haryana, Rs 764.13 crore for Gujarat, Rs 616.13 crore for Andhra Pradesh, Rs 276.55 crore for West Bengal, Rs 150 crore for Punjab and Rs 15.63 crore for Uttarakhand, it said. However, NABARD has so far released a total loan amount of Rs 1,754.60 crore to the states. Of this, about Rs 659.70 crore has been released to Haryana, Tamil Nadu and Gujarat. About Rs 616.13 crore loan has been released to Andhra Pradesh, Rs 937.47 crore to Tamil Nadu, Rs 21.57 crore to Haryana and Rs 179.43 crore to Gujarat so far, it added. Under the MIF, subsidised loans are provided for not only taking up special and innovative projects but also for incentivising micro irrigation beyond the provisions available under Pradhan Mantri Krishi Sinchai Yojana (Per Drop More Crop) to encourage farmers to install micro irrigation systems.

NABARD promotes alternative income sources for rural population dependent on agriculture

The National Bank for Agriculture and Rural Development (NABARD) is promoting off- farm sectors to reduce rural West Bengal's over dependence on agriculture, an official said. Around 20 per cent of the people of West Bengal still live below the poverty line and the average size of landholding is only 0.77 hectares, Nabard claimed. "As 20 per cent of the people of West Bengal still live below the poverty line and the average size of land holding is only 0.77 hectares, Nabard was working on reducing the rural West Bengal's over dependence on agriculture. Nabard is encouraging young entrepreneurs move towards the handloom sector," Nabard DGM Kamalesh Kumar said. He was speaking at a webinar on 'Vocal for Local' organised by Press Information Bureau, Kolkata and Field Outreach Bureau, Chuchura. He said the development of the handloom sector will also arrest large scale migration of small and agricultural labourers to the urban areas in search of livelihood opportunities on account of unemployment. With the objective of arresting such migration, Nabard is putting more thrust on the formation of Off-Farm Producer Organisations or OFPOs with the support of the rural weavers, craftsmen or artisans to take up collective business activities and generate local employment through value addition, Kumar said. According to Rajesh Chatterjee, Deputy Director, Weavers Service Centre, Kolkata, the Centre always encourages in technical skill upgradation, cluster development and also helps in getting Mudra loan benefits for specific handloom schemes. He said the Centre also provides technical support to the skilled weavers and helps in e-marketing of their products and in this way it is helping nearly 5.5 lakh weavers of West Bengal.

Food park inaugurated in Punjab to benefit 25000 farmers and create 5000 jobs

Food Processing minister Narendra Singh Tomar inaugurated a mega food park (MFP) at Phagwara in Kapurthala district of Punjab that will benefit 25,000 farmers and create 5,000 jobs, an official statement said. "Punjab and Haryana have significant role in development of agriculture sector of India. This MFP built at project cost of Rs 107.83 crores and spread over 55 acres of land is expected to benefit about 25000 farmers," he said. Till date, 37 MFPs have been sanctioned and 20 have already started functioning. Tomar added that due to untiring efforts of farmers of these two states, India is not only self reliant in food grains but is food surplus. He said that Punjab has been ahead in production of rice and wheat however, due to reduced ground water levels, diversification of crops is required for which Punjab farmers have taken several steps. "Food processing sector needs to be focussed upon so that farmers get fair prices and related sectors can also benefit," he said in a statement. The Sukhjit mega food park is equipped with warehouses, silos ,cold storage, deep freezer and other related food processing facilities. Tomar said that the government is continuously working for welfare of farmers under leadership of Prime Minister Narendra Modi. A Rs 10,000 crore fund has been created under Aatmanirbhar Bharat, for development of food processing sector which will benefit farmers and create employment opportunities, he said. Rameswar Teli, MoS, food processing, said that latest technology and processing facilities will reduce wastage of food products and ensure fair prices for farmers.

MPEDA knocks state govts for reforms in marine fishing act to boost shrimp exports to US

The Marine Products Export Development Authority (MPEDA) is pushing for necessary reforms in marine products act with state governments that will facilitate lifting of the ban by United States imposed two years earlier to make India more responsible toward turtle prevention, an official said. Some 15 per cent of total shrimps exports from India had been impacted due to the ban by the US on import of sea caught shrimps from India. In India, law and order and fishing regulations are state subjects and are governed by respective local governments. The ban is only on sea shrimps (catch shrimps) as they are presumed to be caught by vessels without using turtle excluder devices (TED). There is no issue with farmed shrimps exports. "We are progressing well in dialogue to get the ban lifted. Now state governments will have to show their eagerness in strengthening laws against the offenders of turtle regulations. In the last two years, a lot of progress had been achieved in implementing fitting turtle excluder devices and almost all trawlers are fitted with such devices. But, the USA wants India to strengthen the act," a senior MPEDA official told. "We have written to the state governments including West Bengal to take necessary steps in modifying marine fishing regulations to facilitate us to take final remedial action to lift the ban which is hitting the country's forex earning," he said. Some southern states and West Bengal is hit with the ban as all sea catch shrimps exports had stopped. In West Bengal alone loss is valued at Rs 1500-2000 crore a year. During 2019-20, around 88,264 tonne of frozen shrimp were exported from Bengal to other countries. It fetched Rs 4615.44 crore. The other markets are European countries, Japan and China.

Agriculture ministry unveils NAFED's honey FPOs programme for 5 states

Agriculture Minister Narendra Singh Tomar on inaugurated cooperative Nafed's programme for helping set up farmer producers organisations (FPOs) for beekeepers and honey collectors in five states.

Nafed is one of the four implementing agencies of the government for creation of 10,000 FPOs under a central scheme, which aims to make agriculture self-reliant. The other agencies are Small Farmers' Agri-Business Consortium, NABARD and National Cooperative Development Corporation. Under the programme, Nafed will help in setting up FPOs for beekeepers in five states -- West Bengal, Bihar, Madhya Pradesh, Uttar Pradesh and Rajasthan. "Beekeeping in India is highly predominant in the unorganised sector among the rural and tribal population. Despite having a huge potential of honey production in the country, the beekeeping industry is still underdeveloped. "The adoption level of beekeeping is also quite less due to various constraints," an official statement quoted Tomar as having said after the virtual inauguration of the programme. Nafed will address these issues by acting as an intermediary and filling up the gaps between the elements of the beekeeping supply chain and also ensure price remuneration to the beekeeping farmers, he said. Through these honey FPOs, the Nafed will also work for promotion of beekeeping as an occupation for unemployed women and tribal populations and uplift their livelihood, he said. In the statement, the government said Nafed has already helped set up first honey FPO 'Chambal FED Shahad Utpadak Sahakari Samiti' in Madhya Pradesh under the National Beekeeping and Honey Mission, which was registered on November 11, 2020. This FPO will cover five blocks consisting of about 68 villages in the Morena district of the state. The other four FPOs will be set up in Sundarbans (West Bengal), East Champaran (Bihar), Mathura (Uttar Pradesh), and Bharatpur (Rajasthan). Together, this will cover 340 villages in five states. Through these five FPOs, 4,000-5,000 beekeepers and honey collectors would be benefitted directly, it added. According to the government, the honey FPOs will not only help its members upgrade their skills in scientific beekeeping but also in setting up of state-of-the-art infrastructural facilities for processing honey and allied beekeeping products like bee's wax and propolis. Besides, they will also help in quality control lab collection, storage, bottling and marketing. These FPOs will also get benefit from the government schemes under the National Bee Board's National Beekeeping and Honey Mission (NBHM). That apart, beekeepers and honey collectors of all the five states would be helped in branding and collective marketing of their honey and other allied products through the marketing channels of Nafed. Efforts will also be made to explore the foreign market to improve the returns to the beekeepers and honey collectors, it added. Under the new FPO scheme, the government has approved 2,200 FPO clusters to all implementing agencies for the current financial year.

Pomegranates may soon be exported to Oz

Pomegranates from Maharashtra could soon find their way to the Australian market. Until now only mangoes were exported to Australia from India. The Maharashtra State Agriculture Marketing Board (MSAMB) has been working with the Australian government to conduct various assessments from the past year to commence exports of the fruit. Sunil Pawar, MD, MSAMB, said there is a big demand for pomegranates in Australia due to its medicinal properties. Australia currently imports 4000 tonne of pomegranates from New Zealand and the US, he said. Around eight levels of assessments and approvals are required to export any kind of agri produce to Australia, Senior Officials of the marketing board said. The agri-produce sent to Australia requires to undergo the irradiation process.

Next is, an Indian Alexa for farmers

Can a farmer living in the hinterland query a government-run application through a voice command in his local language to check for the best price of wheat or paddy at the nearest mandi? If Google Assistant or Alexa can provide these functionalities, why can't the government build a voice-enabled application to benefit those who can't read or write, or don't communicate in English or Hindi. This was one of the thoughts that has emerged as the government saw a massive spike in the usage of its digital applications during the lockdown and the subsequent restriction imposed on the movement of people due to Covid-19. The initiatives rolled out in the first phase of Digital India, such as Aadhaar and Unified Payment Interface-led digital payments platforms, came in handy for the government to serve the citizens when the pandemic struck. Acceleration in digital adoption due to Covid-19 is now spurring policymakers to not just strengthen the physical infrastructure that supports digital connectivity, but also align future initiatives with the new realities. "There are 62 crore people in the country who use the Internet but there are another 60 crore who are yet to use internet based services.. And literacy and language are the main challenges for them. The next phase of Digital India has to be planned in a way that takes into account these people and also takes services to the next level," Digital India Corporation chief executive Abhishek Singh told. The National Language Translation Mission under the Ministry of Electronics and IT has now been directed to build in functionality in the government's Umang aggregator app to provide voice-enabled services. "If someone is getting benefits under the Awas Yojana, then that person should automatically be able to come under the Ayushman Bharat, and scholarship schemes should also be made available to the children of the family. This can be achieved through having a platform-based architecture," said Singh. The need of the hour is not just ensuring robust connectivity but also subsidizing it for professionals or organisations which choose to operate from such areas, by possibly financing it through the Universal Service Obligation Fund — it was created to finance telecom infrastructure in rural and remote areas. There is also a need for government-to-consumer services to be delivered to home, be it Aadhaar or a ration card or any kind of certificate. "Why should anyone have to visit the government office to avail of the service; forms should be filled online and the card should reach people at their home, this is as simple as it can get," he said.

NFL spurts on reporting steep growth in non-urea fertilizers

In order to promote balanced use of the fertilizers in the country , the National Fertilizers (NFL) is encouraging farmers to use non-urea fertilizers like DAP, Mop , NPK and sulphur based fertilizers. With these efforts, the company has registered growth in sale of all non- urea fertilizers during the first seven months of the current financial year. The sale of sulphur based fertilizers of company — bentonite sulphur — has registered a growth of 237% and SSP has registered growth of 133% over the comparable period last year. The Bentonite Sulphur, produced in NFL Panipat plant, logged sale of 11,730 MT during April-October 2020 against 3,478 MT in the same period year ago, sale of SSP reached 14,726 MT compared to 6,323 MT last year. "it is imporatant to encourage use of all types of fertilizers to provide balanced nutrition to soil," said V N datt, chairman & MD of the company. Sulphur is essential to maximizing plant growth and yield. As the fourth most important nutrient, sulphur is also required for nitrogen use efficiency. NFL markets Urea, DAP, MoP, NPKs, APS, Compost, SSP and bentonite sulphur besides many strains of bio-fertilizers to provide all types of fertilizers to farmers.

India favours 'support-per-farmer' rule at WTO

India has countered a proposal by the US, EU, Australia and others that seeks to reduce the farm subsidies given by countries with higher potential to distort global markets. On this "proportionality principle," it said the new negotiations on domestic support must be based on a "support per farmer" basis and not be defined in aggregate terms. Besides, the first step of the negotiations at the World Trade Organizations (WTO), India said, is to create a level playing field by getting rid of the aggregate measurement of support (AMS) or trade- distorting farm subsidies given by the developed countries. "On the proportionality principle, India said that domestic support must be based on a 'support per farmer' basis, not be defined as sum total ," said a Geneva- based official, who did not wished to be indentified. The 47-member G-33 coalition supported India's ideas. As per the official, India also said a level playing field can be created by getting rid of AMS entitlement beyond de minimis and that it is a form of reverse special and differential treatment. De minimis or the threshold caps the domestic support at 10% of the value of production but many developed countries have entitlements to provide domestic support well over 10% of the value of production. The US, EU and Canada give $160 billion of trade-distorting form of farm subsidies to products including cotton, wool and tobacco, according to a submission by India and China. India has maintained that AMS above de minimis has had a more severe impact on market uncertainty compared to de minimis entitlements. Therefore, its elimination is necessary to enable all members to start on an equal footing before talking about proportional contributions. It said agriculture reform is not only an import and export issue but also a food security issue. "India will work with other interested members to put forth a technical submission on domestic support based on per farmer terms," said the official. India also suggested that an analysis of the cumulative per farmer agriculture support that has been provided by WTO members from 1995 to the present be done, with those responsible for the biggest distortions in the past making the biggest contribution.

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logistics and supply chain issues," Goyal said in the letter. The move is in line with the country's aim to reduce logistics cost by 5% for users over the next five years and improve India's ranking on the World's bank Logistics Performance Index to 25-30 in the next five years from 44 in 2018. The logistics cost is pegged at about 13% of the gross domestic product (GDP). The logistics division in the commerce department plans to set up a single window or one- stop source for all approvals and clearances for setting up a single window or one - stop source for all approvals and clearances for setting up and operating logistics businesses that would also cater to all grievances and dispute resolution in this regard. It is drafting the National Logistics Policy and a separate National Logistics act to replace the existing Multimodal transportation of goods law. A National Master Plan to provide multimodal connectivity across the country to reduce logistics cost and improve competitiveness of local manufacturing is also in the works . In the letter, Goyal also asked states and UTs to ensure first and last-mile connectivity with the National Economic Corridor by "developing a state action plan that leverages existing passenger transport infrastructure such as intra and inter-city buses and mass rapid transit system for last mile parcel distribution logistics during off-hours and off - peak hours".

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