Report on

Training on Existing Transformative Agriculture Tech, Mobile-based Applications, Innovations and Smart Farming

Hanumanamatti, Haveri Saturday, July 2, 2022

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Background

The Public Affairs Foundation (PAF) was provided funding support by National Bank for Agriculture and Rural Development (NABARD) to conduct a series of training programmes in six districts in Karnataka. The topic for the same is "Training on Existing Transformative Agriculture Tech, Mobile-based Applications, Innovations and Smart Farming".

The training programme aims to bring together farmers, Farmer Producers Organisations (FPOs) and Experts (scientists & researchers) on a unified platform. This may increase the farming yield and farmers can market value-added products instead of mere raw produce and learn how the latest developments in agri-tech can enable them to enhance their profitability. While FPOs in the state has been constantly conducting similar programmes, the current endeavour is to scale up the initiatives to include branding, marketing techniques by using Artificial Intelligence and Machine Learning techniques.

The main objectives of the training programme are to explore, discuss and proliferate modern transformative, technology, mobile App-based, innovative and Smart Farming techniques among farmers using traditional farming techniques. This is expected to help traditional farmers make a paradigm shift to adopt modern farming techniques. Primarily, the training programme is focused on sharing experiences, active interactions, and providing solutions offered by smart farming. Farmer Producer Organisations (FPOs) have not only been providing farmers with seeds and manure but also training them in the latest farming methods for a few years.

The fifth training was held in Haveri, Saturday, July 2, 2022 at the ICAR- Krishi Vigyan Kendra, Hanumanamatti, Haveri. (Refer to Annexure 1 for the Agenda).

This report provides an overview of the key deliberations from the programme held at Kodagu and Haveri

Haveri

ICAR - Krishi Vigyan Kendra (KVK), Hanumanamatti, Haveri Saturday, July 2, 2022



Introductory Session

Ashwini Venkataram, Senior Officer, Finance, PAC welcomed the dignitaries and the audience gathered to the training on Transformative Agriculture, Existing Mobile Applications, Innovations and Smart Farming. She introduced PAF as an organisation that works with the government to take the government's schemes effectively to the people.



Welcome Address

Dr. Annapoorna Ravichander, Executive Director, PAF, who addressed the gathering said that this was the fifth such training that is being organised in a series of six programmes. She said that PAF is a research organisation. She thanked the dignitaries for their participation in the event. She called the training a movement (rather than just a programme) to better the lives of farmers.

She added that PAF had invited resource people like Srinivas Patil, Dr Avinallappa and Balachandra who would share their smart farming experiences with the trainees. She noted that Artificial Intelligence and Machine Learning (AI & ML), were the next steps in the development of agriculture in India. So, NABARD is very keen that farmers use AI and ML in their agricultural activities.

She said that the organisers were learning new things along with the trainees and that it is a joint learning experience. She also added that PAF was looking at conducting a second phase of sessions with NABARD by identifying trainers of trainers (ToT) within Farmer Producer Organisations (FPOs) and women Self Help Groups (SHGs).



At this point the farmers' anthem was played as everyone stood to attention.



Inaugral Address

Shri. P Manjunath, Joint Director, Agriculture, Haveri lauded PAF for organising the training programme. He said that ordinary agricultural activities like sowing, irrigation, harvesting and selling through middlemen must change if agriculture should become more profitable. He added that



the farmer must not remain a producer alone but become a marketing person too. He urged farmers to adopt the latest technology available in the farming industry.

He said that adoption of technology was directly linked to the quality of life that farmers experience. He added that by using technology farmers can save input costs and reap rich benefits for their hard work. He said that technology has improved to such an extent that one can access any person in any corner of the world using a mobile phone. He mentioned that there were over 800 new Apps that have been made available for agricultural activities. He stressed that such Apps could open global markets for farmers in the state. He called for greater involvement in composite farming to improve the income of farmers. He stressed that farming techniques should be tied to market expectations and demand.

He touched on the benefits of the Pradhan Mantri Formulation of Micro Processing Enterprises (PMFME) scheme. He informed that FPOs and SHGs making VA products informally can get assistance under this programme. He explained that under this scheme, farmers are provided machinery, know-how and financial assistance for processing, packaging, branding and marketing. He urged the 38 FPOs in the district to avail the benefits of this scheme. He cautioned that FPOs should not become politicised or communal.



The real aim of FPOs should be to benefit farmers by providing high quality inputs with subsidies and exploring markets for the yield. He stressed that training programmes for farmers in latest technology and techniques was the need of the hour by calling it 'capacity building to bring farmers into the mainstream'. He mentioned that 15 FPOs in Haveri were striving hard to better the lives of farmers by doing input business and another five FPOs are totally immersed in doing output business. He informed that under PMFME a farmer can avail loan upto Rs 10 lakh.

He also informed that loans up to Rs 2 crore at six percent subsidy was available for mechanisation of farming under agriculture infrastructure development programmes. He asserted under PMFME the department had given loans of totally Rs 1.50 crore to 17 beneficiaries through banks. He averred that 50 other applicants had come forward to avail these benefits. He pointed out that both the Chief Minister and the agriculture minister were from Haveri.

He said that Haveri farmers were mainly growing soybeans, millets and maize and called millets 'energy food'. He pointed out that millets were the best food for diabetics who formed one third the population of the country. Hence the great demand for millet products. He also said that most of the food available in the market was adulterated. Hence the demand for organic products. He gave the example of two farmers Chandrakanth and Gowrishankar who exported their products to the USA, Singapore, and Malaysia. He called for farmers to adopt project management principles.

Introductory Remarks

Dr. I S Katagere, Director of Extension, UAS, Dharwad in his introductory remarks shared that there have been many technological advancements in agriculture because of extensive research across the country. It is true that there is no dearth of research and technology advancements but there is a dire need for adoption of these technologies and the potential benefits of these technologies must be realised. He noted that the gap was in the adoption of such technologies and over 90% of the Indian farmers were unable to reap the potential benefits of these technological advancements.



He urged the farmers to adopt new technology in their farming to bring about changes in potential yield. He urged the participants to use the latest communication technology to learn the latest advances in agriculture. These modern communication platforms also help in understanding the real challenges that farmers face in their daily activities like pest control. He took the example of a simple mobile phone that has enabled agricultural experts to connect with farmers daily.

Going one step further, communicating with agriculture department experts daily with mobile Apps like WhatsApp has made life easier for farmers who are finding solutions for their problems instantly. He noted that in this endeavour, a training like this goes a long way in equipping farmers to practice Smart Farming. Mentioning that the trainers are lucky to be attending such an informative programme where there is an organisation to conduct such a programme and resource persons to share their knowledge, he urged the participants to make the most of the sessions and bring about change in their lives.

Address by Chief Guest



Shri. Ramesh Babu B V, District Development Manager, NABARD, Kodagu said that in lay terms, the objective of the programme was to disseminate how modern technology can be leveraged for agriculture activities. He lauded that the programme was presented and conducted by PAF using technology and not just as speeches. He stressed that farmers must be made aware of government schemes and who to approach in order to avail the schemes. He touched on the benefits of the JanSamarth portal that was launched by Prime Minister Narendra Modi in June 2022. He explained that all the scheme details of various departments of GoI and GoK would be uploaded onto the portal. He detailed that this portal was accessible on mobile devices and that one can learn how to apply for the schemes through the portal. He shared those details of agricultural marketing infrastructure were available on the JanSamarth portal.

He also explained that NABARD had fixed an age limit for the participants because people of that age group can convince others to adopt new agricultural techniques and quickly grasp what is shared during the programme. He hoped that programmes such as the one in progress would be beneficial to farmers to improve their incomes.

Address by Special Guests



Shri. M Mahadev Kirti, District Development Manager (DDM), NABARD Haveri said that Haveri FPOs are engaged in multiple farming. They grow not only maize but also profitable crops like millets, groundnut, and mango. Local farmers grow a mixture of horticultural and agricultural crops. He noted that the main issue being faced by FPOs are encountered when they try to increase their memberships. He mentioned that one FPO was already exporting products and there was dire need for training that focused on how to export local products.

He noted that there is sufficient scope to develop Haveri as an export hub. He said that the locally grown Alphonso mango was better than Ratnagiri mango. Because the latter variety has a geographical Index (GI) tag, it was selling better than the Haveri mango. He noted that the local groundnut and millets were accepted universally as the best in class. He said that the need of the hour was to process the produce and make Value Added (VA) products. He pointed out that there needs to be a paradigm shift in focus from input business to output business. The imperative here is that guality and timeliness must be maintained.

There are 16 Agricultural Department FPOs, five Horticulture Department and nine NABARD FPOs in Haveri. He added that animal husbandry FPOs and fisheries and sericulture FPOs are also started in the district under the Amrut Yojana. He pointed out that there needs to be a conference with the FPOs where the line departments can explore and assist farmers in adopting not just the schemes but also the related technologies. He said that there were several mobile apps for agriculture, only that the rate of adoption must increase.



Shri. Prabhudev, Lead Development Manager (LDM), Haveri said that in most of the programmes he attends he is asked only about crop loans, and he was happy to attend a training on technology for agriculture. He said that he was happy to note that such training was being imparted for the benefit of farmers. He took the example of a farmer in Shiggaon who hired a drone from a farmer in Hubballi for Rs 600 rent per hour and sprayed pesticides for his maize crop because he could not get labour for the task. With this he could complete two days' work in half a day. He added that adoption of technology will become inevitable in the coming days.

He said that he was happy that PAF had chosen Haveri for holding the programme. He averred that crop loans given to Kisan Credit Card (KCC) holders must be renewed within 12 months to avail a three percent interest rebate. He said that the intelligent way of renewing the crop loan is to deposit small amounts of money into the bank whenever there is some money available with the KCC holder during the midterm. He said that such a provision has been in existence since 1998. The crop loan account can be operated just like a savings account.

When the loanee deposits money into the account, the loan gets automatically renewed. He said that this method saves the farmer trouble for the farmers who take hand loans to repay their KCC dues. He warned farmers to stay aware of the cyber frauds that happen on the Internet wherein strangers call farmers and ask for a PIN and OTP. He took the example of a Byadgi farmer who was cheated of Rs 1.20 lakh that he had deposited in his State Bank account. He categorically stated that no bank or financial institution asks for the account holder's card number or PIN or OTP. He also said that strange messages offering to give loans by clicking a link can also be dangerous. He signed off by saying the by adopting Smart Farming, farmers can save labour costs.



Dr Ashok, Senior Scientist and Head, ICAR-KVK, Haveri said that Hanumanamatti Haveri KVK was the first KVK that was established in Karnataka in 1976. He informed that 713 villages were catered to by the KVK. He said that there are five teams of scientists who impart technology knowledge to the villages. He listed them saying they were horticulture, agriculture, animal husbandry, pest control and soil scientists. These teams have been aiding farmers jointly with line departments and lead banks. He said that under the one district, one crop, Haveri had been chosen for mango cultivation. He said the great importance was being given to mango value added products coming out of Shiggaon. He announced that Haveri district has come to be known as the land of millets. He said that the KVK had tied up with many NGOs like the Dharmasthala NGO to take the fruits of scientific research to the farmers.

He said that during a training programme on earthworm cultivation, a farmer raised a pertinent question – a bottle of water costs the same everywhere but why are agricultural crops not given the same price everywhere? Haveri grows cotton, maize, pulses, and millets. But there is no system of uniform pricing in the district. He expressed happiness that the PAF training in the districts on marketing of VA products and Smart Farming was being used as a vehicle for imparting the fruits of research to grassroots farmers.

He informed that FPOs and SHGs in the district were proactively finding markets for raw banana and mushroom products using mobile Apps like WhatsApp. He urged farmers to make the most of modern mobile technology to find markets for the VA products and make use of the scientific tests (soil and moisture) services given by the KVK.

He said that pest control must be done scientifically not randomly for the crop to be saved or to increase the yield. He gave the example of VA products like sweet corn, baby corn and popcorn products that can be made with the maize that is grown locally. He said that composite farming techniques like mushroom cultivation (which does not need any extra land) can be adopted to increase the income of farmers. It can be done in one's backyard. He said the impetus must be given to value addition and branding.



Dr M V Manjunath, Dean and Campus Head, Agriculture College, Hanumamatti, Haveri complimented NABARD and PAF for organising a training programme that is very necessary for farmers at this juncture. He said the automated drip irrigation systems had become very common in India. Farmers switch the system on and off remotely using their mobiles. He said that in countries like Israel, these systems were further automated; the systems switch on and off automatically depending on the soil moisture content.

He added that the Agriculture Minister B C Patil had encouraged farmers to adopt the Kolar model of agriculture wherein many modern methods are being adopted. He said that over the years' lakhs of farmers have solved their farming problems through mobile phones in the past when a farmer helpline was set up. He said that hundreds of farmers raise questions and get their problems solved in a WhatsApp group created and administered by KVK.

He said that weather forecasts are shared in this group, and they have proven to be very useful to farmers of the district. He pointed out that the loss in soil moisture on one day can affect the yield to a great extent. He said though there was adequate rainfall, crops were failing because the related activities are not synchronised to the weather conditions. He informed that as far as agricultural achievements are concerned, Haveri is at the forefront of all other districts in the state.

He urged that FPOs should fulfill their role in making agriculture profitable for farmers. He pointed out that 18 professors at the university had fallen prey to cyber fraud and that even educated people are targeted. He also warned farmers not to go by social media posts but to approach KVK, agriculture colleges and Agriculture Department for important information. He defined 'smart' as smart in sowing, timely application, pest control and other agricultural activities.

All the dignitaries were presented with value-added farm products as a token of gratitude by PAF.

Module 1: Existing Transformative Technology and **Innovations in Transformative Technology**



Srinivasa Patil, Research Engineer, Farmer & Agripreneur

Resource Person, Srinivas Patil started the technical sessions by comparing the technological developments in banking to agricultural technological developments. Just the way ATMs gave way to mobile money transfers, advancements in Agri technology have also bettered the lives of farmers. He said that mechanisation of agriculture happened long ago. But the need of the hour is to develop markets for agricultural produce. He said traditionally, Indian farmers were very aware of the relationship between soil quality and yield and were using age-old methods for farming. But now there is a low-cost device available online for as less as Rs 500 to determine the PH level and moisture content in the soil. He said that faulty methods of watering the crop is leading to crop failure. He took his own example wherein he grows groundnuts in his eight-acre farm. He started to sow a better variety of seeds and increased his yield based on a suggestion

> given by a friend. His point was that farmers need to get to know more about the modified seed quality before sowing.

> He pointed out that knowledge sharing is limited in local agriculture. He said that though AI and ML were revolutionising agriculture, farmers still adopt traditional

methods which are low yielding. He stressed that the quality of crops is the first focus because the price of produce is directly linked to quality. He shared information on precision agriculture being undertaken in Israel where there is acute shortage of rainfall and cultivable land. In Israel, farmers determine the exact inputs (water, manure etc) that needs to be applied to crops. In this manner they make their farming profitable. He briefly introduced weather forecasting mobile apps to the audience. He noted that in most other countries, agriculture had become an industry that is driven by modern technology like drones, soil sensors, drip irrigation etc.

He took the example of Kolar where there is acute water scarcity and bore wells have failed. A Kolar farmer has devised a method where the water is supplied directly to the root of the mango tree and not from above using a simple water pipe rooted into the ground. He simplified the meaning of AI and ML using the example of an automated overhead tank water controller.

At this point Resource Person Dr Avinalappa Hotti. Project Coordinator at Sarvodaya Integrated Rural Development Society, Koppal, explained how a mobile-based sensor app works to determine the moisture content of the soil.



Patil stressed that farmers must first identify markets and then take up farming a crop. He stressed that working backwards like this makes farming profitable. He reiterated the need for FPOs to appoint a marketing manager whose sole job is to search for markets for the produce grown by the FPO members. The marketing person must have all the data of the members' farming activities and start looking for markets when the sowing is done and not wait till the harvest. Going to the Agricultural Produce Marketing Committee (APMC) is not a bad thing but the problem there is that the farmer does not get the price that he demands.

Patil continued by sharing information on greenhouse farming of vegetables in Singapore. He added that the quality of capsicum grown in greenhouses was greater. He also added that greenhouse farming is a given protection against crop loss due to heavy rain. Patil said that by using irrigation water as a medium to carry nutrients to the crop the quality of the crop can be increased. He touched upon vertical farming adopted where there is cultivable land shortfall, and the farming is done without adequate soil. He said that the notion that farmers can never be rich has been disproved.

Interaction: A farmer from Bhoomika FPO said that the FPO distributes free millet seeds, organic manure, to farmers in 20 villages and buy the produce at market rate. The FPO then processes the ragi and millets at the Itagi processing plant and packages it in 1 Kg, 2 Kg and 25 Kg packets, brands it as 'Bhoomika' and sells it locally and its Rural Mart. He added that the value-added products sell in places other than Haveri when the FPO gets big orders. He expressed that the challenges being faced by the FPO is in getting bulk orders exceeding one quintal. He pointed out that bulk marketing would make FPOs self-dependent. He not-



ed that awareness of millets was lesser in the local markets and the need of the hour was to look at urban markets like Bengaluru for millets where the awareness is greater. He said that with the help of NABARD's 'Grameena Habba' events held once or twice a year, the FPO has been able to sell in urban markets. He said that if marketing services were given to FPOs by the authorities, they can certainly become profitable.

Patil continued and appreciated the FPO for the noble work done. However, he pointed out that the FPO was doing only one level of value-addition. As the next step, further levels of value addition can be made. He took the example of Gutte Ragi that he grows in this land. He makes ragi cookies with ghee and jaggery and sells it for a much higher price than just selling the ragi as-is. By doing this he gets the price that he wants for his produce. He said that by making VA products a farmer can get five times the price he gets for raw products. He shared information about his company Organic Options rural mart. He stressed that markets for agriculture products must be created where they don't exist.

He said that he makes his money in repeat orders. He explained that the real owner of the mart is the customer. He shared an anecdote where he sourced ragi cookies for a lady customer at 9 PM because she was adamant to buy it in his rural mart only. The lady was buying the ragi cookies to mix in the milk that she feeds her baby.

He also took the example of a success story in Gangavathi, Koppal, where the members of Annapoorneshwari SHG which was making pickles as a VA produce out of local produce. His organisation came forward to package and brand the product and these products were selling well in his rural mart. He also informed me that organic pickles have beneficial bacteria in them, and this

was not present in the pickles that are made in factories because the pickle is mixed with preservatives. Hence people prefer organic pickles. He also enlightened the audience that packaging in glass bottles was better than plastic containers.

> He urged the FPOs to work like companies and pay attention to product design and branding. He said that research has proved the customer takes eight

seconds to make a buying decision. So, the product information must be simple and useful. He explained the concept using coriander pickle as an example.

He mentioned that such fast moving goods sell up to 500 kg per month. Patil explained the benefits of getting a GI tag for VA products. He dealt with sales tactics like informing the customer of the origin and specialty of Haveri mangoes. If the customer is not informed of the origin, then the locally grown mangoes will not find a market, he debated. He compared this with Byadgi chillies from the Haveri region that are now famous all over the country. He suggested the norm of one FPO, one famous product.

At this point a short video on mechanised agriculture and technology-enabled precision farming in Israel was shown to the participants.

The resource person resumed his interaction with the trainees. He explained that sales and marketing were two different aspects. The job of marketing manager is to develop the strength of the brand. A salesperson takes the product to the customer.

Interaction: Patil asked the participants to understand what the real needs of the customer are. They answered that guality and taste matter to the customer. The audience also said that increasing yield with limited water is an absolute necessity. To this Patil pointed out that like in Israel, farmers in Kolar are also adopting techniques like drip irrigation as the region lacks water resources.

He also informed that the sewage water from Bengaluru was being recycled and reused to fill Kolar lakes and this had given the farmers there some relief in terms of addressing the groundwater shortage problem. He talked in brief about automated agriculture using intelligent devices to supply water to crops automatically. He took his own example to explain the concept.

Patil said that his land and his house are 80 km apart, and he grows dragon fruit and papaya which need very little water (once in 12 days a participant said). He said that the water to be



given to these crops should be determined by rainfall. He suggested that instead of selling the whole fruit, tutti-frutti can be made with raw papaya and sold as a VA product for several times the price. He said that just out of one tomato crop, seeds, squash, chutney, powder can be made as value-addition and sold for many times the original price.

He stated that selection of seeds must be local because seeds brought from one region may not survive in other climatic conditions. He promoted that 'family farmer' concept wherein each family has a farm producer like it has a doctor or a lawyer. He added that people are increasingly realising that organic products are better than factory products. He touched up genetically modified crops like BT cotton.

At this stage, Patil introduced the working and the benefits of mobile weather apps like weather. com, Meghadoot with the location feature on. He introduced other mobile apps like Kisan Diary (for account keeping). He suggested that markets for VA products can be created by hosting events like farmer festival, rural festival, and weekly shandies.

He again stressed that the farmer must build his own 'salary' into the accounting. He also stressed the need for a full-time marketing manager in each FPO and creating demand was the most important job of the FPO. He said that the FPO should have a designated office with all modern facilities. He said that market exploration should not stop at Bengaluru, but extend to Mumbai, Hyderabad, Pune, Dubai, UK, and USA. "APMC is not the only market. Markets today are global," he added. He gave the examples of Big Basket, Amazon, and Dunzo Daily which buy farm products from registered vendors. Maintaining quality is the key to brand building.

Patil addressed a participant named Vijay who grows cabbages in his land. He suggested that he talks to Chinese restaurants which buy cabbages in bulk. He extolled the virtues of multi-cropping whereby farmers can increase their income. He declared that knowledge-based farming is more beneficial than input-based farming.

At this point a short video on vendor registration was shown to the participants. With this the programme paused for lunch.

Module 2: Financing Smart Farming



R K Balachandra, Lead Bank Manager (Retd), Gonikoppal

Post lunch, Balachandra, Retd. Lead Bank Manager and resource person of the training began the session on agriculture loans. He opened his presentation by discussing the burning issue being reported in the media that CIBIL score rating should not be considered for crop loans. He said that agriculture was the 'culture' of farmers of the land.

He clarified that there is no agricultural activity for which a loan can be denied by a bank. He stressed that each agricultural activity can be financed by banks. He added that crop loans can be given to farmers irrespective of the crop they are growing. He informed that no security is needed for crop loans up to Rs 1.60 lakh. The agricultural land must be given as collateral if the loan amount is greater than that. This is the RBI guideline that applies to all banks giving crop loans. He noted that as per RBI regulations the crop loan amount is calculated for a five-year tenure. He said that while determining the loan eligibility, all the livestock like cattle, chicken etc must be considered. Another important consideration is a 20% inflation rate per year is considered while sanctioning the loan. Therefore, the farmer does not spend on stamp duty repeatedly. He pointed out that all the farmer needs to do is to maintain a credit balance (not a debit balance) to renew his loan each year.

The loan is sanctioned keeping in mind all the activities like pest control, seed purchase, irrigation, labour charges etc. He categorically stated that any farmer with own land can avail a crop loan. He also informed that in credit cooperative societies and DCC banks loans are given at 0% interest up to Rs 3 lakh.

However, the nationalised banks do not follow this rule. But even in these banks, if the farmer repays the loan one day before the expiration, he need not pay any interest. He noted that of the 7% interest on crop loans, the Centre pays 2%, state government pays 1% and the farmer pays only the remaining 4%.

He stated that loans are given by banks for plantation crops like areca, pepper, and coffee. Banks give loans for tractor, trailer, and all other machinery needed for agriculture. But to buy a tractor the farmer should own at least seven acres of land. Banks give loans for estate purchase wherein the loan is not fixed as per market value, but the sub-registrar value. As much as 50% of this cost is given as a loan. Banks sanction loans for all types of irrigation equipment. These loans are longterm loans. The farmer only must repay each year. Loans are also given for animal husbandry, poultry, and fisheries.

Balachandra said that banks do not hesitate to sanction Rs 3 lakh to Rs 10 lakh for SHGs. He noted that the main objective here is women empowerment. He lamented that the Joint Liability Group scheme failed in India.

He pointed out that angry farmers' protest by dumping tomatoes on national highways when the price of tomatoes falls drastically. Instead of doing that they could have made VA products out of the yield and made money. He shared that the bank also gives temporary loans against yield stored in cold storages (all that is needed is the receipt from the cold storage). He said the problem was that though there are so many schemes for farmers, they are unaware of these schemes. He lauded PAF for becoming a bridge between banks, the government, and farmers and creating awareness on these issues. He also shed light on gold loans. He urged farmers to 'dream big'. He said that mango growers can avail plantation crop loans and get up to eight to 12 years to repay the loan.

Balachandra revealed that banks give long term loans for drone purchases up to Rs 12 lakh. But one farmer can buy only two drones. The bank asks for a 25% profit margin and fixes the term at

three years. The short term is fixed because drone technology is developing so fast that today's drones can be obsolete in three years. He noted that bank loans were given under the Kisan Pushpak scheme for digging bore wells, irrigation etc. at a nine-year repayment period. He suggested that farmers can make VA products out of coconut water and sugarcane juice and earn incomes. He took the example of farm transportation loans wherein even scooters are covered. High tech agriculture loans up to

Rs 18 lakh is given by banks at a subsidised rate of interest.

He informed that there were many benefits for FPOs under the Pradhan Mantri Atma Nirbhar programme at 50% subsidy. He urged FPOs to set up processing plants using the financing available under this scheme.



Interaction: In reply to questions from the audience, Balachandra said that banks are authorised to give crop loans only to holders of agricultural land and not non-agricultural (NA) land. In case of NA land, the landholder must apply for conversion of NA land to agricultural land before seeking a crop loan.

He clarified that all agricultural loans are given at a rate of interest fixed by the government and banks cannot charge even 0.25% extra.

A short video on 'Family Farmer' was shown to the participants at this juncture.

The resource person resumed his address to the participants. He quizzed the participants on the video they had just seen. The audience came out with their learning from the video. They said that the Smart farmers in the video sold directly to customers, lowered their input costs, and earned better incomes. Patil explained the various new methods of farming being adopted by the agripreneurs in the video in pest control, irrigation, and making of VA products.

Patil said that farmers can reduce their yield transportation costs by using the mobile app Loop. He explained how to use the Bele Darshaka app and enter data in it which helps producers to connect with customers. He mentioned that the farmer needs a Right to Tenancy Certificate (RTC) for this. He also introduced other apps like Kayaka Mitra, and another app for pest management.

Module 3: Innovations in Transformative Technology



Dr Avinalappa Hotti, Consultant / Project Coordinator, Sarvodaya

Avinalappa, Consultant / Project Coordinator at Sarvodaya, Integrated Rural Development Society, Koppal and resource person of the training said that there is an App called Plantix on mobile wherein by merely uploading a detail of the land area and the crop, the app will let you know how much water, fertiliser, and other inputs the land needs. He said that this is a German app, which is very user-friendly. He said that knowledge of English is not necessary to use this app. He said that because the percentage of cultivable land was reducing, taking to organic and composite farming will revitalise the soil in three years' time. He said that the Plantix app gives the symptoms and preventive measures for pest attacks and diseases of specific crops like maize.

He admitted that mushroom pickle was a VA product with great demand. He urged SHGs to take it up as an enterprise. He said that the pomegranates grown in Kushtagi, Koppal have a market in Russia. He said that the farmer organisation there graded the produce by size and carbon content and exported it. But the catch is that in making VA products for the export market one must pay special attention to quality. He said that the Russian scientists who came tested not only the fruit but also the soil for authenticated parameters.

Interaction (with Srinivas Patil): During the interaction that followed, Patil said that Haveri farmers can supply their maize to a company called Cornitos that makes branded popcorn and other edible corn products. He said that he himself is willing to buy corn flour with 14% moisture content. He explained how to approach the customer directly and eliminate middlemen.

A member of the Bhoomika FPO said that the FPO had reached the level of signing an agreement with a large customer, but their conditions happened to be unacceptable.

Patil asked the FPOs not to go by oral agreements but to put everything in writing. He cautioned that nothing should be supplied without a purchase order. He also cautioned that the FPO should ascertain whether the prospective buyer has a GST number. He informed that farmers could avail overdraft facilities in banks to get loans if they have a current account.

At this point the stage was offered to the participants who wanted to share their views and experiences.

A Ranebennur farmer addressed his fellow participants saying that he was using lemon grass grown on his seven-acre land and selling it as a VA product to cosmetic manufacturing companies. Inviting others to visit his farm he said that his dire need is to know how he can export his products. He was magnanimous enough to share his mobile number with his comrades.



Another farmer said that he has five and half acres of land where he grows areca on one and half acres. He also grows pepper and cardamom using organic farming methods. He stressed that owning cattle would prove very profitable to farmers.

Another FPO member from Ranebennur said that the FPO owns a tractor and is involved in the input business and making VA products out of garlic as an output business. He said that the FPO was supplying 1 Kg and 5 Kg packets to malls and the export market. Patil suggested that making garlic pickle and powder should be the next level of value-addition.

A member of the Spoorthi FPO thanked the organisers (PAF and NABARD) for conducting the training programme. He said that he had garnered much learning from the programme. He

opined that soil health is very important and farmers should adopt scientific methods of farming. He said that Spoorthi FPO was involved in input business like sale of seeds and fertilisers. He said that the FPO had done Rs 70 lakh worth of business in one month. He mentioned that the FPO was GST tagged.

Another member of the Vaidurya FPO said that the FPO was involved in the input business and had supplied several tons of fertilisers to its members. He said that he was adopting organic farming on his one-acre plot. He said his FPO is willing to sell soybean, maize, and ragi in bulk. Patil suggested that the farmer can make VA products like chivda from the soybean.

Another farmer said that floriculture can open new avenues for farmers of Haveri.

A lady farmer from Byadgi taluk said that she was part of an FPO which was animal husbandry focused. The FPO has over 200 shareholders and the FPO had collected Rs 3.5 lakh from them. She said that the FPO had given livestock to members to rear and was buying animal products from them for marketing. She stressed that what they needed badly was marketing support. Patil said at this point that he was prepared to buy up to 1,000 kilos of ghee and eggs from the FPO.

Another lady farmer from Haveri Farmer Producer Company (FPC) addressed the gathering and said that her farmer organisation was 16 years old and with the help of an NGO, they had educated hundreds of lady farmers in organic farming. The training was not given a classroom environment but was hands-on. The farmers were trained in their farms. She said that this had sky-rocketed their membership and there are 2,016 shareholders in the FPC now. She said that the FPC was mainly involved in input business. She presented some challenges in doing output business. She added that the FPO had arranged for crop loans for its members and SHGs to the level of Rs 10 crore by signing an MoU with Vijaya Bank and others. Another lady farmer said that she had undergone training in organic farming conducted under the PM Atma Nirbar scheme.

At this point participation certificates were presented to the participants of the programme. A NABARD FPO representative proposed the Vote of Thanks and the programme ended.



Feedback

Total Number of Participants



Key Takeaways

What the Government must do?

- Conduct awareness programmes on crop loans- how to apply to banks, and how to manage the debt
- Encourage FPOs and SHGs to avail benefits of the PMFME and PM Atma Nirbhar programmes and become self-sustaining
- Expose farmers to drone technology for agriculture by demonstrating the use of such technology in their fields
- Find new ways to finance output business of FPOS



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Was the training conducted in an organised way?





What FPOs must do?

- Set up stalls on highways and sell value-added products manufactured by their SHGs
- Appoint a full-time marketing manager to create demand for VA products
- · Organise 'Grameena Habbas' and other events to create a market for SHG VA products
- · Encourage member participation in train the trainer programmes conducted by organisations like PAF to ensure seamless dissemination of knowledge on transformative agriculture

Were the examples suitable and helpful to understand





Number of Feedback











What did you like most about this programme?

- 1. Banking Intention, Sales and Marketing
- Loan facilities from the bank for agriculture sector and marketing strategies 2.
- 3. Marketing & Training
- 4. How the FPOs function
- 5. We liked the secession about marketing
- 6. How to get the loan for FPO
- 7. Liked about the Organic farming and Marketing of the farmers products
- 8. Facilities available for the marketing and the farmers products
- 9. How to earn profit from marketing
- 10. How to get the loan for FPO from the bank
- 11. About the banking
- 12. How to get the profit from value added product produced by the farmers
- 13. How we can earn profit from the product produced by us
- 14. Information about the bank loan
- 15. Uses for the agricultural products
- 16. Liked the training models
- 17. Total information about the value added products
- 18. Session about the coordination about the program, Value added product required for the market
- 19. How to get loan from the bank for farmers, Mobile application for marketing the product
- 20. About the marketing and how to use the mobile application
- 21. How to the marketing
- 22. About Marketing and value added product
- 23. Got more information about on training on transformative agriculture technology organised by NABARD
- 24. Well organised training
- 25. Without any loan, how to market the product produced by the farmers
- 26. How to develop the FPOs and got to know about the functioning of bank and how to get the marketing of the product produced by the farmers
- 27. How to manage the agriculture crop
- 28. About the bank sector
- 29. How to get bank loan for FPO, Technology using by the farmers, FPO input and output Business
- 30. How we can market product produced by us
- 31. How to do the value addition

What did you not like about this programme?

- 1. Nothing
- 2. More time could have been given
- 3. Nothing
- 4. Nothing
- 5. Nothing
- 6. Nothing
- 7. Nothing
- 8. Nil
- 9. It was a new experience for me I like this programme
- 10. Not I can think of. It went well
- 11. Nil
- 12. Should be a 3 day programme, in future it will help us
- 13. Some of presentation where not particled I mean it is theoretical only instead they could use image if could be more interactive
- 14. As our major crop is coffee, pepper it would have been more better of this programme was more relevant to coffee & pepper
- 15. Expected it to be more region specific and crop specific like coffee, pepper, cardamom & Arecanut
- 16. Marketing E Marketing and Avi Class
- 17. The programme was nice there is no any dislike
- 18. Nothing as such to be disliked adoption of mobile apps to be promoted to farmers
- 19. Nil
- 20. I liked this programme
- 21. Good suggestion

Annexures

Annexure 1: Agenda

Training on Existing Transformative Agri Technology, Mobile-based Applications, Innovations & Smart Farming Day & Date: Saturday, July 2, 2022 Venue: ICAR-Krishi Vigyan Kendra, Hanumanamatti, Haveri 10.45-11.00 a.m. Registration 11.00-11.05 a.m. Introduction Ms. Ashwini Venkatram Senior Officer - Finance, Public Affairs Foundation, Bengluru 11.05-11.10 a.m. Welcome Address Dr. Annapoorna Ravichander Executive Director, Public Affairs Foundation, Bengaluru 11.10-11.20 a.m. Inaugural Address by Chief Shri. P. Manjunath Guest Joint Director-Agriculture JDA Office, Haveri 11.20-11.30 a.m. Introductory Remarks Dr. I.S. Katagere, Director of Extension, UAS Dharwad 11.30-11.35 a.m. Shri. M Mahadev Kirti District Development Manager, NABARD, Haveri 11.35-11.40 a.m. Mr. Prabhudev, LDM, Haveri Special Guests 11.40-11.45 a.m. Dr. M V Manjunath Dean and Campus Head Agriculture College, Hannummanamatti, Haveri 11.45-11.50 a.m. Dr. Ashoka, Senior Scientist & Head ICAR KVK, Haveri 11.50-12.00 p.m. Coffee/Tea Break 12.00-1.00 p.m. Module 1: Existing Srinivasa Patil R, Research Engineer, Transformative Technology Farmer & Agripreneur & Sangeetha K.B. Entrepreneur, Navaneetam Organic Farms 1.00-1.45 p.m. Lunch Break 1:45-2:15 p.m. Module 2: Financing Smart R K Balachandera Retd. Lead Bank Manager Farming 2.15-3.00 p.m. Module 3: Innovations in Dr. Avinalappa Hotti Transformative Technology Consultant /Project Coordinator at Sarvodaya, Integrated Rural Development Society, Koppal 3.00-3.15 p.m. Coffee/Tea Break 3.45-4.15 p.m. Q & A and Summing Up Moderator - Srinivasa Patil R

Annexure 2: Certificate Conducted by **CERTIFICATE OF PARTICIPATION** ಭಾಗವಹಿಸುವಿಕೆಯ ಪ್ರಮಾಣ ಪತ್ರ PUBLIC AFFAIRS FOUNDATION This certificate is presented to for participating in a training programme on Training on Transformative Agriculture Technology, Mobile Based Applications, Innovations and Smart Farming ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಪ್ಲಿಕೇಶನ್ ಗಳು, ನಾವೀನ್ಯತೆಗಳು ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಎಂಬ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ Saturday, July 2, 2022 Sponsored by Hanumanamatti, Haveri ٩ annon NABARD National Bank for Agriculture and Dr. Annapoorna Ravichander Rural Development Executive Director Public Affairs Foundation, Bangalore Date:



Annexure 3: Feedback Form Organised by Feedback Form: Hanumanamatti, Haveri PUBLIC AFFAIRS FOUNDATI ಫೀಡ್ ಬ್ಯಾಕ್: ಹನುಮನಮಟ್ಟಿ, ಹಾವೇರಿ Training on Transformative Agriculture Technology, Mobile Based Applications, Innovations and Smart Farming ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಪ್ಲಿಕೇಶನ್ ಗಳು, ನಾವೀನ್ಯತೆಗಳು ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಎಂಬ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ Name: ಹೆಸರು Phone Number: ದೂರವಾಣಿ ಸಂಖ್ಯೆ 1. Were the objectives of the training met? Yes No ತರಬೇತಿಯ ಉದ್ದೇಶಗಳನ್ನು ಪೂರೈಸಲಾಗಿದೆಯೇ? • ಹೌದು ଅଁ 2. Were the exercises useful in applying the learning? Yes No ಕಲಿಕೆಯಲ್ಲಿ ಅನ್ನಯಿಸಿದ ಚಟುವಟಿಗಳು ಉಪಯುಕ್ತವಾಗಿವೆಯೇ? • ಹೌದು • ଅମ୍ 3. Was the training conducted in an organised way? • Yes No ತರಬೇತಿಯನ್ನು ಸಮಗ್ರವಾಗಿ ಆಯೋಜಿಸಲಾಗಿತ್ತ? • ಹೌದು

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Annexure 4: Media

1. Kannadaprabha





ಲ್ಲಿ ಆಧುನಿಕ ತಂತ್ರಜ್ಞಾನವನ್ನು ಕವಾಗಿ ಬಳಸಿಕೊಂಡು ರೈತರು ಹೆಚ್ಚಿನ) ಪಡೆದುಕೊಳಬೇಕು ಎಂದು ದಾರವಾಡ ತ್ವವಿದ್ಯಾ ಲಯದ ವಿಸ್ತರಣಾ ನಿರ್ದೇಶಕ ಎಸ್. ಕಟಗೇರಿ ಹೇಳಿದರು. ೂಕಿನ ಹನುಮನಮಟ್ಟ ಕೃಷ್ಣಿ ಏಜ್ಞಾನ ನಲ್ಲಿ ಶನಿವಾರ ಬೆಂಗಳೂರಿನ ಪಬ್ಲಿಕ್ ೯ ಫೌಂಡೇಶನ್ ಸಹಯೋಗದಲ್ಲಿ ಾಗಿ ಏರ್ಪಡಿಸಲಾಗಿದ್ದ ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಉತ್ರಜ್ಞಾನ ಪರಿವರ್ತಕ, ಮೊಬೈಲ್ ತ ಅಪ್ಲಿಕೇಶನ್, ನಾವಿನ್ಯತೆಗಳು ಹಾಗೂ

ಕೃಷ್ಠಿ ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ

ದಿನದ ತರಬೇತಿ ಕಾರ್ಯಾಗಾರದಲ್ಲಿ ರಾಣಿಬೆನ್ನೂರು ತಾಲೂಕಿನ ಹನುಮನಮಟ್ಟಿ ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರದಲ್ಲಿ ರೈತರಿಗಾಗಿ ಏರ್ಪಡಿಸಲಾಗಿದ್ದ ಒಂದು ದಿನದ ತರಬೇತಿ ಕಾರ್ಯಾಗಾರದಲ್ಲಿ ಧಾರವಾಡ ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾ ಲಯದ ವಿಸ್ತರಣಾ ನಿರ್ದೇಶಕ ಜ್ಞಾನದ ಅರಿವಿನ ಕೊರತೆಯಿಂದ ಶೇ. ಡಾ. ಐ.ಎಸ್. ಕಟಗೇರಿ ಮಾತನಾಡಿದರು. ರೈತರುತಾವುನಿರೀಕ್ಷಿಸಿದಪ್ರಮಾಣದಲ್ಲಿ

ಹು ಪಡೆಯಲು ಸಾಧ್ವವಾಗುತ್ತಿಲ್ಲ. ಆದರೆ, ಇದೀಗ ರೈತರು ಮೊಬೈಲ್ ಆ್ರಪ್ ಗಳ ಮಾಹಿತಿಯನು ಪಡೆದುಕೊಳ್ಳಬೇಕು ಎಂದರು.

2. Hosadidantha

ಂಡು ಮಾತನಾಡಿದರು.

ಂಹೊಸ ದಿಗಂತ

ತಾಂತ್ರಿಕತೆ ಮಾಹಿತಿ ಕೊರತೆಯಿಂದ ಕೃಷಿಯಲ್ಲಿ ಹಿನ್ನಡೆ

ಹಾವೇರಿ; ರೈತರಲ್ಲಿನ ತಾಂತ್ರಿಣಿ ಮಾಹಿತಿ ಕೊರತೆ ಯುಂದಾಗಿ ಇಂದು ಶೇ.90 ರೈತರು ಊಹಿಸಿದವು ಬೆಳೆಯನ್ನು ಬೆಳೆಯಲಾಗುತ್ತಿಲ್ಲ, ಆಗತ್ಯ ತಂತ್ರಷ್ಟಾನ ಮಾಹಿತಿ ನೀಡುವುದರೊಂದಿಗೆ ತರಬೇತಿಯನ್ ನೀಡುವುದು ಆಗತ್ರವಾಗಿದೆ ಎಂದು ಧಾರವಾಡ ಕೃಷಿ ವಿವಿಯ ವಿಸ್ತರಣಾ ನಿರ್ದೇಶಕ ಡಾ. ಐ.ಎಸ್.ಕಟಗೇರಿ ಹೇಳಿದರು.

ಜಿಲ್ಲೆಯ ರಾಣೇಬಿನೂರ ತಾಲೂಕಿನ ಹನುಮನಮಟ್ಟಿ ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರದಲ್ಲಿ ಪಬ್ಲಿಕ್ ಆಫೇರ್ಸ್, ನಬಾರ್ಡ್, ಕೃಷಿ ಇಲಾಖೆ ಮತ್ತು ಐಸಿಎಆರ್, ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರ ಸಹಯೋಗದಲ್ಲಿ ಆಯೋಜಿಸಿದ್ದ ಆಸ್ತಿತ್ವದಲ್ಲಿರುವ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ ಮಾವರ್ತಕ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಭ್ಯಿಕೇಶನ್, ನಾವಿನ್ನತೆ ಹಗೂ ಸ್ಪಾರ್ಟ್ ಕೃಷಿ ವಿಷಯಗಳಗೆ ಸಂಬಂಧಿ ಸಿದ ಒಂದು ದಿನದ ಕಾರ್ಯಾಗಾರ ಉದ್ರಾಟಿಸಿ ಆದರು ಮಾತನಾಡಿದರು.

ನಬಾರ್ಡ್ ಆಭವೃದ್ಧಿ ಅಧಿಕಾರಿ ಮಹದೇವ ಕೀರ್ತಿ

ಯಂತ್ರಗಳ ಬಳಕೆ ಬಗ್ಗೆ ಮಾಹಿತಿ ತರಬೇತಿಯಲ್ಲಿ ಸಧ್ಯ ಲಭ್ಯವಿರುವ ಆ್ಟಪ್ ಗಳ ಪರಿಚಯ, ಉತ್ತಮ ಕೃಷಿಕನಾಗಲು ನಿರ್ವಹಿಸಬೇಕಾದ ಜವಾಬ್ದಾರಿಗಳು, ಬ್ಯಾಂಕ್ ಗಳೊಂದಿಗೆ ವರ್ತಿಸುವಾಗ ಅರುವ ಸವಾಲುಗಳು, ಎಫ್.ಪಿ.ಓ ಕಚೇರಿಗಳ ನಿರ್ದಹಣೆ, ಮಿಶ್ರ ಬೇಕಾಯಯದ ಪಾಮುಖ ತೆ ಹಾಗೂ ಯಂತಗಳ

ಮಾತನಾಡಿ, ಪ್ರಸಕ್ತ ಜಿಲ್ಲೆಯಲ್ಲಿ ಸಿರಿದಾನ್ಯಗಳ ಬೆಳೆಗಳನ್ನು







ಹಣ್ಣಿನ ಬೆಳೆಗಳನ್ನು ಬೆಳೆಯುತ್ತಿದ್ದು ಇವು ಎದೇಶಗಳಿಗೆ ರಪ್ರಾಗುತ್ತಿವೆ ಎಂದರು.

ಐಸಿಎಆರ್ ಹಾಗೂ ಹಿರಿಯವಿಜ್ಞಾನಿ ಡಾ. ಅಶೋಕ.ಪಿ. ಹಾಗೂ ಹನುಮನಮಟ್ಟೆ ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರದ ಡೀನ್ ಎಂ.ವಿ.ಮಂಜುನಾಹ ಮಾತನಾಡಿದರು. ಪಬಿಕ್ ಆಫೇರ್ಸ್ ಫೌಂಡೇಶನ್ ನ ನಿರ್ದೇಶಕಿ ಡಾ. ಅನಮೂರ್ಣ, ಅಕ್ರಿನಿ ಹಗೂಣತರರು ಮಾಹಿತಿ ನೀಡಿದರು. ಶ್ರೀನಿವಾಸ

Annexure 5: Video Link of the Training Programme



https://www.youtube.com/watch?v=Z1MaHqibxUE

Annexure 6: Photograhs

Dr. Annapurana Ravichander addressing the audience



PAF Team



Group Photo



Annexure 6: Photograhs

Group Photo



Resource Person interacting with participants



JD, Agriculture interacting with Dr. Annapoorna and Srinivas



Lunch



Distribution of Certificates



Dr. Annapoorna giving away memento to the Dignitary



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