

Report on

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

Gangavathi, Koppal

Saturday, May 21, 2022

Organised by



PUBLIC AFFAIRS FOUNDATION
Partnership for Better Governance

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NABARD

National Bank For Agriculture And Rural Development

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Koppal

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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 programmes 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 have 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 third training was held in Gangavathi, Koppal on Saturday, May 21, 2022 at ICAR- Krishi Vigyan Kendra, Gangavathi (Refer to Annexure 1 for the Agenda).

This report provides an overview of the key deliberations from the programme held at Gangavathi & Gonikoppal.



Koppal

ICAR - Taralabalu Krishi Vigyan Kendra, Gangavathi

Saturday, May 21, 2022



Introductory Session

Ms. Ashwini Venkataram, Senior Officer - Finance, PAF welcomed the gathering and explained the purpose and contents of the training programme to the participants. She said that PAF was working closely with the government and the National Bank for Agriculture and Rural Development (NABARD) which is the sponsor of the training programme series, to fetch the benefits of government schemes to the grassroots farmers. Ashwini introduced the chief guests on the dais and welcomed them. She also invited PAF Training Coordinator Indira Pichumani to deliver the welcome address to the gathering.



Welcome Address

In her welcome address, Indira Pichumani, Training Coordinator of PAF in her welcome address said that PAF was a not-for-profit organisation based in Bengaluru. She added that NABARD had commissioned PAF to conduct a series of trainings in the state on the above-mentioned topics. Indira mentioned that NABARD had mandated PAF to conduct the trainings in six districts of the state and PAF had already held such trainings successfully in Chitradurga and Davanagere. She added that the current programme was the third in the series in Gangavathi, Koppal District and the rest would be conducted in Kodagu, Raichur and Haveri. She again welcomed each and everyone to the training programme and expressed the hope that the participants would benefit from it. She also hoped that the participants would get a lot of useful learning from it. As a personal note she again invited the guest speakers on behalf of PAF and requested them to share their knowledge and experience of the day's topics.



Introductory Remarks

Dr. Raghavendra Yaligar, Senior Scientist & Head, ICAR - Krishi Vigyan Kendra delivered the introductory remarks at the function. He said that PAF, NABARD and Krishi Vigyan Kendra, Ganga-vati had joined in the effort of bringing the training programme on Transformative Agriculture



Technology and Smart Farming to grassroots farmers. He explained that the objective of the programme was to inspire farmers who are adopting traditional farming techniques to migrate to Smart Farming. He expressed that the farmer today was facing many challenges in their farming activities due to vagaries of climate and ploughing and sowing activities were ridden with risks. He explained that Smart Farming could be practised remotely. He averred that Smart Farming was precise and ensures that the right soil and manure is used depending on the type of crop and the location of the field.

He also mentioned that the decision to use the right irrigation systems and pesticides could be made through existing agricultural technologies and robotics, artificial intelligence-based software can be employed to improve the yield from a given plot of land. He stressed that the most advanced technologies are now available on smartphones. He gave the example of a tracking system to remotely monitor cattle that are left to graze.

He also said that mobile apps exist to select the right cattle feed to increase the milk yield. He added that apps also exist for choosing the right amount of water to be fed to crops and decrease the use of chemicals like pesticides and fertilizers. Through the effective use of the natural resources available in the plot of land, reduction in labour costs by using 'unmanned vehicles' like drones and robots, yield can be increased, he said. The 'third green revolution' was occurring in the country wherein technology which is already in use in developed countries is being utilised in India.

He noted that using satellite technology, reliable weather forecast apps can be used to determine the rainfall, atmospheric temperature, and use farming techniques accordingly. He said that knowledge and use of such smart farming apps was almost absent among small farmers in the state and encouraged the participants to learn as much about such apps as possible from the training programme. He gave the example of apps like Kisan Suvidha and Atma Nirbar apps to drive his point home. He once again requested the participants to involve themselves in the programme well and benefit from it.

Inaugral Address

Shri. B G Mastan Reddy, Special Officer, College of Agriculture, Gangavathi said that several advancements in mechanised agriculture had benefited farmers greatly over the years. But the outcome was overuse of natural resources like water and soil. He stressed that with smart farming



methods, farmers can bring down their use of pesticides and fertilisers and save the fertility of soil.

He took the example of nitrogen applications given to crops wherein farmers apply up to 300 kg of the chemical to one acre of land. He explained that the sole objective of smart farming was efficient natural resources management. He pointed out that by using weather forecast apps farmers can time their agricultural activities better to increase yield.

He pointed out that due to overuse of water for irrigation, as much as 1 lakh hectares of land was becoming non-cultivable for every 3.5 hectares of land. He urged farmers to use water-saving technologies like field water tubes, drip irrigation, and micro irrigation. He added that those technologies exist, there is dire need to digitise them and create apps for them. He noted that farming should be mechanised to avoid human labour costs wherein each labourer is paid up to Rs 500 to Rs 700 per day for activities like ploughing and spraying.

He mentioned that drone technologies development was in an advanced stage in India. He said that using drones, a piece of land that requires 200 litres of fertilizer (or pesticides and micronutrients) can be covered with just 20 litres. He also pointed out that drones are being used in West Godavari district of Andhra Pradesh for seeding as well.

He noted that farmers were increasingly using social media platforms like Whatsapp to find solutions to farming problems. They consult agricultural scientists using these platforms and find remedies for crop failure, disease, and infestation. By merely sending a photo of the field on Whatsapp, farmers are getting solutions to their farming woes on Whatsapp, Reddy added. He discussed precise farming experiments that were carried out three years ago in Koppal district. During the experiments scientists discovered that soil fertility can be leveraged to the maximum extent by calculating the fertility of each piece of land and sowing accordingly.

He mentioned that there was a lot of software for calculating the amount of fertiliser needed for a specific piece of land and urged farmers to utilise such software. He gave the example of

sugarcane being grown by Belagavi farmers where all the activities are automated. He pointed out that the only difference between other countries and India is the land holding pattern. While farmers own up to 10,000 acres of land in other countries, here we find fragments of land (one to five acres). It is very important to create apps for such land holding patterns, he stressed. He urged farmers to use Information Technology to the hilt in their farming activities.

Address by Cheif Guests

Shri. Chandrakanth Nadagowde, District Agriculture Training Centre (DATC), Gangavathi in his address, lauded PAF for acting as a catalyst to spread smart farming techniques. He said that he was glad to be present at a programme that would be very useful to farmers. He traced the history of agriculture in India way back to 10,000 years ago when farming actually began and said that there had been multiple advancements since. He appreciated the role that government and non-governmental agencies had played in bringing about such advancements in agriculture. He said that such agencies had successfully influenced farmers to adopt newer technologies that increase production. He spoke of the green revolution that happened, the outcome of which was an increase in agricultural yield across the country.



He said that smart farming techniques improve the yield and reduce the burden of the farmers. He gave the example of developing countries that had adopted smart farming to improve the produce. He said that the land holding pattern of small and marginal farmers in India wherein the owned lands are very small and fragmented, is a major hurdle that prevents adoption of smart farming. He hoped that 25 years from now all farmers in the state would become smart farmers.

He urged the participants to make the maximum benefit from the training programme and spread the knowledge they acquire with other farmers who are not participating in the programme. He pointed out that even uneducated farmers had conducted the crop survey this year and added that if that is possible then smart farming is also possible. He noted that the government would supply drones for crop survey from next year and that would make crop survey efficient and quicker. It would also make spraying of pesticides and fertilizers easier.

He noted that in the Tungabhadra Achcut area farmers had abandoned 1 lakh hectares of land as non-cultivable. He stressed that this land could have been saved if smart farming had been used. He urged farmers to save fertile land and natural resources for future generations.

Shri. Raman Jagadeesh, District Development Manager, NABARD, Koppal began his speech by introducing NABARD and its objectives. He noted that NABARD does not directly loan to farmers; but does it indirectly by funding through various governmental and non-governmental agencies.

He explained that while the Reserve Bank of India (RBI) has commercial obligations, NABARD's sole beneficiaries are farmers and rural people. He mentioned that NABARD was founded in 1981. He explained that crop loans are given to farmers by NABARD through banks not directly to farmers. He said that NABARD issues loans (through banks) for all sorts of agricultural needs like purchase of tractors, fertilisers, seeds etc.

He added that apart from giving term loans, NABARD also funds rural road development (connectivity), minor irrigation projects, bridge construction by funding the state government based on proposals and loan sanctions to GOK. He gave the example of concretisation of the road leading to Agricultural Produce Marketing Committee (APMC), Gangavati which was funded by NABARD. He also gave the example of the rice technology park that was formed on 300 acres of land by APMC Karatagi which was funded by NABARD. He also gave examples of school classrooms and anganwadis constructed with NABARD funding (Rural Development Projects).



He shared that by automation and mechanisation of agriculture, yields have improved over the last three decades. He suggested that farmers should make use of weather forecast apps before preparing the land for cultivation. He said that nitrogen, potassium, and phosphates were the three major nutrients that the crop requires. But overuse of these chemicals had robbed the land of its fertility.

He suggested that increased use of vermicompost prepared at home with wet waste, can substitute these chemicals. He revealed that vermicompost is said to have 90 nutrients and is very good for fertilising the crops. He cautioned that farmers need not be overwhelmed by technology because all agricultural technologies are built on existing methods of agriculture, only that they are mechanised and digitised. He pointed out that practically all information that a farmer needs is now available on smartphones. So, farmers need not go to agencies for information.

He then moved to the role that Farmer Producer Organisations (FPOs) should play in farmer societies. He stressed that by adding value to farm products farmers can make more money from their yield and it is the job of FPOs to search for markets for these products. He declared that the fundamental reason why FPOs exist is to eliminate middlemen who make money by

charging commissions in the sale of crops. While the farmers invest money, time, and energy to grow crops, the middleman profits merely by finding a market for the produce. This is unfair, Jagadeesh noted.

He said that FPOs are empowered to buy fertilisers in bulk from government agencies and from the open market. While government agencies follow a rationing system, any amount of fertiliser can be purchased in the open market. But the advantage of FPOs buying in bulk is that they get discounts on all purchases – even tractors and mechanised farming tools. This discounting ensures better profit margins for the growers of the crops (farmer). FPOs are also empowered to organise training programmes for their member farmers. He summed up the role of FPOs stating that the organisation is established for three major purposes—marketing, training, and discounted farm purchases.

He stressed the need for value-adding activities like cleaning, grading, polishing, and making other value-added products from raw produce. He gave the example of the five animal husbandry FPOs in Koppal that are adding value to dairy products and making successful profits in the open market. He urged FPOs to look for online markets globally for their farmer members. With this, the organisers announced the tea break.

Technical Session

Module 1: Existing Transformative Technology



Srinivasa Patil, Research Engineer, Farmer & Agripreneur

Srinivas Patil began his technical session by taking stock of the knowledge level of Self-Help Groups (SHG or Stree Shakti groups) and the role of FPOs in farmer societies among the participants.

Interaction: Patil encouraged FPO members to share their experiences. His primary question to them was what a FPO should do if he approaches the organisation for doing business with them as a customer. The FPO member who interacted with Patil said that he grows mainly corn and millets. A Koppal Siri FPO member shared that the FPO was helping members to make value added products like cookies and other bakery products out of millets.

Another FPO member Basappa who interacted with Patil said that his FPO was three years old and had 1,000 members. He added that they grow a large variety of millets, paddy and ragi in their lands and produce up to 3,000 quintals of produce each season. He said that the FPO was making all out efforts to reduce the use of chemical fertilisers and pesticides by substituting it with vermicompost and cow urine. He added that over 500 of the FPO members were using organic manure and pesticides for paddy cultivation by making these supplements at home. He proudly stated that his FPO has completely eliminated middlemen by fixing the prices of products and marketing them themselves. He added that one quintal of produce fetches Rs 3,300 in the market and farmer gets up to Rs 2,300 for his produce from it.

A member of the Siddeshwara FPO said that for the last two years, the FPO has been focussing on input business and now it is focused on output business. He added that the FPO was now involved in making value-added cornflour and other processed agricultural products. He mentioned the 325 FPO members who were involved in growing corn and marketing value added products.

A lady member of Annapoorneshwari SHG, a local women's SHG, said that 50 of the group members were involved in making Andhra style home products from locally grown produce and marketing them. Among other things the SHG makes packaged pickles, sweets, and fried snacks. She added that they had availed funding under the Atma Nirbhar scheme.

Sarita Mallikarjuna, who interacted with the gathering said that over 50 SHGs had organised themselves into a bigger organisation and were engaged in producing value added products, packaging and marketing them. She hoped that the programme would be useful for the SHG members to understand how to make and market value-added products.

Another FPO member said that his organisation was involved in growing and selling Bilichi rice which is a local (desi) special variety of rice. He said that the rice was rich in nutrients because it is grown on 500 acres of hilly region land where rainfall is abundant. He added that his FPO was focused on developing a market for this unique variety of rice through value addition.

Srinivas stressed that it is the FPOs responsibility to look for profitable markets for the farm produce grown by its members. He added that SHGs must join the FPOs in the marketing effort by making value-added products out of the raw produce. He mentioned that it would be preferable to get Food Safety and Standards Authority of India (FSSAI) approval and bank loans for this kind of effort.

Patil said that FPOs should first identify markets and then get down to growing the crops accordingly. He asked them to find demand and then work backwards and start growing the crops that



Technical Session

have a market. He urged participants to make use of mobile apps like YouTube to learn more about agricultural methods. He summed up that his presentation would focus on pre-farming preparation, sowing, tending to crop, harvesting and marketing of the produce. He explained that the market dynamics are based on supply and demand. And to make agriculture more profitable and earn at least Rs 20,000 profit per month, the farmers must make value additions to the raw produce and put it up for sale. Patil said that packaging of the value-added products was a dire necessity. He added that it is okay to use middlemen for marketing if the pricing is not done by them.

At this point Patil properly introduced himself as a software engineer by training and profession who had now started smart farming on eight acres of land because he hails from a family of farmers. He submitted that he had found farming to be rewarding not just in monetary terms but also in terms of job satisfaction. He said that by farming he was able to maintain good health.

He explained that he grows Mallika and other varieties of mango in his farm, and he sells it directly to end consumers through the stalls he has set up in the city. He does not take his produce to the APMC or other middlemen. In this manner he can sell his mangoes at even Rs 220 per kg. He urged SHGs to make pickles and papad out the local produce and package it differently. He stressed that the packaging and marketing content should promote the product as an 'organically produced' product. Only then will people buy it. With his Patil introduced the concept of unique selling proposition (USP).

Patil advised farmers to always think global. He said that their efforts should be focused on producing value-added products for the export market. "First overcome your apprehensions and think big, think global," he said.



Module 2: Financing Smart Farming

Nagarjuna A, Assistant Manager, SBI ADB Gangavathi said that banks give loans for a variety of agricultural activities. Other than crop loans, banks fund purchases of tractors and other mechanised farming equipment he added. He began by clearing the confusion around Kisan Credit Cards (KCC). He clarified that KCC was just another name for crop loan. He revealed that banks also finance Self Help Groups (SHGs) for many of their needs and dairy farmers for their needs.



Nagarjuna A, Assistant Manager, SBI ADB Gangavathi

He introduced Asset Bank Agri Loan (ABAL) products to the gathering under which loans can be sanctioned to farmers. However, he categorically stated that no bank will disburse loans without security. He mentioned that there are government schemes like Mudra under which farming activities can be financed. With this he invited the participants to ask him questions and clarify their understanding.

Nagarjuna continued by giving details of Mudra Scheme which can be availed in three different ways – Shishu, Kishore, and Tarun. Shishu loans can be availed up to Rs 50,000, Kishore loans up to Rs 5 lakh and Tarun loans up to Rs 10 lakh Nagarjuna informed.

He went on to provide information on loans for SHGs. He said that the SHG must be mandatorily registered. He shared that SHGs were sanctioned small loans like Rs 2 lakh and given a term to repay the loan. If the repayment schedule is prompt, then they will be sanctioned bigger amounts as loan.

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To a specific question from the audience as to whether loans will be sanctioned by banks without collateral, Nagarjuna, again repeated that somebody must provide collateral for loan sanctions (FPO president or directors). Nagarjuna enlightened the audience by sharing information on CIBIL scores. He said that the personal score of the FPO functionaries should be between 700 and 800 to avail loans.

Interaction: Soon the discussion took an interesting turn when the members of the FPOs began grilling Nagarjuna and demanding to know why loans are not being sanctioned without collateral. The discussion that went on for a long time was concluded by Patil who advised farmers to become self-reliant by searching for markets for their products and not to depend on bank loans. He also advised them to document all their sales with bills and invoices because banks demand proof of transactions for the years gone by.

At this point the audience was treated to two videos listed below:

- Smart Farming techniques in Israel (Drone technology, drip irrigation, biopesticides, biofertilisers and robotics)
- Family Farmer Model (educating urban populace about regional, seasonal farming, bio-dynamic/traditional farming, rain harvesting, ecosystem development, intensive organic farming, dairy management, green circular economy)

During the interaction that followed the videos the lady secretary of Siddeshwara FPO said that though they have been farming for generations, they had not realised how to earn from their produce. In her statement she narrated that farmers were largely concerned with selling their crop for money without any thought given to profitability through value addition. Though the FPO has eliminated the curse of middlemen, farmers had a microscopic vision of the possibilities for profit.

Basappa, the other FPO member present, said that the farmers of Koppal lacked the expertise and experience in marketing farm produce. He was joined by another lady FPO member who shared that the tomato they sell at the yard for Rs 10 per kg, is packed, labelled, and branded by Big Basket and sold online for Rs 500 per kg. Basappa continued stating that most farmers were disinterested in sorting, grading, and packaging products and this was the gap that needed to be addressed after the training programme.



FPO member Sarita in her inputs to the discussion said that multi-crop farming was much better because when the price of one crop falls, the farmer need not despair because there is another crop which will offset the losses. She underlined the need for organic farming as such produce fetches far more profit. Sarita's views were wholeheartedly supported by other FPO members in their contributions to the discussion.

At this point Basappa shared his experience with multi-crop farming. He pointed out that the three qualities the farmer should have -- sense of adventure, courage, and toil. He suggested that each farmer household should have cattle. This statement was received with applause from the gathering. He also suggested that by-products of the dairy can be used in a variety of ways by the farmer. He continued his speech by stating the tobacco manufacturers and liquor barons have become millionaires, but the ordinary food provider remains poor. He pointed out that ragi cultivation had taken a back seat in recent years and coconut cultivation was nearing extinction in the region.



He encouraged farmers to live by the sweat of their brows thinking it as worship. He urged farmers to become self-reliant and not depend on bank loans. He shared his personal experience in horticulture by saying that he had already started preparing the land for the festive season beginning with Varamahalaxmi Vrata and Ganesh Chaturthi. He stressed the need for planning and execution of strategies. He shared openly that by Deepavali he would have become richer by Rs 75,000 through flower sales. He shared that he had received accolades from famous people and won awards for his dedication in farming. "Worship Mother Earth," he advised the audience. He invited other farmers at the gathering to come to him for saplings and earthworms in his nursery. He urged them to take up composting at home.

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At this point the participants were treated to another video where a foreigner (Englishman) named Krishna McKenzie was portrayed. He has settled in Auroville, Pondicherry in India and become an organic farmer running Solitude Farm. Sangeetha explained the gist of the short film to the participants in Kannada.

At this point, participation certificates were presented to the participants. They were also given a goodies bag containing organically manufactured products. With this the programme ended.

Module 3: Innovations in Transformative Technology



Sangeetha K. B., Entrepreneur, Navaneetam Organic Farms

Sangeetha introduced herself stating that she was from Bengaluru and does not hail from a farmer family like Patil. But she wanted to take up agriculture as a passion and help farmers. So, she entered a partnership with a Srirangapatna farmer she knew well and bought two acres of land and began farming on it. Her intent was to practice organic farming just the way her ancestors did.

She averred that she practiced composite farming; meaning the farm had desi cattle, goats, and sheep also. All other farmers in the region use chemicals for cultivation. But in Sangeetha's farm, she has an agricultural pond for water storage, gober gas unit, and she grows sugarcane, paddy, vegetables, and greens in her farm. She does not use the canal water because it is highly polluted. The farm is irrigated with borewell water. She said that she was not running the farm with a profit motive, rather as a service to farmers.

Sangeetha said that she makes value-added products like ghee, and organic manure. She added that the organic manure she makes costs Rs 15 per kg to make and she earns up to Rs 70 by selling it. She said that she had suffered minor losses due to heavy rains this month and yet she was able to harvest tomatoes and sell the produce at about Rs 5,000 locally. She indicated that if she had sold the tomatoes in Bengaluru she could have earned more

She touched upon various mobile apps available for farming and urged farmers to think beyond WhatsApp and try out the various apps created for them. She encouraged farmers to take to organic farming methods and earn more money from it. She noted that several farmers were sending their children to cities to search for employment, and this had created food shortages in the country.

Therefore, India is importing food grains from China. She encouraged farmers to be proud of their profession. She pointed out that farmers were producers of the most vital commodity needed for people—food. "As food providers we have to be proud of our work," she told farmers. She pointed out that farming basics are not taught in city schools and farmers were relegated to oblivion in society.

People assume that whatever they order online (and get in 20 minutes) is all ready-made. They do not realise the toil that the farmers go through to produce the products. She stated that her primary objective was to inspire farmers to adopt organic farming and introduce farming to city people so that they realise the importance of the role farmers play in society.

She encouraged the participants to make the sessions interactive and interesting to all. She pointed out that individual experiments in Smart Farming can have a cascading effect on other farmers and embolden them to take to Smart Farming techniques. She said that she was pained by the fact that children of farmers were abandoning their farmer lineage and migrating to cities to work as drivers and security guards.

Technical Session

Mobile Apps for Agriculture

Patil introduced Weather forecast apps to the participants. He said that farmers can plan their agricultural activities by checking for rainfall on the weather apps. He stressed that technology can be used to reduce input costs and get more yield per acre.

He also spoke of a remote-control mobile app that can be used to switch and off pump sets. He encouraged farmers to be calculative and keep track of the input and output costs to remain profitable. He urged farmers to take an amount out of the proceeds as 'monthly salary'. Only then will the farmers be able to find out whether they have profited from their agricultural pursuits. He advised that because of the small land holding pattern among Indian farmers, they will benefit from precision farming.

He explained that precision farming was using methods to reduce the water and other inputs to the crop but getting a good yield. He pointed out that efficient water resource management can be adopted using apps that are activated by sensors. This is called automation of agriculture, he explained. He gave the example of developed countries where a single machine would till the land, sow seeds and harvest crops.

He shared that gas burners were used to de-weed the land in many countries. He also shared that vertical farming methods like the ones employed in Singapore had proved to be very economical in places where there is no flat land available. He revealed that using the above methods, cucumber and capsicum was grown solely for the export market. He added that such methods of cultivation were also used in Bengaluru, Ramanagaram, Hesaraghatta and Bidadi.

Coming to drip irrigation, Patil said that nutrients can be mixed with the water supplied to crops as this would save time and energy. With a device (priced Rs 500) it is possible to check the moisture in the land, Patil said and demonstrated the device to the participants. He pointed out that it can be bought online.

He said that using the device he plans his irrigation pattern (once a week, twice a week etc) . The same device can be used to determine the PH level in the soil (if it is below 5 then the soil is acidic and must be made alkaline). He said that the moisture and PH data can be analysed on a smartphone. He gave the example of commercial crops like papaya, pomegranate, and dragon fruit (that need very little water) and added that the device can be used in such cases.

Patil pointed out that instead of selling honey (produced by bee-keeping farmers) as-is; value-added products can be made from it. He gave the example of honey mixed with dry fruits which fetches great value in the open market. Dried Amla can also be mixed with honey to make 'morabbas'.

He again stressed that FPOs should team up with SHGs to make value-added products out of

farm produce. Farmers should practise agriculture for profit and nothing else, Patil added. He urged farmers to create their own markets by hosting 'melas' where their value-added products can be marketed. Patil offered to provide all kinds of branding and selling services (in his three highway stalls) to farmers.

He gave the example of progressive farmer of Chitradurga who sells elephant apple juice with jaggery along with many other value-added products made of that fruit like jam and rasam powder in his highway stall. He revealed all this to drive home the point that the highways are the nearest markets for value added farm produce. He submitted that his organization had set up a stall for value added farm products on the highway between Bengaluru and Nelamangala.

Patil took the example of Israel where there is very little cultivable land and severe water scarcity. The country is food-secure because Israel farmers desalinate sea water and use it for farming. He also illustrated his point by sharing an anecdote of an English citizen who had come to India, learnt agriculture, and set up a farm in Pondicherry.

He shared that powder made of the leaves of a weed (tangdi hoova) was being sold online for Rs 1,000 per kg. This has become a hit in the market as it is a perfect remedy for constipation. He also gave examples of other weeds that can be used to make powders for diabetic patients.

He introduced an app called 'Smart Farm' where the farmer can document all his agricultural activities on his phone. He added that the app can be used in Kannada, Hindi, Telugu and many other Indian languages. He observed that farmers today are very social media savvy and can easily turn adopters for farming apps. He also introduced the government owned Meghadooth weather app which is very accurate in predicting rains.

Patil introduced other apps like Kisan Diary which can be used to maintain a record of all agricultural activities and market prices. He urged tomato farmers to make squash and dry the pulp that is left over and convert it into powder. He revealed that there was great demand in European markets for tomato and onion slices. He stated that his participation in the training programme was meant to inspire FPOs to supply products for his stalls. He urged farmers to make products with the end-consumer's taste in mind.

He took the example of Gutte Ragi (a desi variety) grown in Goravanahalli which is used not as-is but converted into ragi cookies with jaggery and ghee. Gutte Ragi is a three-month crop. Patil plants papaya in February and reaps a harvest during the festival season when it fetches a higher price. He stressed that strategy is involved in making farming smart and lucrative, and farmers can educate themselves in these matters through mobile apps and YouTube

Just to give the participants a sense of the market for their products Patil gave the example of an upmarket MG Road food outlet that sells vegetables at Rs 500 to Rs 1,500 per kg to foreigners based in Bengaluru. He gave a personal example of how he used to buy vegetables that originate in Bidadi near Bengaluru when he was living in London. He said local FPOs can achieve feats such

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as this by assigning people to take care of sales & marketing, production, and accounts exclusively. “Your brand is your identity. You will survive only if your brand survives,” he said.

Patil said that farmers can make use of logistical apps to reduce transportation costs. These apps can be leveraged if each FPO has one member who is tech savvy. He also introduced apps like Video Khethi, Kisan Buddy, Bele Darshaka, and Bhoomi apps. He noted that State Bank of India and few other banks had made apps available online to avail crop loans.

He stressed that soil testing should precede all other agricultural activities. He also stressed the need for grading the produce before giving it to collection centres set up by online grocery companies. He urged farmers to make value-added products like tutti-frutti from raw papaya, snacks from raw banana which fetch up to Rs 300 in the market. He suggested that each FPO should have soil moisture measurements devices, oil extraction machines and driers.

Interaction: Farmers expressed the apprehension that finding global markets would be difficult. Replying to this, Resource Person assured that through mobile apps local farmers can find markets all over the world because these apps have brought markets closer to the farmers.

Patil explained that value added products should be marketed using some novel characteristic of the product. Taking the example of pickles, he said that the product promotion should clearly state that the pickle contains probiotic (beneficial) bacteria for it to succeed in the market.

To another question on how to transport the pickles safely from source to market Patil offered to demonstrate how packaging is done to the participant. He offered to help as much as possible in areas such as packaging, labelling, and marketing.

Several SHG members expressed that they were unable to market their value-added products due to lack of publicity for their products. Patil pointed out that all they needed to do is to make a video on their smartphones and upload it onto social media platforms. Many women SHG members asked for tips on how to grow their organisations. Patil explained that the growth of the SHG is indicative of how much profit it makes.

To a specific question on how to promote tamarind chutney, Patil gave examples of a desi products company in Sira which can help the SHGs of Koppal in their marketing efforts. It is learnt that the Sira-based company run solely by women makes tamarind lollipops and sells them for Rs 5 per stick. “FPOs should run as enterprises,” he said, adding that each FPO should have a CEO and a CMO and should be run with financial discipline. Pune, Mumbai, and Delhi are good markets to explore, Patil averred.

This was followed by lively interaction between the farmers and the experts. A FPO member asked a specific question on how to cushion the negative impact of price variations that happen in the market?



Answering this question, Patil said that grading the products would be one remedy. Secondly, he suggested that the waiting period for the mango crop to become saleable, could have been used to explore far-off markets. Patil informed the participants of “Fruits” app where farmers register and avail loans. He also revealed that farm expenditure can be crowdsourced through customers.

Sangeetha intervened and pointed out that the honey can be used to prepare herbal skin products. She stressed that branding agricultural products was the key to good marketing. Each product should be packaged and labelled with a story of its own—its origin, heritage, specialities, how its produced etc.

With this the training paused for lunch

Interview Sessions

As part of the programme some key participants'/resource persons were interviewed.

Dr. Raghavendra Yaligar, Senior Scientist & Head, ICAR KVK, Gangavathi



During the interview, Dr Raghavendra Yaligar said that the Krishi Vigyan Kendra, Raichur had three wings including a Research Wing. He said that the expansion wing was responsible for taking the fruits and discoveries made by scientists to the grassroots farmers via frontline demonstrations.

He said that the Kendra conducts need-based assessments and provides training to farmers accordingly. Apart from this, the Kendra also visits farms and makes assessments of the field-based problems of farmers and provides solutions to them.

He averred that the Kendra collaborates with other government departments like the Agriculture Department, Veterinary Department, and Horticulture Department to launch and sustain schemes for the welfare of farmers involved in agriculture.

He said that the Kendra conducts two types of training—one on campus and the other in the field. He noted that there were scientists who specialise in different aspects of agriculture at the Kendra like pest control, soil analysis, veterinary science etc. They conduct demonstrations to train the farmers in that particular subject.

Dr Yaligar said that the Kendra coordinates with Farmer Producer Organisations (FPOs) and takes the fruits of modernisation of agricultural activities to the grassroots by providing them with technical advice.

He also informed that the Kendra has a soil testing laboratory which does soil and water sampling for farmers in Raichur, Koppal, and Bagalkot. The Kendra also has a horticultural nursery which gives farmers high quality seedlings. The Kendra also provides high quality groundnut seeds to farmers after processing them.

In reply to a specific question on periodicity of training programmes, Dr Yaligar said that the Kendra's trainings were need-based. He took many examples of diseases that had attacked crops in the district recently and said that the Kendra's intervention at the field level had saved the crops from failing. The Kendra had not only created large scale awareness on how to save the crops, but also provided the chemicals that were needed to do so.

Now that the kharif season is on, the Kendra is actively involved in educating farmers how to choose, process, plant and tend to seed. The centre is also busy educating farmers in disease management. These trainings are season-based, and they are conducted during the kharif and rabi seasons.

Dr Yaligar also informed that the Kendra was creating awareness among farmers with demonstration of drone technology and solar applications. He said that the Kendra draws up an annual action plan and conducts trainings accordingly. The Kendra also holds trainings sponsored by various state and national agricultural bodies like Agricultural Society of India, in poultry farming, sheep rearing and vermicompost preparation.

The senior scientist gave the example of an FPO that had been trained by the Kendra in beekeeping. This FPO has so far earned Rs 44 lakh by selling honey and value-added honey products he added. He also gave the example of some farmers (who had been trained by the Kendra) successfully managing commercial earthworm farming in small plots of land.

Asked about his opinion on the day's training programme Dr Yaligar said that he was happy to note that an attempt was being made to take new and transformative agricultural technologies and smart farming to the farmers. He mentioned that it was imperative that farmers learn about mobile applications that can be used for agricultural activities.

He pointed out that with modern mobile based apps farmers can manage resources better and increase their yield within shorter periods of time. He stressed that skill development is the key to successful farming. He pointed out that sustainability in farming is the need of the hour. Dr Yaligar said that the third green revolution has already begun in India with farmers increasingly adopting smart farming techniques.

Interview Sessions

will be able to operate various machines using their handheld devices.

Ms Farzal M, Senior Technical Officer, Krishi Vigyan Kendra, Gangavati



He expressed that with the advancements in Internet of Things (IoT), smart farmers To a question on what her role in KVK was, Ms Farzal, said that she was soil and water scientist for the last decade and farmers approach her for soil and water testing. She recollected that given the importance of the fertility of soil in agriculture, the Union government had declared 2015 as the year of the soil and issued soil health cards after testing the soil free of cost. She described that soil testing allows the farmers to determine what nutrients need to be added to the soil to reap a good harvest.

“Soil testing is necessary whenever a new crop is sown or if there is a change in the cropping pattern. This helps the farmers to determine what proportion of fertiliser (organic or chemical) is needed for the crop. We are also promoting green manuring crops among farmers. This is an ancient and traditional method that is being reintroduced under the banner of organic farming. KVK is also promoting integrated farming where farmers can earn more by having diverse activities on the same plot of land like fisheries, cattle, and sheep/goat rearing,” she added.

She put it in a nutshell and said that KVK was mainly promoting integrated cropping patterns and sustainable agriculture. KVK had stepped up its efforts to ensure that farmers get the best out of the monsoon season (May-June) by increasing soil sampling drives wherein dry land can be made cultivable by green manuring.

Farzal said that there are progressive farmers in every village in Koppal. “We train farmers in groups in their villages and welcome them to KVK to get trained. We are coordinating our efforts with other state agencies. We charge a minimal university fee of Rs 200 for soil sample testing and Rs 100 for water sample testing and then issue health cards that contain all information on PH levels, micronutrients, and moisture content.



Key Takeaways



What the Government must do?

- Conduct more such programs at the hobli level
Give training kits for participants
- Clear the confusion around Kisan Credit Cards and crop loans
- Look at strategies to finance farm activities without collateral
- Organise bulk purchases of farming requisites through FPOs at discounted prices
- Set up single window agencies to process FPO loans



What FPOs must do?

- Appoint exclusive functionaries to carry out marketing activities for farm produce
- Tie-up with SHGs to make value added products from farm produce
- Set up stalls on the highways to sell value added products
Document all farming activities
- Maintain records of the transactions with customers
- Seek bank loans for its members

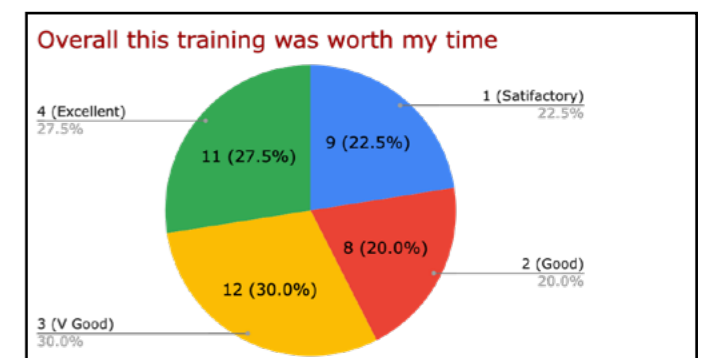
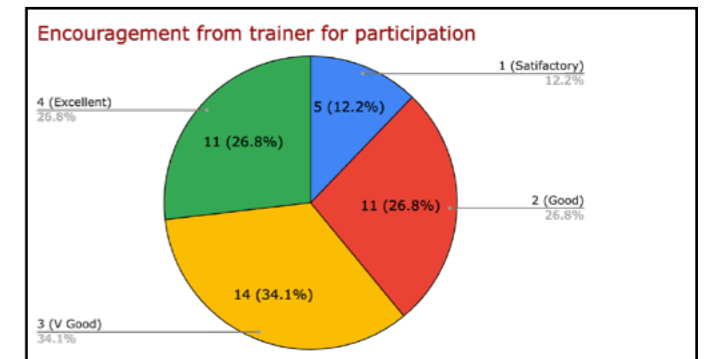
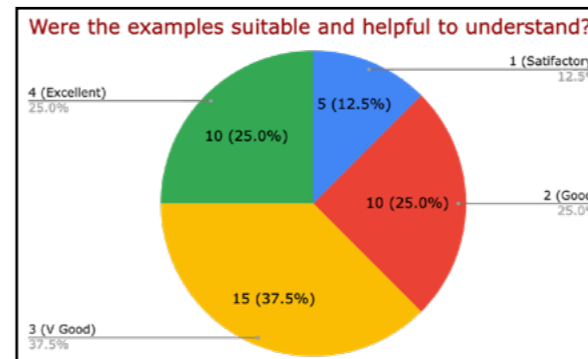
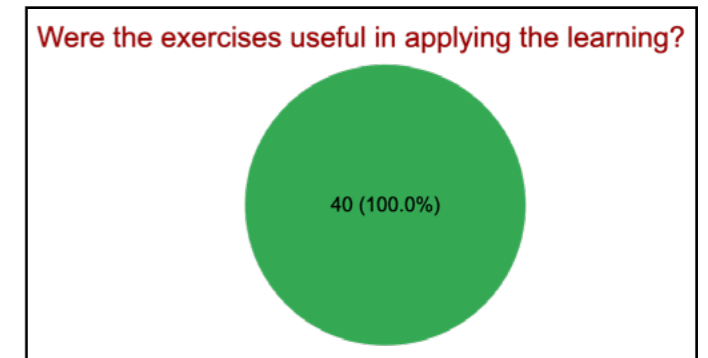
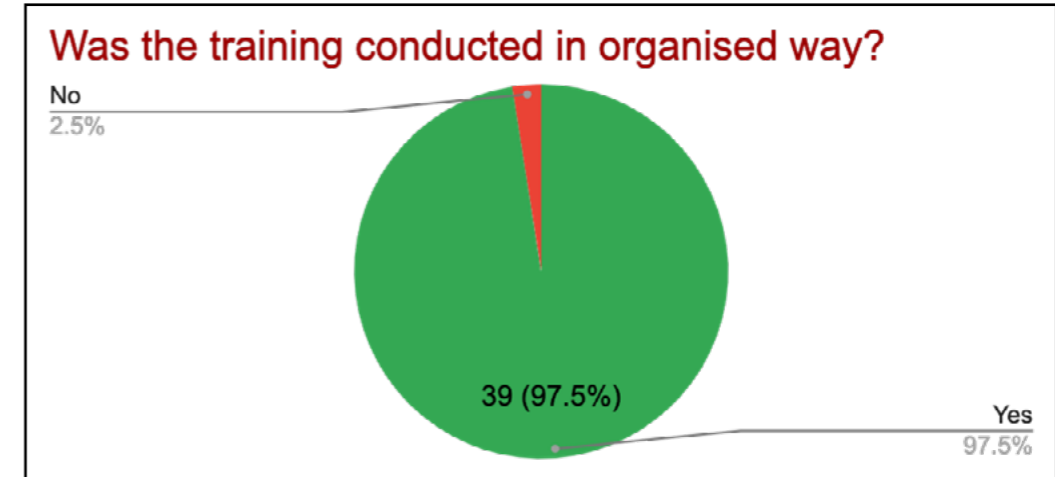
Feedback

Total Number of Participants

40

Number of Feedback

40



Annexures

Annexure 1: Agenda

| Training on Existing Transformative Agri Technology, Mobile-based Applications, Innovations & Smart Farming Day & Date: Saturday, May 21, 2022 Venue: ICAR Krishi Vigyan Kendra Gangavathi (Koppal) Kanakagiri Road, ARS Campus, Gangavathi-583227 | | |
|---|--|--|
| 10.45-11.00 a.m. | Registration | |
| 11.00-11.05 a.m. | Introduction | Ashwini Venkatram Senior Officer - Finance, Public Affairs Foundation, Bengaluru |
| 11.05-11.10 a.m. | Welcome Address | Indira Pichumani Training Coordinator, Public Affairs Foundation, Bengaluru |
| 11.10-11.20 a.m. | Inaugural Address by Chief Guest | B G Mastan Reddy Special Officer, College of Agriculture Gangavathi |
| 11.20-11.30 a.m. | Introductory Remarks | Dr. Raghavendra Yaligar Senior Scientist & Head ICAR KVK |
| 11.30-11.35 a.m. | Special Guest 1 | Chandrakanth Nadagowde, DATC, Gangavathi |
| 11.35-11.40 a.m. | Special Guest 2 | Shri. Raman Jagadeesh District Development Manager, NABARD, Koppal |
| 11.40-12.00 p.m. | Coffee/Tea Break | |
| 12.00-1.00 p.m. | Module 1: Existing Transformative Technology | Srinivasa Patil R, Research Engineer, Farmer & Agripreneur |
| 1.00-1.45 p.m. | Lunch Break | |
| 1:45-2:15 p.m. | Module 2: Financing Smart Farming | Nagarjuna A Assistant Manager SBI ADB Gangavathi -20288 |
| 2.15-3.00 p.m. | Module 3: Innovations in Transformative Technology | Sangeetha K.B. Business Transformation Manager for a large ITE & Entrepreneur, Navaneetam Organic Farms |
| 3.00-3.15 p.m. | Coffee/Tea Break | |
| 3:15-3.45 p.m. | Valedictory Speech | U. Nagaraj Tahsildar, Gangavathi |
| 3.45-4.15 p.m. | Q & A and Summing Up | Moderator - Srinivasa Patil R, and Sangeetha K.B. |

Annexure 2: Certificate

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CERTIFICATE OF PARTICIPATION

ಭಾಗವಹಿಸುವಿಕೆಯ ಪ್ರಮಾಣ ಪತ್ರ

This certificate is presented to

for participated in a training programme on

Training on Transformative Agriculture Technology, Mobile Based Applications, Innovations and Smart Farming

ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅನ್ವೇಷಣೆಗಳು, ನಾವೀನ್ಯತೆಗಳು ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಎಂಬ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ

Saturday, May 21, 2022
Gangavathi, Koppal

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NABARD
National Bank for Agriculture and Rural Development

Annapoorna

Dr. Annapoorna Ravichander
Executive Director
Public Affairs Foundation, Bangalore

Date: _____

Annexure 3: Feedback Form

Organised by

 Feedback Form: Gangavathi, Koppal
 ಫೀಡ್ ಬ್ಯಾಕ್: ಗಂಗಾವತಿ, ಕೊಪ್ಪಳ

Training on Transformative Agriculture Technology, Mobile Based Applications, Innovations and Smart Farming

ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಪ್ಲಿಕೇಶನ್‌ಗಳು, ನಾವೀನ್ಯತೆಗಳು ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಎಂಬ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ

Name: Arinalappa Hota
 ಹೆಸರು

Phone Number: 7975881791
 ದೂರವಾಣಿ ಸಂಖ್ಯೆ

1. Were the objectives of the training met?
 • Yes
 • No
 ತರಬೇತಿಯ ಉದ್ದೇಶಗಳನ್ನು ಪೂರೈಸಲಾಗಿದೆಯೇ?

- ಹೌದು
- ಇಲ್ಲ

2. Were the exercises useful in applying the learning?
 • Yes
 • No

ಕಲಿಕೆಯಲ್ಲಿ ಅನ್ವಯಿಸಿದ ಚಟುವಟಿಕೆಗಳು ಉಪಯುಕ್ತವಾಗಿವೆಯೇ?
 • ಹೌದು
 • ಇಲ್ಲ

3. Was the training conducted in an organised way?
 • Yes
 • No

ತರಬೇತಿಯನ್ನು ಸಮಗ್ರವಾಗಿ ಆಯೋಜಿಸಲಾಗಿತ್ತೇ?

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Annexure 4: Media

1.

2.

**ರೈತರಿಗೆ ಒಂದು ದಿನದ ತರಬೇತಿ ಕಾರ್ಯಾಗಾರ
'ಮಾಡರ್ನ್ ಸ್ಮಾರ್ಟ್ ಫಾರ್ಮಿಂಗ್‌ಗೆ ನೂರೇಂಟು ಸವಾಲು'**



ಗಂಗಾವತಿಯ ಕೃಷಿ ವಿಜ್ಞಾನ ಮತ್ತು ಸಂಶೋಧನಾ ಕೇಂದ್ರದಲ್ಲಿ ಆಧುನಿಕ ತಂತ್ರಜ್ಞಾನ ಬಗ್ಗೆ ಶನಿವಾರ ಹಮ್ಮಿಕೊಂಡಿದ್ದ ರೈತರಿಗೆ ಒಂದು ದಿನದ ತರಬೇತಿ ಕಾರ್ಯಾಗಾರದಲ್ಲಿ ಪಾಲ್ಗೊಂಡಿದ್ದ ರೈತರು

ಪ್ರಜಾವರ್ಮ ವಾರ್ತೆ ಆಯೋಜಿಸಲಾಗಿತ್ತು ಎಂದರು. ಕೃಷಿ ಕಾಲೇಜಿನ ವಿಶೇಷ ಸಂಪ್ರದಾಯಿಕ ಕೃಷಿ ಉತ್ಪಾದನ ನಿರೀಕ್ಷಿಸಿ ನಿಟ್ಟಿನಲ್ಲಿ ನಿರಂತರವಾಗಿ ವೈಜ್ಞಾನಿಕ ಮತ್ತು ಆಧುನಿಕ ರೀತಿಯ ಬೆಳೆ ನಿರೀಕ್ಷಿಸುತ್ತಿದೆ. ಈ ಮಧ್ಯೆ ಮಾಡರ್ನ್ ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಫಾರ್ಮಿಂಗ್‌ಗೆ ನೂರೇಂಟು ಸವಾಲುಗಳು ಎದುರಾಗಿವೆ ಎಂದು ಜಿಲ್ಲಾ ಕೃಷಿ ತರಬೇತಿ ಕೇಂದ್ರದ ಸಹಾಯಕ ನಿರ್ದೇಶಕ ಚಂದ್ರಶಂಕರ್ ಗೌಡ ಹೇಳಿದರು. ನಗರದ ಕೃಷಿ ವಿಜ್ಞಾನ ಮತ್ತು ಸಂಶೋಧನಾ ಕೇಂದ್ರದಲ್ಲಿ ಬೆಂಗಳೂರಿನ ಪಬ್ಲಿಕ್ ಆಫೇರ್ಸ್ ಫೌಂಡೇಶನ್ ಸಂಸ್ಥೆಯು ನವಾರ್ಡ್ ಸಹಯೋಗದಲ್ಲಿ ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಪ್ಲಿಕೇಶನ್, ನಾವೀನ್ಯತೆ, ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಪದ್ಧತಿ ಮತ್ತು ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನದ ಕುರಿತು ಒಂದು ದಿನದ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮವನ್ನು ಆಯೋಜಿಸಲಾಗಿತ್ತು ಎಂದರು. ಕೃಷಿ ಕಾಲೇಜಿನ ವಿಶೇಷ ಅಧಿಕಾರಿ ಮಾಸ್ತಾನ್ ರೆಡ್ಡಿ, ನವಾರ್ಡ್ ಸಂಸ್ಥೆಯ ಪ್ರತಿನಿಧಿ ರಾವನ್ ಜಗದೀಶ್ ಮಾತನಾಡಿದರು. ಸಂಪನ್ಮೂಲ ಸ'ವಾಲುಗಳಿ'ನ್ನು ವ್ಯಕ್ತಿಗಳಾಗಿ ಆಗಮಿಸಿದ್ದ ಸಂಗೀತ, ಶ್ರೀನಿವಾಸ, ನಾಗರಾಜ ತರಬೇತಿಯಲ್ಲಿ ವಿಶೇಷ ಉಪನ್ಯಾಸ ನೀಡಿದರು. ಚಾಲ್ತಿಯಲ್ಲಿರುವ ಮೊಬೈಲ್ ಅಪ್ಲಿಕೇಶನ್ ಪರಿಚಯ, ಉತ್ತಮ ಕೃಷಿಕರ ಜವಾಬ್ದಾರಿ, ಜ್ಯಾಂಕ್ ಜೊತೆಗೆ ವ್ಯವಹರಿಸುವಾಗ ಇರುವ ಸವಾಲುಗಳು, ಕೆಚೇರಿಗಳ ಅನುಗುಣವಾಗಿ ಕೃಷಿಯಲ್ಲಿ ನಿರ್ವಹಣೆ, ಮಿಶ್ರಣೀಯವಾದ ಪ್ರಾಮುಖ್ಯತೆಯ ಬಗ್ಗೆ ಮಾಹಿತಿ ನೀಡಲಾಯಿತು. ಪ್ರಮುಖರಾದ ಇಂದ್ರ ಪಿಚುಮಣಿ, ಅತ್ತಿನಿ, ಶೀಭಾದಾಸ್ ಇತರರೂ ಪಾಲ್ಗೊಂಡಿದ್ದರು. ತರಬೇತಿಯಲ್ಲಿ 42 ರೈತರು ಭಾಗವಹಿಸಿದ್ದರು. ರೈತರಿಗೆ ಪ್ರಮಾಣಪತ್ರ ವಿತರಿಸಲಾಯಿತು.

3.



4.

Annexure 5: Video Link of the Training Programme

Training on Transformative Agriculture Technology, Mobile Based Applications, Innovations and Smart Farming

ಅಸ್ತಿತ್ವದಲ್ಲಿರುವ ಪರಿವರ್ತಕ ಕೃಷಿ ತಂತ್ರಜ್ಞಾನ, ಮೊಬೈಲ್ ಆಧಾರಿತ ಅಪ್ಲಿಕೇಶನ್‌ಗಳು, ನಾವೀನ್ಯತೆಗಳು ಮತ್ತು ಸ್ಮಾರ್ಟ್ ಕೃಷಿ ಎಂಬ ತರಬೇತಿ ಕಾರ್ಯಕ್ರಮ

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ICAR Krishi Vigyan Kendra, Gangavathi (Koppal)
ICAR - ಬಿಸಿಎಆರ್ ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರ, ಗಂಗಾವತಿ (ಕೊಪ್ಪಳ)
Saturday, May 21, 2022
ಶನಿವಾರ, ಮೇ 21, 2022

Conceptualised & Designed by
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Website: www.pafglobal.org

<https://youtu.be/P6u7Q-b2HTw>

Annexure 6: Photographs





Web : www.pafglobal.org



Phone : +91 80278 39918/19/20



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