

Innovative Interventions by Farmers in Horticulture

Indian HortiCulture Congress

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Crop Improvement in Grape

Personal Information

Name of the farmer	Shri Dattatraya N. Kale
Age	50 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Dattatraya N. Kale 114/1, Sneh Residency, Murarji Peth, Solapur- 413001
Educational Background	12 th Pass
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Information on Innovation



Type of innovation : Crop Improvement in Grape

Specific group : Fruits crops: Grape

Existing practice : Sharad Seedless requires more efforts in terms of application of plant growth regulators (PGRs) and fertilizers to achieve berry size of more than 18 mm.

Details of innovation : Identified a clone from Sharad Seedless having large berry size and introduced the same among farmers for cultivation with the name 'Nanasaheb Seedless'. The variety is better over Sharad Seedless in terms of berry size with less use of plant growth regulators.

Usefulness of innovation : Nanasaheb Seedless gives >20 mm berry size with limited use of PGRs. More than three clones with bold berries have been identified and introduced by grape growers from Sharad Seedless but Nanasaheb Seedless is the only clone which gives >18°brix sugar along with >20 mm berry size with limited use of PGRs. Growers also achieve about 22-25 mm berry size with Nanasaheb Seedless by additional 1-2 PGR applications.



Impact : Nanasaheb Seedless is a leader among the various clones of Sharad Seedless. The Nanasaheb Seedless fetches higher price in the market than Sharad Seedless and other clones of Sharad Seedless. If Nanasaheb Seedless is harvested during December month, it fetches more than Rs 100 per kg as farm-gate price, giving substantial profit to the growers not achieved by any other variety. At present, Nanasaheb Seedless is the most popular and preferred among the varieties for export to Middle and Far East countries. This clone has replaced Sharad Seedless from many grape growing areas of Maharashtra and Karnataka as popular black table grapes. Within three years, Nanasaheb Seedless has spread widely in Nashik district and Bori in Pune covering more than 1500 acres.

Adoption by others : In Bori village in Pune district, where early pruning in July-August is adopted Sharad Seedless was major coloured variety. Today entire village has replaced Sharad Seedless with Nanasaheb Seedless. Similarly its area under cultivation has grown more than 3000-4000 acres and spread over Sangli, Nasik and South Karnataka.

Commercial gains : During last 2-3 years Nanasaheb Seedless has got about Rs. 10/- more per kg as compared to Sharad Seedless.

Scope for commercialization : Already commercialized.

Recognitions : *Vitis vinifera* is sensitive to mutations and useful mutations have been developed into cultivars such as Sharad Seedless, Sonaka, etc. Received Innovative Farmer award from Indian Agricultural Research Institute, New Delhi during 2014.

Documentation: Not in case of Nanasaheb Seedless.

Message :

Useful mutations from popular varieties should be observed and multiplied for the benefit of the farmers.

Farmer's Selections in Custard Apple

Personal Information

Name of the farmer	Shri Navnath Malhari Kaspate
Age	59 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	A/P: Gormale Tal: Barshi, Dist: Solapur-413404
Educational Background	11 th Std. (Pass)
Telephone number (Residence)	-
Telephone number (Mobile)	9822669727
Email ID	nmkaspate@yahoo.com Web site: custardapplekaspatefarm.com

Information on Innovation



Type of innovation : Farmer's Selection in Custard Apple

Specific group : Fruits crops: Custard Apple

Existing practice : Shri Kaspate was involved in growing of local cultivars of custard apple that were collected from various sources.

Details of innovation : Mr. N.M. Kaspate has developed the following selections from his Custard Apple collection; Annona-2; NMK-1; NMK-2; NMK-3; Finger Prints

Annona-2: This is the selection on which he has been working since last ten years that has more fruit weight, late maturity (5-7 months), good keeping quality, less losses due to over ripening (harvesting period can be increased up to 20-25 days without disturbing the quality & appearance of fruit) less number of seed (20-25) per fruit, Pulp percentage is more than other varieties (70-75%), TSS percentage is 28-30%, soft & tasty pulp, easy to eat (can be eaten with spoon), pulp is easily separated from the seed which reduces the uneasiness during eating, which is commonly observed in other varieties. Leaf size of the annona-2 is more than other varieties. The average size of leaf is 7-9 inch in length which goes up to 12 to 13 inches.



Mr. N.M. Kaspate had also developed 'NMK-1' selection. He is working on this selection for last 8 years.

Usefulness of innovation : The selection viz. Annona-2 and NMK-1 are good for all types of soils to plant at a distance of 10 X 15 feet. Thinning operation for getting good number of quality fruit i.e. 100-125 fruit / plant at the age of 8-10 years is ideal. The salient features of these selections are:

- Fruits are very attractive in colour and size.
- Harvesting time can be adjusted according to market demand & cargo facilities because of the special characteristics of matured fruit. The fruit will remain in good condition (un-ripped) for at least 20-25 days on plant itself.
- The numbers of seed per fruit are less and berry size is quite big.

The harvesting of fruits of NMK-1 Selection can be possible 2-3 time within the period of 20-25 days as per the market demand.

Impact : The productivity of existing varieties with traditional cultivation is about 10 to 12 ton / ha. Whereas the productivity of new selections is about 15-19 ton / ha. with 70-80% Grade-1 fruits. Due to good quality fruits production the market rates are 120-150% more over existing varieties. The benefit-cost Ratio is 4.6. Near about 700-800 farmers from 9-10 district of Maharashtra cultivators got the benefit of Custard Apple production technology & new cultivars and diversified their cropping pattern towards dry land fruit farming.

Adoption by others : Due to the efforts of Mr. N.M. Kaspate and Krishi Vigyan Kendra, Solapur the area under Custard Apple increased to 800 ha. in Solapur district and approximately 450 ha. in adjoining districts during last 8-10 years.

Commercial gains : He developed commercial orchard of Custard Apple on 8 ha. and nursery on 2 ha. He has started Madhubhan nursery for supply of good quality saplings. Till date he has sold lakhs of seedlings to more than 7000 farmers since 2005. Almost all the district of Maharashtra have been covered with the cultivation of Annona-2, NMK-1, NMK-2 & NMK-3 etc. Not only Maharashtra, farmers from the states of M.P., Karnataka, Gujarat, A.P. & U.P. have adopted the above said selections and are earning lakhs of rupees, On an average he is selling 150000 grafts per year.

Scope for commercialization : He has already started the nursery on 2 ha area and selling the grafts.

Recognitions : He was appointed as president of the Maharashtra Custard Apple Producers Training and Research Association, Pune (2003 to till date). He was invited by ICAR in National Farm Innovator meet-2010. Invited for ICAR Day-2013. Shreshtha Kisan Puraskar of Gujrat Government 2013. Visited to Australia on invitation from Custard Apple Growers Association of Australia.

Documentation: The Krishi Vigyan Kendra, Solapur documented his innovation and submitted to Zonal Project Director, Zone-V, Hyderabad.

Message :

*Custard Apple fruits of Annona-2 are very attractive in colour & size, harvesting time can be adjusted according to the market demand. Please contact for grafts.
For getting sustainable yield in Custard Apple soils that are problematic and with limited water resources choose Annona-2.*



New Mango Graft: Anand Sagar

Personal Information

Name of the farmer	Shri Ananda Garnayak
Age	73 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Kureibahal, Tainsar, Purunagarh, District Deogarh, Odisha
Educational Background	Matriculate
Telephone number (Residence)	-
Telephone number (Mobile)	09438679189
Email ID	-

Information on Innovation



Type of innovation : New Mango Graft: Anand Sagar

Specific group : Fruit crop: Mango

Existing practice : Most of the mango growers of Odisha grow traditional and old varieties of mango that are raised from seedlings.

Details of innovation : Shri Garnayak collected the scion of the one of the rare species of mango from Bamanda king's orchard and grafted it. He named the new plant in his own name as Ananda Sagar. This graft of mango is a regular fruit bearer and its bearing starts from the main branches, emerging from the trunk. It ripens after 2nd week of July till mid August and is sold at double the rate in comparison to other varieties.

Usefulness of innovation : Ananda Sagar is non fibrous, juicy, tasty and its ripening period coincides when there is peak demand for mangoes in the market. This grafted variety is superior to its contemporary varieties like Fazli and Neelam. It is sold at about double the rate and market demand is also high.

Impact : The farmers of his village are impressed with the new introduction.



Adoption by others : About 50 farmers have taken the grafts for planting in their orchards.

Commercial gains : The fruits of this variety are sold at about double rate and the market demand is also high.

Scope for commercialization : There is a need for its popularization and Mr. Garnayak has a plan to do it by establishing a small nursery.

Recognitions :

- Best farmer award of the district-2009 from the State Govt.
- Participated as a progressive mango grower in the state level mango festival, 2009, at Bhubaneswar, organised by Directorate of Horticulture, Odisha.

Documentation : Yes in Farm Innovators -2010 of ICAR

Message :

Nature induced variations in fruit crops are rare, farmers have to be watchful to identify and commercialize them.

Rejuvenation of Old Lime Orchards

Personal Information

Name of the farmer	Shri Sohan Singh Chouhan
Age	62 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Shri Ashapura Bagwani Farm, V.P.O Joyla, Tehsil Sheoganj, District- Sirohi (Rajasthan)
Educational Background	Intermediate (Senior Secondary School passed)
Telephone number (Residence)	09413874920
Telephone number (Mobile)	08890466405
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Information on Innovation



Type of innovation : Rejuvenation of Old Lime Orchards

Specific group : Fruits crops: Lime

Existing practice : Farmers do not practice pruning of old, dried and unused branches in lime orchards, which results in undesirable shape and less sprouting of fruit bearing branches. The use of balanced fertilization and integrated pest management is also not followed. The infection and infestation of diseases and insects pests reduce the yield and produce inferior quality fruits. This drastically reduces the economical profitability of lime orchards.

Details of innovation : Shri Sohan Singh used the rejuvenation technology to make the unproductive plants productive, which include heavy pruning of all dried and diseased branches followed by integrated crop management schedule like:

Integrated plant nutrient management practice: Using super compost, vermicompost, FYM, bio-fertilizers and soil test based macro and micro nutrients for application of balanced fertilization.

Integrated pest management practices: Vector and disease management by using recommended insecticides, fungicides and antibiotics.

Application of bordex mixture on the stems of lime plants after pruning to protect the plants from gummosis and fungal infection.

Grading of lime fruits: He knew that graded fruits can be sold at high prices. He started washing and then grading of lime fruits. This practice helped him to get more monetary benefit from orchards.

Market linkage establishment: He tried to understand the reason of low profitability of farming and observed that after harvesting of agricultural produce, farmers do not get economical price. He started focusing on marketing/market linkage/secondary agriculture. He made contacts with the persons in mandi in the capital of Rajasthan, instead of selling papaya and lime fruits at local level. He got very good benefit from lime and papaya orchard.

Development of region specific Integrated Framing System model: He made contact with agriculture scientists and developed a suitable IFS model consisting of Lime-papaya orchard, vegetables, fodder crops, cereals, pulses, vegetables, cotton, mustard and live stock production for regular and sustainable income generation from the farm. Today he is producing very good quality lime which is known as Sirohi Gold, good quality papaya and vegetables. This has enhanced farm income. This IFS model secures farmer from weather vagaries also.

Usefulness of innovation : Development of region specific Integrated Framing System model

- For regular and sustainable income generation from the farm.
- Maximum utilization of available resources
- Increase in total income as well as soil health

Grading of lime and papaya fruits

- This practice provided more monetary benefit.
- Reduce post harvest losses significantly
- Increased employment opportunity at farm

Market linkage establishment

- Got very good benefit from lime and papaya orchard.
- Reduce middleman commission.
- Established market reputation by quality produce.

Impact : Regular and sustainable income generation from the farm.

Adoption by others : The technology has been witnessed by many lime growers and progressive farmers of the area for rejuvenation of old and unproductive orchard to fetch good income.

Commercial gains : The technology has improved the profitability of the orchard many fold and is being expanded from one corner of district to other.

Scope for commercialization : The innovation is totally based on recommended crop management practices hence for commercialization it is amenable.

Message :

The technologies provided by the KVK Scientists have changed the entire scenario of lime orchard and farming system which in turn improved the economic condition of my family. I urge the fellow farmers to follow the advice of KVK scientists for economic upliftment and better livelihood.

Girdling in Mango

Personal Information

Name of the farmer	Shri Rajeshbhai Ratanchand Shah
Age	53 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Village : Fansa, Ta. - Umargam, Dist. - Valsad, State : Gujarat - 396140
Educational Background	SSC
Telephone number (Residence)	-
Telephone number (Mobile)	9825251012
Email ID	shahrr11@gmail.com

Information on Innovation



Type of innovation : Girdling in Mango

Specific group : Fruits crops: Mango

Existing practice : Farmers of Valsad district do not follow girdling in mango due to lack of knowledge and availability of skilled labour. There is no standardized technique in terms of timing of girdling. Mango growers of the district apply paclobutrazol @ 20 ml/mature tree in the month of August for inducing flowering. Application of paclobutrazol is a recommended technology by the SAU.

Details of innovation : Girdling, also called as ring barking is the complete removal of a strip of bark from around the entire circumference of either a branch or trunk of a tree. Girdling is nothing but an attempt to keep the processed food (carbohydrates) through photosynthesis in the upper level of the tree by making complete circle of cut about 1 to 1.5 cm width around branches selected for girdling. Carbon and nitrogen ratio in the tree determines the fruit yield. Girdling tries to keep the processed food in the form of carbohydrates in the upper segment of the tree. Girdling is basically an intervention in the phloem transport between canopy and roots, in an attempt to manipulate the distribution of photosynthates, mineral nutrients and plant bioregulators.



Usefulness of innovation : Girdling around the tree trunks leads to abundant flowering and early fruition in mangoes. Girdling tries to keep the processed food in the form of carbohydrates in the upper segment of the tree. The fruit is ready 60 days in advance, fetching good price. The fruit is also saved from monsoon showers and pest – diseases attack. This has resulted in increase in yield and also improved the quality of fruits.

Impact : Girdling leads to early flowering and fruiting. It also increases fruit yield with good quality. It reduces the use of Paclobutrazol for regularization of flowering besides increase in fruit size, yield and quality of fruit.

Adoption by others : Many farmers of Umargam and Valsad block of Valsad district have started girdling in mango.

Commercial gains : In Valsad district, generally the harvesting of mango is done during the end of May-June. So, farmers get low market price and also face fear of rain. By adopting girdling technique, farmers can get good return due to early fruiting.

Scope for commercialization : Mango crop covers more than 28000 ha. area in Valsad district. Farmers get low return due to late harvesting. Therefore girdling may be useful. But, Girdling needs to be done under an expert's observation or else it could damage the tree permanently.

Message :

Girdling should be done only on one inch of the 10 inch tree trunk. It should never be done on all branches. Only half of the branches should undergo girdling. The process should be undertaken when the humidity is at 70%.

Export Quality Banana

Personal Information

Name of the farmer	Shri Ketan Bhai Jash Bhai Patel
Age	41 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	At and Post Boria, Ta: Petlad, Distt. Anand - 388130 (Gujarat)
Educational Background	F. Y. B. Sc. (Biology)
Telephone number (Residence)	-
Telephone number (Mobile)	09825458529
Email ID	ketan.patel43@yahoo.com

Information on Innovation



Type of innovation : Export Quality Banana

Specific group : Fruit crop: Banana

Existing practice : Use of chemical fertilizers as per the recommendations of Anand Agricultural University

Details of innovation : (i) Integrated Bio Nutrient Management (IBNM) involving cow dung, cow urine, buttermilk, jaggery, pulse flour, soil from below banyan tree, van vrudhi powder, was developed by Shri Patel which is helpful for small and marginal farmers to decrease the cost of cultivation as well as increasing the yield. IBNM also helps to improve soil fertility as well as to decrease pollution in air, soil, water and crop produce. The innovation saves upto 30% of chemical fertilizers on an average. The sap of psuedostem is a rich source of Potassium and can supplement chemical K fertilizers upto 50%. (ii) Fiber extraction from pseudostem and supplied to Navsari Agricultural University used in quality paper making, special cloth, candy and other items. Income from fiber making contributes Rs. 42000 per hectare. (iii) Exported banana in Arab countries (Doha & Dubai) through NDDDB & Mother Dairy and got good profit, this has helped to motivate



other banana growers to export banana produced by them. It also helped to improve their living standard. (iv) Shri Patel is convinced that summer banana introduced for the first time in Gujarat and got highest remuneration. Summer banana cultivation (off season production) would be immensely helpful to banana growers to increase their income. (v) The leftover bananas, not qualifying for international markets are converted into wafers. Profit by wafer making contributes Rs. 9000 per hectare.

Impact : Overall improvement in income and living standard of farmers.

Adoption by others : Adopted by 400 farmers through NABARD training and monitoring

Commercial gains : During 2013 the farmer could achieve a production of 120t/ha with a net profit of Rs. 10,30,000.

Scope for commercialization : The intervention has enormous potential for commercialization.

Recognitions : First prize in Banana crop (Var. Basarai) competition (2003) by Horticulture dept. Govt. of Gujarat, GAU, Horti. Society of Gujarat; First prize for value addition in banana (Wafer) competition (2004-05) by Horticulture dept. Govt. of Gujarat; First prize in potato crop (Var. Pukhraj) competition (2004-05) by Horticulture dept. Govt. of Gujarat; First prize in Banana crop competition (2008) by Horticulture dept. Govt. of Gujarat, JAU, Horti. Society of Gujarat. Best presentation on banana cultivation. (2009) by Associated Chambers of Commerce and Industry of India (ASSOCAM), New Delhi; Recognition and Certificate awarded during Agri Fair (3-5 March 2011) organized by IARI New Delhi; Innovative Farmers Meet, 29-30 September 2011, for producing banana with drip and value addition and 100% exports using modern techniques organised by Navsari Agricultural University, Navsari.

Pomegranate Cultivation

Personal Information

Name of the farmer	Shri Genabhai Dargabhai Patel
Age	50 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Genabhai Dargabhai Patel At. Sarkarigoliya, Po. Agthala, Ta. Lakhani, Dist. Banaskantha - 385541, Gujarat
Educational Background	12 th Standard Pass
Telephone number (Residence)	(02744) 256046
Telephone number (Mobile)	09925557177
Email ID	patelgenabhai@yahoo.co.in

Information on Innovation



Type of innovation : Pomegranate cultivation

Specific group : Fruit crop : Pomegranate

Existing practice : The soil of Lakhani taluka in Gujarat is sandy. Rainfall is scanty. Genabhai Patel has been growing bajra, castor and pulses in *kharif*. Mustard and amaranthus in rabi and bajra in summer season. He was doing traditional farming and his average profit was around Rs.10000/- ha/year.

Details of innovation : Lakhani taluka of Banaskantha district (Gujarat State) falls in arid and semi arid region in which average rain fall is 550 mm, temperature minimum 2°C in winter and maximum temperature 45°C in summer season. Shri Genabhai started pomegranate cultivation in his 5.0 ha land because this crop requires very less water and it is temperature tolerant. He adopted Sinduri (Bhagva) variety of pomegranate recommended by MPKV, Rahuri. He adopted drip irrigation with plastic mulching to save water, plastic net and reflecting strip to control birds. He grew garlic, onion, tomato and watermelon as intercrop with these technologies he harvested bumper crop. He



earned Rs. 13.00 lakhs from one hectare (total Rs. 85.80 lakh from 5.0 ha) with Rs. 10.00 lakhs as expenditure he made net profit of Rs.75.80 lakh during the year 2012-13. He advised other farmers to grow pomegranate in Gujarat as well as in Rajasthan. He took “Early Hast Bahar” and harvested the crop in December- January. The best time for export to other countries.

He prepared hard wood cutting as well as Gutti Kalam on pomegranate plants and provided quality plants to other farmers.

Usefulness of innovation : Genabhai started pomegranate cultivation in the year 2005-06. He adopted drip irrigation system and also adopted the integrated Bio Nutrient Management (IBNM) an innovative technique developed by Anand Agril. University, Anand. He has also adopted plastic mulching and bird protecting nylon net. These are the new technologies adopted by Genaji Patel in pomegranate cultivation.

His initiative resvited in horizontal spread of pomegranate cultivation mainly in Deesa, Deodar and Tharad talukas. Many farmers of above talukas adopted pomegranate cultivation to improve their socio economic status.

Impact : Shri Genabhai started pomegranate farming in 5.0 ha. of land, earned Rs. 75.80 lakhs during the year 2012-13. He purchased another 12 ha. land and started pomegranate cultivation. Shri Genabhai Patel had promoted a large number of farmers for adoption of pomegranate cultivation.

Adoption by others : Shri Genaji started pomegranate cultivation with modern technologies. A large number of farmers have adopted the innovation.

Scope for commercialization : Pomegranate cultivation has been found to be successful in arid and semi arid zone with sandy soil of Banaskantha district of Gujarat State. It require very less irrigation so a large number of farmers can grow this crop in dry area with less water and earn higher income.

Recognitions : Progressive farmer award (2009) Convocation of S.D.A.U., Sardarkrushinagar; Krushi Na Rushi (2009) Farmers’ fair during Krushi Mahotsav, Deesa; Best Progressive farmer (2012) Awards in Agriculture ceremony, Gandhinagar; Haldhar Siromani (2012) Awards in Agriculture ceremony, Jaipur, Rajasthan; Shresth Kisan (2013) Agriculture Summit-2013, Mahatma Mandi, Gandhinagar; Mahindra Award (2014) Mahindra Samridhhi INDIA AGRI AWARDS-NEW DELHI; Jan Jagruti Award (2014) Gujarat University, Ahmedabad; Appreciation (2014) AAU, Anand.

Message :

Pomegranate is a tropical fruit crop suitable for sandy soil of Banaskantha district, requires less water and more profitable than other crops. So cultivation of pomegranate is beneficial for farmers.

Peach based Farming System

Personal Information

Name of the farmer	Shri Rajpal Singh
Age	54 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Village - Jagaita, P.O. - Fendpuri, Block - Nakur, District - Saharanpur, Uttar Pradesh - 247 001
Educational Background	Graduation
Telephone number (Residence)	-
Telephone number (Mobile)	09412558235
Email ID	-

Information on Innovation



Type of innovation : Peach based Farming System

Specific group : Fruit crop: Peach

Existing practice : The farmer used to practice mono cropping or sugarcane based cropping system as practiced by other farmers of the region.

Details of innovation : Sri. Rajpal Singh has introduced peach based system for the first time in his district which is proving to be a substitute to the sugarcane dominated cropping system in the district. Three fruit + vegetable systems are practiced in 4 ha. The cropping systems are peach (Saharanpur Prabhat) + brinjal (Navkiran) + chilly (AK47); peach (Saharanpur Prabhat) + spinach (Rajdhani) and peach (Saharanpur Prabhat) + cucumber-cucumber (Alamveer) - black gram (PU .35). Peach based system viz. peach + cucumber-black gram-spinach provides highest net profit of Rs. 3.43 lakh/ha followed by peach + brinjal + chilly at Rs. 3.39 lakh per ha

Usefulness of innovation : The intervention by the farmer has improved the farm income by many fold. This has also eliminated the uncertainty associated with mono cropping.



Impact : The intervention has helped the farmer to realize higher returns from unit of land. Besides this peach based cropping system has also helped in having a more balanced nutrition for the farm family.

Adoption by others : The intervention is well received by the fellow farmers. It is being adopted by the fellow farmers of his village.

Commercial gains : The peach based cropping system having cucumber + black gram + spinach is highly remunerative in terms of financial gain to a tune of Rs. 3.43 lakhs/ha.

Scope for commercialization : The financial gains speak volumes of the intervention. The scope for commercialization is very high in view of the high returns.

Recognitions : Felicitated by

- NHM for quality fruit production.
- KVK for Organic farming.
- Khadi & Gramodyog Commission, for beekeeping.
- First prize by NRC on Litchi for Litchi cultivation

Documentation : Yes in Farm Innovators -2010 of ICAR

Message :

My fellow farmers must adopt innovative and remunerative cropping systems to increase the profits from unit area.

Sapota Propagation

Personal Information

Name of the farmer	Shri Harulal Mandal
Age	39 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Village - Srikrishnapur, P.O. - Sukdevpur, District - South 24 Parganas, West Bengal
Educational Background	Matriculation
Telephone number (Residence)	-
Telephone number (Mobile)	09733217226
Email ID	-

Information on Innovation



Type of innovation : Sapota Propagation

Specific group : Fruit crop: Sapota

Existing practice : Approach grafting is practiced by the farmers on existing trees. Owing to the size and height of the mother tree it is often very difficult to get the scion material at the ground level. In order to graft the farmers construct wooden structures near the trees to bring the rootstock and the scion together. Hanging a rootstock (with earth ball) on a large and tall tree is not only labour intensive, but also a costly affair.

Details of innovation : Fallen sapota plants are used for grafting in this innovative method. In the fallen trees, scion branches of pencil thickness are grafted on the rootstock kept on the ground surface. Grafting in the fallen tree is easy and around 2000 to 2500 number of grafts are prepared from one single tree per season. Observing the ease of making grafts in this method, the orchard growers have started felling sapota plants artificially/mechanically by digging on one side of the tree and by cutting few roots. After felling the tree, rootstock of *khimi* seedlings (in earth ball) are placed on the soil by the side of the pencil thickness branches of sapota mother plant. The earth ball of



khimi seedlings are placed within the soil by making small holes. In this way, a grafter can make 250 to 300 numbers of graft unions in a day. After removal of graft unions, the mother plants are erected, properly nourished and then again make it fall down on the opposite side to complete the cycle of two graftings in a year.

Usefulness of innovation : This method is useful to increase the number of grafts, eliminates the cost of raising bamboo structures for bring the rootstock and scion, reduces the labour.

Impact : In this method 4200 grafts per year can be produced with a profit of Rs.16,110 and 2.59 BC ratio. Whereas in non-grafted plants, the profit is only Rs.850 per year as the cost of seedling is 50 paisa against Rs.6.25 in the grafted plants.

Adoption by others : This technique was first applied in Srikrishnapur village of the district by a group of farmers and now it is practiced by the farmers of Amtala-Bishnupur region, the main nursery area of the district.

Commercial gains : The seedlings are sold at Rs. 0.50/plant where as the grafted pants are sold at Rs. 6.25/plant which is 25 times the cost of seedlings.

Scope for commercialization : This technique is highly remunerative and is amenable for commercialization.

Recognitions : The farmer is identified as master trainer for KVK.

Documentation : Yes in Farm Innovators -2010 of ICAR

Message :

Grafted plants are true to type and hence always prefer grafted plants over the seedlings.



Hi-tech Nursery

Personal Information

Name of the farmer	Shri Ranjeet Kumar
Age	52 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	S/o Late Upendra Prasad Village - Sandalpur, P.O. - Munger, Block - Jamalpur, District - Munger - 811201
Educational Background	B.Sc.
Telephone number (Residence)	-
Telephone number (Mobile)	09994185536
Email ID	-

Information on Innovation



Type of innovation : Innovation in Hi-tech Nursery

Specific group : Fruit crops

Existing practice : Wheat/maize cropping system was in practice before inception of innovative technology.

Details of innovation : Mr. Ranjeet Kumar has a big orchard of mango. It includes several varieties. Under N.H.M. and IFFCO foundation a big Hi-tech nursery was established. Now the orchard of mango is serving as mother block. 50,000 fruit plant per year from the hi-tech nursery (Adarsh Paudhshala) are produced which is a significant. It is serving the demand of many district of Bihar. Mango (many varieties), litchi (five varieties), guava (five varieties), bel (two varieties) and other fruit plant production is going on. There is well organized polyhouse, shed nethouse, sprinkler system, sale corner, mother plants of different fruit plants with appropriate fencing facility.

Usefulness of innovation : The hi-tech nursery (Adarsh Paudhshala) is very useful for the farming community. It is serving the requirements of the farmers of many district as well as



the government needs in various programme. Ultimately our plant population area under fruit cultivation is increasing regularly.

Impact : Regular selling of fruit plants shows its impact and usefulness of the innovation.

Adoption by others : The availability of good fruit plants with appropriate price must motivate the farmers for plantation and cultivation of fruit plants for better return.

Commercial gains : Earlier the per year earning of Mr. Ranjeet Kumar was Rs. 1,50,000=00 only. But after the adoption of the innovative technology he is gaining on an average Rs 12,00,000=00 per year.

Scope for commercialization : Munger district is one of the largest growing areas of mango. So availability of good planting material opens a vast scope for commercialization.

Message :

It is important that the farmers must procure the authentic planting material from certified nurseries to establish new orchards to get true to type material.

Improving Productivity in Litchi

Personal Information

Name of the farmer	Shri Prabhat Singh
Age	66 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	Village Chak Madho Singh, PO Pathankot, Teh. & Distt Pathankot, Punjab – 145 001
Educational Background	Graduation
Telephone number (Residence)	-
Telephone number (Mobile)	098152-27299
Email ID	-

Information on Innovation



Type of innovation : Improving Productivity in Litchi

Specific group : Fruit crop: Litchi

Existing practice : Sole crop of Litchi is being planted in 25 acres at his farm for the last 20 year.

Details of innovation :

- **Change of row ratio under litchi** : The farmer has changed the trend of planting sole crop in litchi orchard. One row of Litchi variety Dehra Dun and one row of Calcutta variety (1:1) is being practiced in 7 acres, (Fig. 1).
- **Intercropping of sugarcane in Litchi** : Sugarcane is intercropped in Litchi orchard to protect the young plants from frost during winter and hot winds during summer. (Fig. 2)
- **Establishment of vermi compost unit for use in litchi orchard** : The farmer has been using vermi compost for the last 5 years and due to its continuous use, productivity as well as quality of litchi have been improved and fetched higher rates than the litchi from surrounding orchards.



Fig. 1. Change of row ratio of Litchi (1:1)



Fig. 2. Intercropping of sugarcane in Litchi

- **Use of wind breaks** : Plants of Jamun are planted around the orchard to protect it from hot winds which led to improvement in quality of litchi fruits (Fig. 3)
- **Method of own marketing of litchi** : Normally, litchi orchards are given on contractual basis. But during 2011 the farmer prepared own cartoons (small as well as large). Fruits of litchi were cleaned, rotten and dried ones were discarded and his own sticker of quality produce was pasted and transported to Delhi on the same day by trucks.

Usefulness of innovation : By changing row ratio in litchi the spread of solar radiation was uniform and litchi yield was increased (Fig. 4). By intercropping of sugarcane in litchi, young plants were protected from frost and hot winds during summer. Further, by regular use of vermi compost in litchi orchard, net returns were increased and came out to Rs. 1.5 lakh/acre/year than the normal crop (Rs. 1 lakh/acre/year). Besides, wind break of Jamun improved the quality of litchi and wood of Jamun brought extra income and prevented the soil erosion.

Impact : By adopting new innovations, there is a significant improvement in soil health, quality of the fruit, labour saving, saving of water and electricity, regular source of income.



Fig. 3. Use of wind breaks



Fig. 4. Farmer inspecting the quality of Litchi



Adoption by others : The fellow farmers of the area were highly motivated by the new innovations and started adopting the technique of sowing sugarcane in new orchard. Some farmers have also set up the vermicompost units and started applying to their orchards as well. Many new farmers who were growing traditional crops earlier have brought about 110 acres under litchi cultivation.

Commercial gains : Earlier the farmer used to earn Rs. 1 lakh/acre/year from his orchard, but by adopting new innovations he gets an additional profit of Rs. 40,000 – 75,000 per acre/year.

Scope for commercialization : These innovations have tremendous scope for commercialization as they do not involve additional expenditure. Moreover, the method of packing in small cartoons can fetch higher returns by selling litchi in the local market. Further, the setting up of vermi compost unit is not very costly affair and can be established by investing small amount on earthworms.

Recognitions : The recognitions for the innovation are: (i) Received Chief Minister's Award for Innovative Farmers during Kisan Mela held at Punjab Agricultural University, Ludhiana, (ii) Received State level first prize in Litchi (Seedless) from Department of Horticulture, Punjab on 09.06.2006, (iii) Received State level first prize in Garden Competition (Litchi) from Department of Horticulture, Punjab during 1997-98, (iv) Received State level first prize in Litchi (Dehradun) from Department of Horticulture, Punjab on 18.06.1993, (v) Honoured by PAU, Ludhiana at Kisan Mela on 13-14 September, 2013 as Progressive Farmer.

Documentation : The innovative innovations are well covered by local press and electronic media.

Message :

The fellow farmers should bring more acreage under litchi cultivation than the traditional crops as the net returns from litchi are quiet attractive and high. Secondly, the farmers can do self marketing of litchi by preparing small cartoons and selling in the local market rather than depending upon the contractors.

Multiple Interventions in Kinnow

Personal Information

Name of the farmer	Shri Gurraj Singh Virk
Age	59 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	1293 Chiranjiv Niwas, Mohala Surgapuri, Duareyana Road, Street No. 1, Kotkapura, Distt Faridkot – 151204, Punjab
Educational Background	Higher Secondary
Telephone number (Residence)	01635-221129
Telephone number (Mobile)	9417390129
Email ID	gurrajsinghvirk@hotmail.com

Information on Innovation



Type of innovation : Multiple Interventions in Kinnow

Specific group : Fruit crops: Kinnow

Existing practice : The farmer has made four innovations and the details of the existing practices are given below:

- **Pruning of kinnow trees:** In case of old orchards at normal spacing and in high density plantation, the management of the tree canopy through regular pruning is essential to achieve better results. The pruning of the kinnow trees was done manually. It was very laborious and time consuming process. The cost of the operations was also very high.
- **Spraying of pesticides:** The chemicals are widely used for controlling diseases, insect-pest and weeds in the orchards. He has 21 acres of kinnow orchards. Before the invention of the power sprayer, all chemicals were sprayed manually with the help of four labourers. The capacity of the spray tank was 400 litres only. He had to refill the water tank for ten times to do the spray in the whole orchard. It was very laborious and time consuming process.

- **Grading:** Before the invention of citrus grader, He was not able to grade the fruits due to unavailability of any facility in his area. He was also dependent on the contractors for the selling of his produce at very low prices.
- **Mulching:** Mulching was not done by the farmers. He has adopted the method of clean cultivation.

Details of innovation :

- **Tree pruner:** This implement is developed by his constant efforts to carry out the operations of pruning of the kinnow trees effectively to get higher returns. He has modified the ordinary fodder cutter into tree pruner. Fodder cutter has been converted into tree pruner by changing the position from horizontal to vertical one with the help of an attachment. It is adjusted at an angle of 90°. This tree pruner is approximately 10 feet in height. The blades which are in vertical direction are used for the hedge pruning under the high density planting of kinnow at a spacing of 3 m x 3 m (Fig. 1 & 2).



Fig. 1 & 2. Tree Pruner

- **Power Sprayer:** The chemicals are widely used for controlling diseases, insect-pest and weeds in the orchards. Therefore, spraying is employed for a variety of purposes such as application of protective fungicides to minimize the effects of fungal diseases, insecticides to control various kinds of insect-pests and micro-nutrients to control deficiency symptoms of elements. So to do these day to day activities, he has fabricated a power sprayer having a water tank with the capacity of 1500 litres. The length of the power sprayer is 10 feet and 5.0 feet in width. It is laced with six Korean spray guns. The power sprayer utilizes PTO power of the tractor to operate the pump of the sprayer. 25 hp tractor with 1000 rpm is sufficient for the power sprayer. The pesticide is sprayed in the mist form by this power sprayer (Fig. 3).



Fig. 3. Power Spray

- **Mini Citrus Grader:** He has changed the commercial grading machine (which costs approximately Rs. 25-30 lakhs) into mini citrus grader (Rs. 60,000/-). There is no provision of grading and waxing unit in District Faridkot. That's why, he developed this citrus grader, which after cleaning the kinnow fruits, also grade the fruits into five different sizes. The cleaning is done with the help of 10 Korean plastic brushes that are 1.5 feet in width with 6 inches of thickness. The fruit is graded into five different grades of A, B, C, D and E sizes (Fig 4).



Fig. 4. Citrus Grader

- **Mulching in kinnow:** Paddy straw is not burnt by him and it was used as mulching material in kinnow orchards for the last two years.

Usefulness of innovation :

- **Tree pruner** is used for hedge pruning of the kinnow trees under high density planting. It provides sufficient spacing by pruning the side branches of the trees. It resulted into more penetration of the light and air towards the inner portion of the trees. It helps to increase the fruit yield and to improve the fruit quality towards the inner portion of the tree due to more photosynthetic activity. Besides this, it also enhances the efficiency of the pesticide sprays due to increase in coverage area towards the inner portion of the trees. It also facilitates the intercultural operations between the rows. It saves the precious time and money also.
- **Power Sprayer:** The pesticide is sprayed in mist form. This power sprayer can easily spray the trees up to the height of 20 feet. The efficiency of the pesticide is also increased due to more coverage of the surface area of leaves. It covers approximately 15 acres of the orchard per day with single driver. There is 50 per cent of water saving by this power sprayer.
- **Citrus Grader:** The efficiency of this grader is 2 ton per hour. The market value of the graded fruits will also increase thus resulting into more commercial benefit for the farmer. Self marketing is possible after grading of the fruits and there is no need on the dependency of the contractor.
- **Mulching in kinnow:** Due to mulching, there is increase in soil health due to increase in organic matter. It saves precious water by conserving the soil moisture. It also prevents weed growth. There is improvement in fruit quality due to the mulching as it improves the soil health and creates microclimatic conditions around the fruit trees. As paddy straw is not burnt by him, it helps to reduce environmental pollution.

Impact :

- **Tree pruner and Power Sprayer:** These technologies have been widely adopted by many farmers of the Punjab and Haryana.
- **Citrus grader:** Five machines have been made under his supervision and the other farmers are also getting the benefit from these citrus graders.



- **Adoption by Others:** These machines are widely used by the fellow farmers of Punjab and Haryana States and they have taken advantage from these innovations developed by him.

Commercial gains :

- **Tree Pruner:** A single person is capable of pruning one acre of the orchard in one hour. Manually, more than 35 laborers are required to prune one acre of the orchard. The expenditure on labour is saved by Rs. 10,000 per acre by the use of tree pruner.
- **Power Sprayer:** By the use of power sprayer, it saves 58.5% of the money as compared to the conventional method of spraying.
- **Citrus Grader:** The efficiency of this grader is 2 ton per hour. The graded fruits are bought by the commission agent on priority basis and he gets additional Rs. 1 per kg on graded fruits. Thus, it results into more profitability and economic returns.

Scope for commercialization :

- **Tree Pruner:** There is a wide scope for commercialization of the tree pruner under high density planting as it is very cheap and costs Rs. 25,000/- only.
- **Power Sprayer:** It is already adopted by the orchardists of Punjab and Haryana.
- **Citrus Grader:** There is wide scope for commercialization of the citrus grader as it is very cheap and costs Rs. 60,000/- only.
- **Mulching:** It should be practiced by all the orchardists as it helps to control the environmental pollution and also improves the plant health.

Message :

The aim of my life is to encourage the young farmers towards the adoption of diversification especially the horticulture. I also provide the training to the young farmers and school going children by inviting them to my farm. It enhances their self confidence and they are capable of choosing their trade. It will help to increase their crop productivity and income and leads to good socio-economic condition.

Integrated Farming

Personal Information

Name of the farmer	Shri Dhananjay Kumar Singh
Age	49 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	S/o Late Ranbir Prasad Singh Village - Paharpur, P.O. - Lohchi, Block - Haveli Kharagpur, District - Munger - 811201
Educational Background	Graduate
Telephone number (Residence)	09234182996
Telephone number (Mobile)	07631012966
Email ID	-

Information on Innovation



Type of innovation : Integrated Farming

Specific group : Fruits/ Vegetables/Medicinal and Aromatic crops

Existing practice : Cultivation of rice, wheat, arhar, gram, mustard was in practice. It was traditional farming. None of the cash crops were included in the farming system.

Details of innovation : Mr. Dhananjay Kumar has taken several trainings from KVK Munger. He has also visited several agricultural institutions in India. At present he has 60 acres of land. Now he has adopted integrated farming system, that includes cultivation of fruits and vegetable, fisheries, dairy farming, vermi compost, goat and duck rearing, besides cultivation of medicinal and aromatic plants on his farm.

Usefulness of innovation : The total scenario has changed. Earning from all units increased which improved his life style.

Impact : Success of Mr. Dhananjay Kumar Singh motivated the villagers for commercial cultivation



of fruits and vegetable as well as adoption of integrated farming system. He is also running farmer's field school in the village.

Adoption by others : The acreage of fruits (mainly mango) increased. Use of vermicompost and seed replacement rate of all the crops increased.

Commercial gains : Earlier the per year earning of Mr. Dhananjav Kumar was Rs. 1, 25,0000 only. But after the adoption of the integrated farming system he is earning on an average Rs. 8,00,000 per year.

Scope for commercialization : There is immense scope for commercialization of the interventions adopted by the farmer.

Recognitions : Mr. Dhananjay Kumar Singh is a well recognized farmer of the Munger District. He is the winner of "Kisan Sree" of Haveli Kharagpur block of Munger district.

Message :

*According to Mr. Dhananjay Kumar Singh agriculture is the present, past and future of the farming community. Agriculture is the backbone of any civilization.
Hard work and good work always pays.*

Interventions in Grape

Personal Information

Name of the farmer	Shri. Bharat Eknath Shinde
Age	47 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	At-Post: Bori, Tal: Indapur, Dist: Pune, State: Maharashtra - 413104
Educational Background	B.Com
Telephone number (Residence)	7588622922
Telephone number (Mobile)	7588622922
Email ID	beshinde1967@gmail.com

Information on Innovation



Type of innovation : Interventions in Grape for Higher Production

Specific group : Fruit crop: Grape

Existing practice :

The farmers resort to the following age old practices like:

- Use of traditional varieties which are not suitable for export.
- Use flood irrigation.
- Do not use bio-pesticides and bio fertilizers.
- Use traditional method of spraying.
- Do not use information technologies.
- Improper post harvest management.
- Do not have water storage facility at farmer's level and are more dependent on rain.
- Do not use paper wrapping for export quality grape bunches.
- Spraying of insecticide and fungicides having maximum residue levels.



Details of innovation : To overcome the losses due to the existing practices, Mr. Bharat Shinde made following innovations as per situation observed in village

- To reduce the problem of scarcity of water during summer months he developed farm pond of 4000 sq/m having capacity of 2 cores litres of water.
- He planted improved varieties of grapes having export qualities on 7.2ha area. The improved varieties of grapes are Manik Chaman, Sonaka, Nana Saheb Purple and Krishna.
- Developed spray schedule of insecticides and fungicides for minimum residue level in grapes to increase export potential.
- Spraying is done by electrostatic sprayer which reduces the labor and also reduces quantity of insecticides.
- Use of bio-fertilizers and bio-pesticide to increase the resistance level in grape against pest and disease.
- Use of paper wrapping at the time of bunch development stage export quality grape bunches.
- Use of weather based crop management software for producing export quality grape.
- Use of drip irrigation economise water use.
- Advanced post harvest management practices are followed e.g. harvesting, pre-cooling, grading packaging and storage.

Usefulness of innovation : Irrigation water is now available throughout the year due to the pond. Standard package of practices for cultivating grapes increase the annual income and also standard of living of the Farmers. Water table in farmer's land is increased due to the construction of farm pond. Due to the use of Electro static sprayer the cost of pest & disease management is effectively reduced. Due to use of paper wrapping for bunch management in grapes, the quality has improved for export.

Impact : By observing farm pond construction made by Mr. Bharat Shinde, about 150 farmers constructed their own farm ponds having water storage capacity of approximately 1.5 cores litter and also adopted the insecticide and fungicides spray schedules developed for grape which helps the farmers to increase the quantity and quality of grapes for export purpose.

Also nearly 600-700 acres area of Bori village comes under the cultivation of improved varieties and export quality of grapes. Yearly, 4 tons of grapes are exported to European and Gulf Countries from this zone.

Adoption by others : Now in Bori village about 150 farmers constructed their own farm ponds having water storage capacity of approximately 1.5 cores litters. The area under grapes is approximately 600-700 acres in village.

Commercial gains : Due to these interventions his yearly average income went up to the Rs.3.5- 4.5 lakhs, as compared to conventional or existing method of farming.

Scope for commercialization : By observing the usefulness of this innovation and rural empowerment there is large scope for the commercialization of these interventions.



Recognitions :

- In daily Agriculture News paper “Agro Won” took notice of this and published his success story. Also from ICAR he was recognized as an innovative farmer.
- Department of Agriculture recognized him as a “Udyanpandit” in 2014-2015.

Message :

Development of farm pond reduces the dependency on rainfall. Growing of improved varieties and following standard package of practices for cultivation of grapes increases the quantity and quality of grapes, ultimately increases the annual income of the farmer.

Interventions in Mango

Personal Information

Name of the farmer	Dr. R. Prabhuram
Age	47 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	10, Viswanatha Street, Tirupattur, Vellore Dt. Tamil Nadu - 635601
Educational Background	Ph.D. (Horticulture), Indian Agricultural Research Institute, New Delhi. (1992 -97)
Telephone number (Residence)	04179-220550
Telephone number (Mobile)	9443232944
Email ID	nurserygarden@gmail.com

Information on Innovation



Type of innovation : Mango Cultivation

Specific group : Fruit crop: Mango

Existing practice : A major problem encountered by the mango farmers of Tamil Nadu especially in the semi dry tracts of the state is the increasing levels of salinity in irrigation water. Indiscriminate use of deep bore water has led to a severe increase in the salinity levels in the irrigation water as a result of which there is severe salt injury symptoms apparent in the mango orchards grown in these areas.

Details of innovation :

Salt Tolerant Rootstock : This problem was reduced to a great extent by the use of salt tolerant mango rootstock H-13-1. Hence, large number of H-13-1 seedlings were purchased from Reliance Agro farm in Jamnagar, Gujarat for the purpose. The rootstock has been tried out in salt affected area of Marandahalli, Tiruchengodu, Tirupattur, Tindivanam and Kalayarkoil talks of Tamil Nadu. About 30 mango farmers covering an area of about 690 acres have benefited by adopting this strategy.



Canopy management in Mango : As many as 675 mango farmers of Vellore District have been trained how to rejuvenate their old and unproductive orchards by adopting appropriate canopy management techniques. Alphoso, Totapuri and Neelam are some of the varieties which have responded very well.

Off Season Production in Mango : The farmers near Kerala and Pollachi border are encouraged to grow early season varieties like Alphonso, Sendhura and Peter so that they can harvest their produce in the month of March -April and send it to the market when there are no mangoes. Farmers in the hilly tracts of Tamil Nadu are advised to go for late bearing varieties like Neelam so that they can harvest their crop much later when all fruits are over in the market. The use of growth regulators and pruning methods to induce off-season flowering is widely practiced.

Soil and water analysis : A soil and water testing lab has been set up under the NADP programme under his leadership. About 350 farmers have been trained on the importance of soil and water testing for applying fertilizer based on the soil test reports. About 500 fruit farmers in Tirupattur Taluk have soil health card with them and update their soil report every two years.

Supporting Internship Programme for B.Tech Horticulture students of TNAU : His firm has so far provided internship training programs on nursery technologies for about 12, B.Tech (Horticulture) students undergoing the UG programme at TNAU, Coimbatore. It has also been a regular center for practical field visits as well as tour programs for various students in Agriculture and Horticultural colleges of Tamil Nadu. Classes and training sessions are being conducted in his soil testing lab every four months.

Impact : The intervention made by the farmer resulted in cultivation of slat tolerant mango rootstock by 30 farmers. About 675 farmers were trained on canopy management in mango and 350 farmers were trained in soil testing.

Scope for commercialization : The interventions made by the farmer are already implemented by the fellow farmers on commercial basis.

Recognitions :

1. **“Best Mango Grower Award- 2012”** given by the **Central Institute for Sub-Tropical Horticulture**, Lucknow.
2. **“Best Nursery Award -2004”** given by the **Lal Bagh Horticultural Society**, Bangalore.

Message :

Farming is a viable and rewarding occupation. Horticulture not only ensures nutritional security of farm families but also ensures economic security. I call upon my fellow professionals to venture in to horticulture to harness the technological innovations at the farm level.

Mobile Phone Battery Operated Sprayer

Personal Information

Name of the farmer	Shri Ashok Popatrao Patole
Age	50 Years
Gender	Male
Complete Postal Address with village, mandal, district, state name and pin code	At.Post. Vadner Bhairav, Tal. Chandvad, Dist. Nashik - 423111, Maharashtra
Educational Background	12 th Standard
Telephone number (Residence)	-
Telephone number (Mobile)	09960028375
Email ID	-

Information on Innovation



Type of innovation : Mobile Phone Battery Operated Weedicide Pump

Specific group : Fruits crops: Grapes, pomegranate, mango, guava, etc.

Existing practice : Weed management is crucial; however it is time consuming, labour intensive and costly affair for the farmers. Weeding by labour or application of weedicide are two options. Labour availability is a limiting factor. Present weedicide spray pumps offer solution, but the units are costly and it has to be operated manually, so, efficiency is affected. Conventional pumps which are available in the market costs about Rs. 4000/-. The pump is operated manually which causes drudgery thus the efficiency is reduced. It requires more weedicide, more efforts, more cost towards implement.

Details of innovation : Mobile Phone Battery Operated Weedicide Pump is a simple unit. He used 4 feet 0.5" diameter PVC pipe. Using the idea of 'Centrifugal force' he attached 6 volt capacity motor at lower end. A Compact Disk (CD) is mounted on the motor to rotate it. At the top end he fixed aluminium socket to fix the mobile phone battery to operate the motor. He provided switch to 'on' or 'off' the power supply. 8 mm drip cock is fitted to regulate weedicide solution flow. 10 litre

capacity drum ready to mount on back is provided to store the solution. Small plastic tube to carry the solution from drum to lower end is fixed inside the PVC pipe with a local nozzle. The solution is dropped on the CD by nozzle and revolving CD breaks it into very fine droplets and sprays the solution over 7 feet diameter area.

Mobile Phone Battery Operated Weedicide Pump requires 7 liter of water for 1 acre weedicide spray. 700 ml of weedicide is sufficient for 1 acre. It requires only 2 hours to spray the solution. As it is a mobile phone battery operated, extra effort, is not required to pump the solution.

The battery can be re-used after charging by a charger provided with the pump. In retail market the charger costs only Rs. 80/-. Once fully charged, mobile phone battery can perform spraying operation over 3 acre area. As plastic material is used for the pump, it is rust free, so, least maintenance required. Mr. Ashok Patole sold 4900 units in just 4 years. The unit is very popular among the farmers.

Usefulness of innovation :

Factor	Conventional Pump	Mobile Phone Battery Operated Pump
Water Requirement	200 Lit/ acre	7 Lit/ acre
Time Requirement	8 hrs/ acre	2 hrs/ acre
Unit cost of pump	Rs. 4000	Rs. 1100
Concentration of Solution	1 Litre weedicide/ 200 litre water (For 1 acre)	1 Litre weedicide/ 10 litre water (For 1.5 acre)
Operation	Pumping by hand, so, more efforts and less efficiency	By mobile phone battery, so, more efficiency

Impact : Saving over conventional pump: Cost saving (per unit) is 72.50 per cent. **Time saving** (per acre) is 75%. **Weedicide saving** (per acre) is 33.33%. As weedicide requirement reduced to 33.33%, not only cost reduced but environment pollution is also minimised.

Adoption by others : The “Mobile Phone Battery Operated Weedicide Pump” became popular among the grape and pomegranate growers. In last 4 years, 4900 units have been purchased by the farmers. Now the demand is expanding for the pump.

Commercial gains : Cost saving (per unit) is 72.50%: Rs. 2900/- net saving in purchase of the unit. **Time saving** (per acre) is 75%. **Weedicide saving** (per acre) is 33.33%.

Scope for commercialization : The unit has been commercialized and there is demand for 900-1000 units per year from the farmers.

Recognitions :

1. Awarded with “Aadarsh Shetkari Puraskar” (Progressive Farmer Award) by ATMA, Nashik on 12.03.2011.
2. Local Newspapers viz. Daily Agro-one (02.06.2011), Daily Sakal (19.01.2011), Daily Lokmat (15.03.2011), Daily Gaokari (18.01.2011), Daily Deshdoot (12.03.2011) have given wide publicity to this product.



3. Mr. Ashok Patole was interviewed by two channels and the interviews were telecast on Sam TV and ETV Marathi channel.
4. Mr. Ashok Patole given 3 interviews on All India Radio, Nashik station.

Documentation: The product has got Patent wide No. 1797/MUM/2011.

Message :

As a farmer by profession, I know the pains in weed management, which provided me the inspiration to design this pump. It is cheap, less time consuming for spray, less weedicide requirement and battery operated. The diameter of spray is 7 feet, so farmers may use it and experience the benefits.