

# Farmer FIRST: An Interactive Famer – Scientist Interface

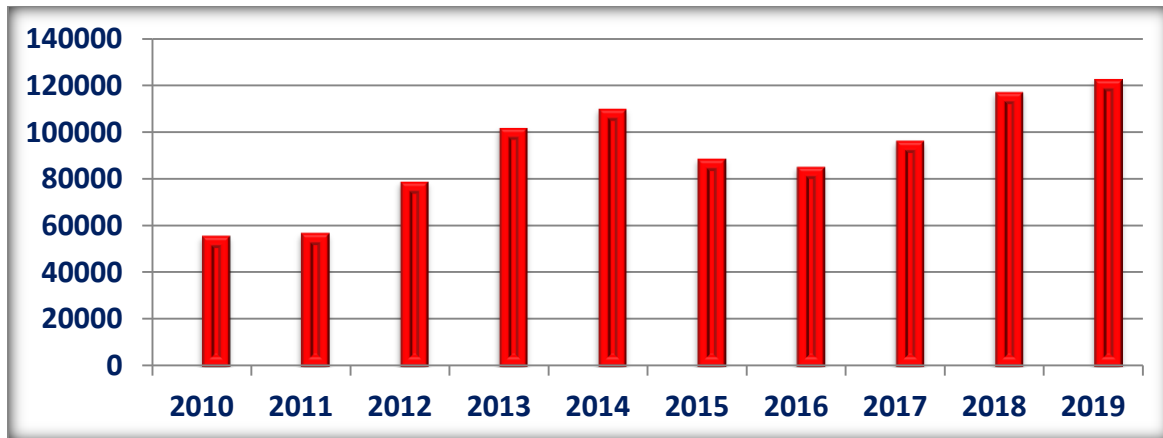
## Category : Agriculture

Integrated Crop Management cluster field demonstrations were organized on 100 small and marginal farmer’s field total of 40 hectare area during kharif 2019 in Nandurbar district of Maharashtra State. Integrated Crop Management practices recommended by Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist- Ahmednagar, in Bt cotton enhanced the yield of seed cotton by 30 per cent and saving of Rs. 2300/- per hectare in cost of production.

## Challenges

After the introduction of Bt cotton hybrids, again our cropping pattern is encroached towards mono cropping, which is dangerous for soil health and specific pest epidemic. It is observed that area under cotton was increased constantly in Nandurbar district experiencing different problems and increased cost of production. The problems were related to soil health, crop nutrition, infestation of sucking pest and diseases in Bt cotton. To tackle these problems and meet out the gaps in adoption of technology, it is necessary to create awareness regarding soil health, use of bio-pesticides to reduce the cost of production and use of bio-fertilizers and micro-nutrients for balanced crop nutrition.

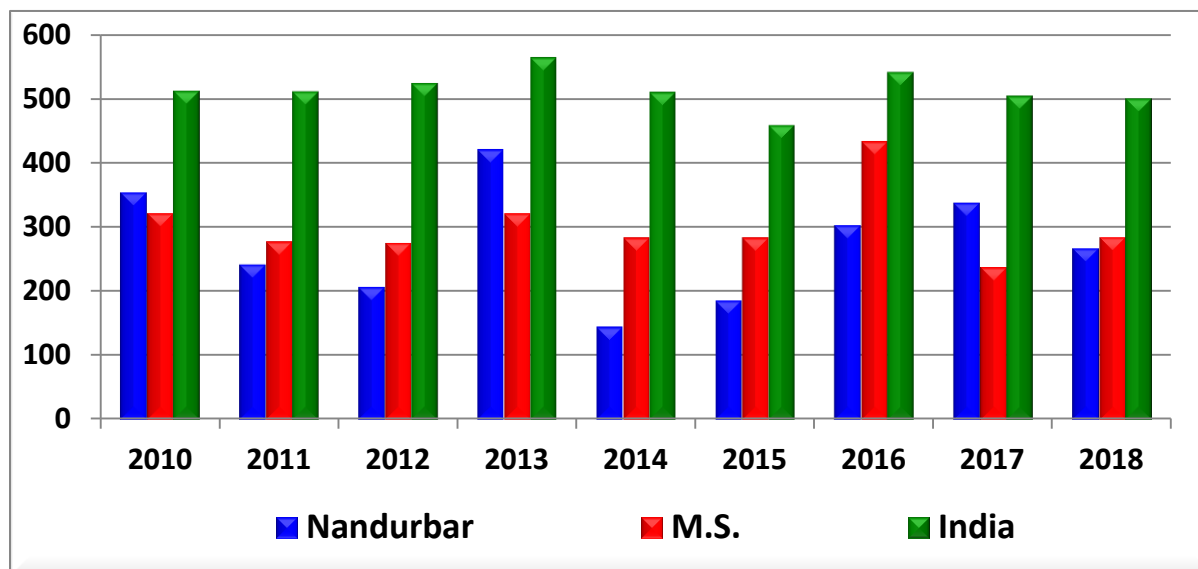
**Fig.-1: Year wise area (ha)under Cotton in Nandurbar district**



This attempt should be done with more number of small and marginal farmers in cluster and on large concentrated area with complete package of technology on sharing basis. Mahatma Phule Krishi Vidyapeeth (MPKV) has a good package of technology to tackle these problems. However, the technologies were used / demonstrated in fragments and in disperse manner to cover large geographical area in minimum time with weak adoption and no use of motive

extension tools for horizontal expansion of the impact of technologies. During 2016-17, Directorate of Extension Education of MPKV, submitted a project entitled, “**Farmer FIRST Project**” under RKVY to the State Department of Agriculture and we get the opportunity to demonstrate the technologies in cluster, in package and on large scale with inclusion of different tools of extension education.

**Fig.-2: Productivity of Cotton (Lint kg ha<sup>-1</sup>) in Nandurbar district**



Farmer FIRST project on “**cotton based production technology**” was allotted by MPKV to the Regional Extension Centre, Dhule to implement on farmer’s field in Nandurbar district during *Kharif* 2019. As 33 per cent of the total area is under cotton in the district, it is necessary to work on this crop for small and marginal farmers, those which are suffering more. Talwade Bk., Vaindane, Kharde Kh. and Saitane villages were selected from Nandurbar tahsil in the district. The average annual rainfall of the *Mandal* is about 600 mm, in which the villages cluster is located. The villages cluster selected for the activity was also located in Scarcity Zone of Agro-climate, where optimum yields are often challenging.

### **Initiatives**

Cluster field demonstrations on Bt cotton with Integrated Crop Management package were organized on 100 small and marginal farmers field on total 40 hectare (0.40 ha each) area during kharif 2019, with complete package of technology on sharing basis. The details of technology package demonstrated are given in table-1.

**Table-1: Technology package for Bt cotton used for cluster demonstrations per acre**

| Sr. No.   | Parameter                | Share of Farmers                  | Farmer FIRST Project share | Solution for   |
|-----------|--------------------------|-----------------------------------|----------------------------|--|
| 1.        | Soil Health Cards        | --                                | 1 sample                   | To know the soil nutrient status                         |
| 2.        | Seed ( <i>Bt</i> Cotton) | 1.00 kg                           | --                         |  |
| 3.        | Organic manure           | 4.00 tone                         | --                         | Part of Integrated Nutrient Management                   |
| <b>4.</b> | <b>Bio-fertilizers</b>   |                                   |                            |  |
|           | a) <i>Azotobacter</i>    | --                                | 250 g                      | Part of Integrated Nutrient Management                   |
|           | b) PSB                   | --                                | 250 g                      |  |
|           | c) <i>Trichoderma</i>    | --                                | 1.00 kg                    | Low cost disease control measure                         |
| 5.        | Chemical fertilizers     | 125:65:65 kg NPK ha <sup>-1</sup> | --                         | Balanced nutrient management                             |
| <b>6.</b> | <b>Micro-nutrients</b>   |                                   |                            |  |
|           | a) Zinc sulphate         | 5.00 kg                           | --                         | Balanced micro-nutrient management                       |
|           | b) Ferrous sulphate      | 5.00 kg                           | --                         |  |
| <b>7.</b> | <b>Plant protection</b>  |                                   |                            |  |
|           | a) <i>Verticillium</i>   | --                                | 1 kg                       | Bio-pesticide for control of sucking pest                |
|           | b) Azadiractine          | --                                | 0.5 liter                  |  |
|           | c) Phule Nomuraea        | --                                | 1.00 kg                    | Bio-pesticide for control of pink bollworm               |
|           | d) Phule Metarhizium     | --                                | 1.00 kg                    |  |
|           | e) Pheromone Traps       | --                                | 10 Nos.                    | Mass trapping of pink bollworm                           |
|           | f) Pectino Lures         | --                                | 20 Nos.                    |  |
|           | g) Chloropyriphos        | --                                | 0.5 liter                  | Supportive chemical pesticide for Management of bollworm |
|           | h) Profenophos           | --                                | 0.5 liter                  |  |

As per the cost norms of RKVY of Rs.3200/- per demonstration of 0.40 ha area for cotton, the critical inputs were finalized by the Crop Specialist of MPKV. For field demonstrations on cotton four villages cluster was identified in Scarcity Zone of Nandurbar tahsil with the help of State Department of Agriculture. The main focal village was Talwade Bk from where 67 farmers and surrounding 33 farmers were from the adjoining three villages. In all

total 100 demonstrations on cotton each of 0.40 ha were organized on total 40 ha area. First farmer meeting was organized on 24<sup>th</sup> June, 2019 at village Talwade Bk in the presence of Taluka Agriculture Officer, *Mandal* Agriculture Officer, concerned Agriculture Assistant and KVK scientists. The problems in cotton, willingness of participation of farmers in the project, objectives of the project and activities during the project were discussed in the meeting. Then, registration of farmers as per their willing to participate in the project was done and 87 male farmers and 13 women farmers registered their names. Out of 100 participating farmers, 92 were marginal and small farmers.

The composite soil sample from each demonstration plot was collected for chemical analysis before sowing. The soil parameters viz; pH, EC, organic carbon, calcium carbonate, available N, P, K, Zn, Fe were analysis and prepared Soil Health Cards. The data on soil analysis revealed that 96 soil samples of demonstration fields have the pH value less than 8 and 04 samples were having the pH value range from 8 to 8.5 (saline). The Electrical Conductivity of all the soils samples were less than 1dS/m. The organic carbon content of 18 soil samples was medium (0.4 to 0.60 %), however, 82 samples plots were low (0.21 to 0.40 %). Regarding micro-nutrients 88 and 47 per cent soil samples were found low in Ferrous and Zinc, respectively.

While implementing the project on cotton, some need based extension activities were organized for the farmers and extension functionaries for Farmer – Scientist interactions and horizontal spread of technology. The details of the programmes organized are given in table-2.

**Table 2 : Extension activities organized during project period**

| Sr. No. | Activity            | Date       | Venue          | No. of Farmers | Extension Functionaries |
|---------|---------------------|------------|----------------|----------------|-------------------------|
| 1.      | Pre-project meeting | 24.06.2019 | Talwade        | 95             | 03                      |
| 2.      | Shivar Pheri        | 28.08.2019 | Talwade        | 91             | 02                      |
| 3.      | Farmers Rally       | 31.10.2019 | Dhule          | 400            | 20                      |
| 4.      | Farmers training    | 16.11.2019 | Talwade        | 100            | 03                      |
| 5.      | Staff Training      | 12.12.2019 | KVK,<br>Kolade | --             | 25                      |
|         |                     |            | <b>Total</b>   | <b>686</b>     | <b>50</b>               |

**Key result / insight / interesting fact**

Mostly Bt cotton varieties were used by the farmers for sowing. For the management of sucking pest, Verticillium, Azadiractine were used during the crop growth. Aphids, jassids and white flies were very well managed due to use of bio-pesticides. After completion of pickings in cotton, the data on yield, production cost and market prices were collected and compiled. The data is tabulated as per sowing windows.

The sowing of demonstration crop was done by farmers as per availability of irrigation facilities with them. Hence, yield data is tabulated as per sowing window and given in table-3. The sowing of cotton during 04 to 10 June, 2019 produced the highest yield of cotton.

**Table 3 : Effect of sowing windows on seed cotton yield of demonstrations plots**

| Sowing window     | No. of farmer | Area (ha) | Seed cotton yield (q/ha) |              | Market Rates (Rs/q) | B:C Ratio   |              |
|-------------------|---------------|-----------|--------------------------|--------------|---------------------|-------------|--------------|
|                   |               |           | Demon.                   | Control plot |                     | Demon.      | Control plot |
| 28 May to 03 June | 11            | 04.40     | 18.63                    | 15.90        | 4977                | 2.20        | 1.87         |
| 04 - 10 June      | 23            | 09.20     | 20.00                    | 13.95        | 4952                | 2.42        | 1.68         |
| 11 - 17 June      | 19            | 07.60     | 18.68                    | 15.28        | 4932                | 2.10        | 1.84         |
| 18 - 24 June      | 40            | 16.00     | 18.95                    | 14.55        | 5008                | 2.40        | 1.85         |
| 25 - 30 June      | 07            | 02.80     | 17.50                    | 12.85        | 5037                | 2.31        | 1.71         |
| <b>Average</b>    |               |           | <b>18.75</b>             | <b>14.51</b> | <b>4981</b>         | <b>2.29</b> | <b>1.79</b>  |

As the organic carbene content of the demonstration fields was different, the yield data was also categorized as content in soil and given in table-20.

**Table 4 : Effect of initial organic carbene content in soil on seed cotton yield**

| Initial organic content in soil (%) | No. of farmers | Area (ha) | Seed cotton yield (q / ha) |              | Market Rates (Rs/q) | B:C Ratio   |              |
|-------------------------------------|----------------|-----------|----------------------------|--------------|---------------------|-------------|--------------|
|                                     |                |           | Demon.                     | Control plot |                     | Demon.      | Control plot |
| Low (0.21 -0.40)                    | 82             | 32.80     | 18.73                      | 14.33        | 4987                | 2.30        | 1.78         |
| Medium (0.41 -0.60)                 | 18             | 7.20      | 20.15                      | 15.60        | 4942                | 2.39        | 1.87         |
| <b>Average</b>                      |                |           | <b>19.44</b>               | <b>14.97</b> | <b>4965</b>         | <b>2.36</b> | <b>1.83</b>  |

The average productivity of Bt cotton of 100 demonstrations was 19.00 qt / ha. The overall results are given in table-5.

**Table 5 : Overall Average yields and monetary benefits of Demonstrations**

| Average Yield (q / ha)  |                  | Average Cost of production (Rs / ha) |                  | Gross monetary Returns (Rs / ha) |                  | B : C Ratio |                  |
|---|------------------|--------------------------------------|------------------|----------------------------------|------------------|-------------|------------------|
| Demon   | Farmers practice | Demon                                | Farmers practice | Demon                            | Farmers practice | Demon       | Farmers practice |
| 19.00   | 14.57            | 41,705                               | 44,005           | 94,601                           | 72,544           | 2.27        | 1.65             |
| FP = Farmers' Practice. (30% increase in yield) Average market rate = Rs. 4979 / qt |                  |                                      |                  |                                  |                  |             |                  |

**Note: Average Market rate –Rs. 4979 per quintal of seed cotton**

### Impact

Integrated Crop Management practices in Bt cotton enhanced the yield of seed cotton by 33 per cent and net saving of Rs. 2300/- per hectare in cost of production. The additional income of Rs. 13,200/- per farmer (0.40 ha) was achieved over farmers practice. The additional total turnover of Rs. 13.20 of 100 farmers was realized from sale of seed cotton in the cluster villages by investing Rs. 3,20,000/- on additional critical inputs. Project activity enhanced unity, thinking power and sharing of ideas among the farmers. In addition to this, they got knowledge of other enterprises of Farming System through different training programmes and continuous contact of Scientists of Regional Extension Center.

### Lessons Learned

If the technologies are imparted in package form and at proper time with its proper knowledge, it gives long lasting impact. Complete cluster remember and became a live proof of technology success. In surrounding villages, always there was discussion that what is something special in that Farmer FIRST cluster. In initial phase of project, while selection of villages, it was challenging to get the participation of farmers. It is learning from the project activity that to enter in any of the village, one must have secured good faith of one of the leading farmer in that cluster, which is the solution to overcome the difficulties. If I am asked to do it all over again, I will increase the number of partner farmers, add farmers farm school activity, capacity building in off farm income generation and inclusion of other social parameters activity.

## **Supporting Quotes and Images**

Sarpanch of village Talwade, Mr. Sunil Patil, during Farmers Rally quoted that, “This the first time in the history of our village, a project like Farmer FIRST is implemented in our village”. “Farmer FIRST means farmer is the first priority of Government”. “In addition to cotton, we got the knowledge of commercial Vegetable cultivation, which is the most important component of Integrated Farming System”. Mr. Patil, who is the main recourse person for us in the village, also quoted that, “Use of bio-pesticides saved our expenditure on plant protection and human health”. “We also learn that soil health should be checked frequently and crop nutrition should be done as per analysis”. He also opined that, “Farmers collective farm visits (*Shivar Pheri*) must be increased while implementing such projects. This extension tool enhances face to face Farmer – Scientist interactions”.

## **Additional Information**

### **a) Project partners and Linkages**

1. Directorate of Extension Education, Mahatma Phule Krishi Vidyapeeth, Rahuri (Main Center)
2. Regional Extension Center, College of Agriculture, Dhule (Project Implementing Center)
3. State Department of Agriculture, Maharashtra State (Funding Agency)
4. District Level Department of Agriculture, Nandurbar (Supporting hand)
5. Krishi Vigyan Kendra, Kolade, Tal & Dist- Nandurbar (Supporting hand)

## **Contact person for story**

Dr. M. S. Mahajan  
Co-PI & Extension Agronomist,  
Regional Extension Center,  
College of Agriculture,  
Dhule-424004 (M.S.)  
Email : [recdhule@gmail.com](mailto:recdhule@gmail.com).  
Cell No. 09922208265



## Photos of Activities



**Farmers First Meeting at Talwade Bk. For selection of participants**



**Supply of Technology kits for demonstrations**





**Distribution of Soil Health Cards**



**Demonstration Plot at Talwade Bk.**



**Method Demonstration on Pheromone Traps**



**Farmers Rally 31 October, 2019**





**Farmers Training on 16 November, 2019**



**Agricultural Officers Training on 12 December, 2019**

## Publicity of Programme

# दैनिक दिव्य मराठी

अंक १५५, मंगळवार, २ नोव्हेंबर २०१२

पाझरा-कान परिसर
लोकमत जळगाव, रतुळवार, दि.२ नोव्हेंबर २०१२ ४

### कृषी तंत्रज्ञान दिन : महात्मा फुले कृषी विद्यापीठाचे संचालक डॉ. शरद गडाख यांचे प्रतिपादन, शोकडो शेतकरी उपस्थित

# उत्पादनवाढीसाठी तंत्रज्ञानाचा वापर गरजेचा

**लोकमत न्यूज नेटवर्क**

**धुळे :** आजचे बदलते हवामान पाहून अधिक उत्पादनासाठी शेतकऱ्यांनी सुधारित व आधुनिक तंत्रज्ञानाचा वापर करावा. त्यामुळे अधिकाधिक उत्पन्न व उत्पादन घेणे शक्य होऊ शकते, असे प्रतिपादन महात्मा फुले कृषी विद्यापीठाचे संचालक, संशोधन तथा विस्तार शिक्षण संचालक डॉ. शरद गडाख यांनी आज येथे केले. कृषी महाविद्यालय धुळे, कृषी विज्ञान केंद्र आणि विभागीय विस्तार केंद्र धुळे, कृषी विभाग, आत्मा यांच्या संयुक्त विद्यमाने राष्ट्रीय कृषी विकास योजना (शेतकरी प्रथम) व धुळे-मंदुरवार अंतर्गत आयोजित कृषी तंत्रज्ञान दिन, शिवार फेरी व कृषी प्रदर्शनाचे आयोजन करण्यात आले होते. त्यावेळी अध्यक्षपदावरून डॉ. गडाख योलत होते.

व्यासपीठावर कृषी विद्यापीठ कार्यकारी परिषदेचे स. न्य. डॉ. प्रकाश

प्रमाणगत पाऊस झालेला आहे. अतिपृथ्वी व तुकसानीबाबत माहिती देवून माती व पाणी यांचे होंगारे प्रदूषण आणि मातीची होंगारी झीज टाळण्यासाठी शेतकऱ्यांनी उत्पादनाला काय्यात, असे डॉ. अशोक फर्गडे यांनी सांगितले. तर कृषी विद्यापीठाद्वारे माहिती तंत्रज्ञानाचा वापर करून विविध मोबाइल ॲप तयार केल्याची माहितीही शेतकऱ्यांना दिली.

कृषी विद्यापीठाने विकसित केलेले तंत्रज्ञान शेतकऱ्यांपर्यंत पोहचविणे हाच या कार्यक्रमाचा उद्देश असल्याचे डॉ. अशोक मुसगाडे यांनी यावेळी सांगितले.

यावेळी तांत्रिक चर्चासत्र झाले. या उत्पादन तंत्रज्ञानाबाबत डॉ. सुरेश दोडके, रब्बी कांदा उत्पादन तंत्रज्ञानाबाबत डॉ. श्रीधर देसले, मका पिकातील अमेरिकन लष्करी अळीचे एकात्मिक व्यवस्थापन याविषयी डॉ.

**कृषी प्रदर्शनाला प्रतिसाद**

प्रदर्शनाचे आयोजन करण्यात आले होते. यात महात्मा फुले कृषी विद्यापीठाने विकसित केलेले विविध वाणाची माहिती पोस्टरद्वारे देण्यात आली होती. उद्यान विभागाने विकसित केलेल्या रोपेही येथे मांडण्यात आली होती. प्रदर्शन पाहण्यासाठी शेतकऱ्यांनी गर्दी केली.

ए.ए.एम. घाडगे, डॉ. धीरज कॅम्बरे, डॉ. सुनील पाटील, डॉ. संदीप पाटील, डॉ. वीरेंद्र चोळे, डॉ. के. एस. खुर्चरी, डॉ. प्रकाश रौदळ, डॉ. विक्रम गिगारे, डॉ. रवी पाटील, अविनाश पापकन्याड, श्रीधर देसले, जे. एम. पाटील, शोहित कडू, अनुराग गुरुत, जयराज गावीत, यशोव्रत घेतले. कार्यक्रमाला प्रगतीशील शेतकरी, महिना शेतकरी तसेच कृषी महाविद्यालय धुळे, शहादा, दोडगाँव, अमळनेर येथील