

## CHAPTER-12

### INNOVATIONS INTRODUCED IN OVERALL FUNCTIONING OF KVK

#### Different Innovation and technologies disseminated in the field by KVK

<b>Innovative approaches</b>	<b>Entrepreneurship development</b>
I. Organic Village Concept	Mushroom Production
II. Sustainable Production Consumption System	Vermi culture
III. Farm Implement Bank (Custom Hiring Centre)	Beekeeping
IV. Self-sustaining Mushroom Resource Centre	Quail farming
V. Innovative Approaches for Enhancing Seed Replacement rate	Poultry Production
● Seed Village Concept	Tailoring & Stitching
● Seed Replacement Through Farmer To Farmer Basis	Medicinal & Aromatic Plants Production
VI. Multi-tier Vegetable production	Gardening
VII. Integrated Farming System	Post Harvest Management & Value Addition
VIII. High Density Orchard	Protected Cultivation
IX. Intercropping in Orchards	Flower Production
X. Popularization of SRI/SWI	Vegetable Production
XI. Popularization of Hi-tech Horticulture	Banana fiber extraction and Handicrafts
XII. Sustainable Livelihood Security	

<p><b>Technology dissemination mechanism</b></p> <ul style="list-style-type: none"> <li>Community Radio Station</li> <li>Krishak Samachar</li> <li>Master Trainer</li> <li>Scientist– Farmers Interface Meet</li> <li>Farm Visits</li> <li>Cluster Development</li> <li>Model Agricultural Villages : Sansad gram (Mushroom, Organic, Seed, Multi-Tier Vegetable Production</li> <li>Production- Consumption Chain</li> <li>Farmers participatory programmes</li> <li>Extension Worker</li> <li>Instruction cum demonstration Unit</li> <li>Leaflet –pamphlet</li> <li>Awareness Camps, Health camp.</li> </ul> <p><b>Diversification of agriculture</b></p> <ul style="list-style-type: none"> <li>Mushroom Production</li> <li>Floriculture</li> <li>Quail farming</li> <li>Horticulture</li> <li>Medicinal and Aromatic plants</li> <li>Poultry</li> <li>Goatry</li> <li>Dairy</li> <li>Beekeeping</li> </ul>	<p><b>Technological interventions</b></p> <ul style="list-style-type: none"> <li>Inter Cropping in cereals</li> <li>Inter Cropping In Orchards</li> <li>High Density Orchards</li> <li>Integrated Farming</li> <li>Multi-tier Vegetable production</li> <li>Inter Cropping In Banana</li> <li>Low Cost Vermicomposting</li> <li>Protected Cultivation</li> <li>IPM</li> <li>INM</li> <li>Organic Farming</li> <li>Natural Resource Management</li> <li>Micro Irrigation</li> <li>Quail farming</li> </ul> <p><b>Women empowerment programmes</b></p> <ul style="list-style-type: none"> <li>Mushroom Production</li> <li>Vermicomposting</li> <li>Jewellery making</li> <li>Textile Designing</li> <li>Food Processing</li> <li>Soft toys making</li> <li>Mithila &amp; Fabric painting</li> <li>Beauty Parlour</li> <li>Banana fiber handy craft making</li> </ul>
--	---

## Innovation 1: Information and Communication Technology

### Kisan Sarthi App

ICT is an important tool to reach out to the farmers in a timely, holistic and extensive manner but most farmers cannot benefit from web access as the outreach through Government Offices, Common Service Centres and Internet Kiosks is also limited as far as web enabled services are concerned. However, mobile telephone density in the rural areas is increasing everyday with more than 35 crore mobile connections being used and therefore, the National e-Governance Plan (NeGP-A) and 12<sup>th</sup> Plan Document for the National Mission on Agricultural Extension & Technology lay great emphasis to provide extension services through mobile phones which gives a potential outreach to nearly 13 crore farm families.

Under this service, Agromet advisory-based information of weather forecast is sent through SMS on the mobiles of farmers on everyday in both the languages Hindi & English. Till date 7640 farmer registered on this app.

### WhatsApp Groups

KVK, Vaishali initiated 3 groups for the farmers. There are 325 farmers in groups and they are sharing their problems. KVK SMS solved their problems through SMS advisory. Till date 1859 messages shared with farmers.



## Automated Weather Station and Advisory Services

Automatic weather stations may be designed as an integrated concept of various measuring devices in combination with the data-acquisition and processing units. Such a combined system of instruments, interfaces and processing and transmission units is usually called an automated weather observing system (AWOS) or automated surface observing system (ASOS). This station updates the weather related information like Relative Humidity, Rainfall, Temperature, and Wind Velocity. The farming community of the district is regularly benefitted from this weather station. The KVK regularly displayed the forecast and provide to the farmer and it send to the line department of the district through voice and text messages.



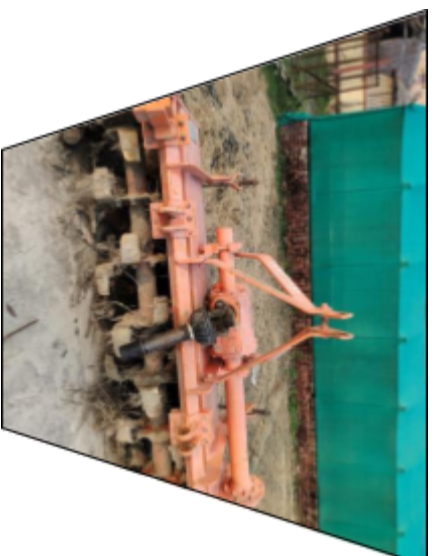
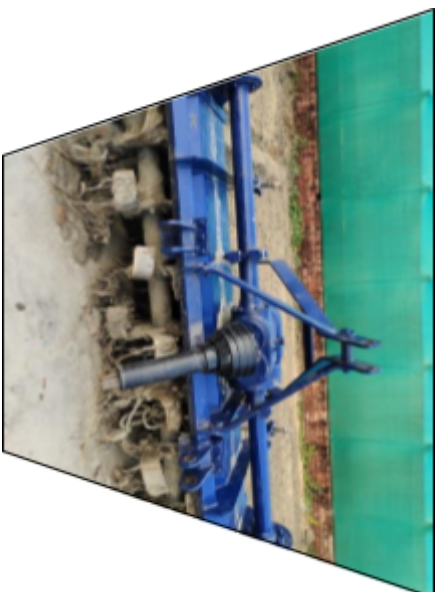
### Innovation 2: Custom Hiring Centre

**Custom hiring centre for timely planting:** Custom hiring centre was established through CNC ICAR and CRA project. Farmers received these equipments on hired basis from KVK. The farmers used these instruments and equipment in a very enthusiastic manner and overall productivity was increased. The crops were planted in time and the farmers were able to learn that this was the only non-monetary input for yield enhancement.











## Innovation 3: Trainings through Virtual Mode

### Use of Mobile & TABLETS

KVK, Strated trainings Kisan Gosthi and e-KisanSammellan through virtual mode due to COVID Pandemic and to provide better technical input to them. KVK provided TABLET to the SHG's during training. They attended training over it. In two years of COVID KVK provided 34 trainings 1 Kisan Sammelan & 5 e Kisan Chaupal in virtual mode with 1676 farmers,

**राज्यस्तरीय ई-किसान सम्मेलन**  
-संवाद का विषय-  
जलवायु अनुकूल कृषि प्रणालियाँ: स्थाई कृषि का बेहतर विकल्प  
मंगलवार: 15 जून, 2021 पूर्वाह्न 11.00 बजे से

**वक्ता**

**मुख्य संरक्षक**  
डॉ. आर. सी. श्रीवास्तव  
कुलपति,  
डॉ.रा.प्र.के.कृ.वि., पूसा

**मुख्य अतिथि**  
डॉ. अजनी कुमार सिंह  
निदेशक,  
अटाही जौन IV, पटना  
विशिष्ट अतिथि

**संरक्षक**  
डॉ.एम.एस.कुंठ  
निदेशक प्रसार शिक्षा  
डॉ. रा. प्र. के. कृ. वि., पूसा

**संयोजक**  
डॉ. पुष्पा सिंह  
उपनिदेशक प्रसार (प्र.)  
डॉ.रा.प्र.के.कृ.वि., पूसा

**आयोजक सचिव**  
डॉ. सुनीता कश्यप  
वरिय वैज्ञानिक प्रत्येक प्रधान  
कृषि विज्ञान केंद्र, वैशाली

**वक्ता**

डॉ राजकमार जाट  
वैज्ञानिक एवं प्रभारी (BISA)  
पूसा, समस्तीपुर

डॉ पारसनाथ  
पाचार्य, भोला पासवान शास्त्री  
कृषि महाविद्यालय, पूर्णिया

डॉ रत्नेश कुमार झा  
मुख्य वैज्ञानिक, डॉ. रा.प्र.के.कृ.वि., पूसा

**विशिष्ट अतिथि**

डॉ. एस.एस. सिंह  
निदेशक प्रसार शिक्षा,  
रा.न. बा. के. कृ. वि.,  
झुंसी, उत्तर प्रदेश

श्री अपूर्व ओ  
सी. ई. ओ.  
आगा खान ग्राम स  
कार्यक्रम (भारत)

डॉ. अमित झा  
उप निदेशक कृषि एवं  
जीवन पदाधिकारी (CRA)  
कृषि विभाग, बिहार  
सरकार

डॉ. आर. एन.  
सह निदेशक प्रसार  
बिहार कृषि  
विश्वविद्यालय, र

श्री सुनील कुमार पाण्डेय,  
"राज्यस" मैनेजर  
आगा खान ग्राम सुधार  
कार्यक्रम (भारत), बिहार

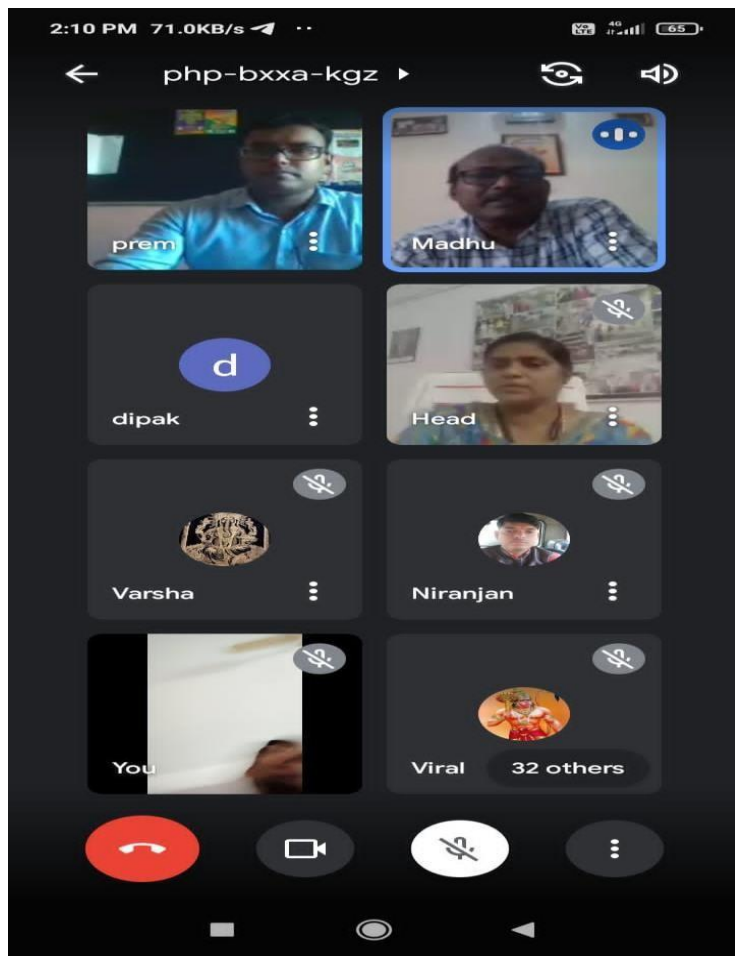
Registration Link: <https://forms.gle/X1Me9w1mp8ZnVw7>  
Meeting Link:- <https://pcau.webex.com/pcau/onstage/g.php?MTID=ge8af805b6fa63813be84906535993d3>

आयोजक  
कृषि विज्ञान केंद्र, हरिहरपुर, वैशाली  
प्रसार निदेशालय  
डॉ राजेंद्र प्रसाद केंद्रीय कृषि विश्वविद्यालय, पूसा, समस्तीपुर (बिहार)  
एवं  
बोरलॉग संस्थान साऊथ एशिया, पूसा  
आगा खान ग्राम समर्थन कार्यक्रम(भारत), बिहार  
कृषि विभाग बिहार सरकार

AKRSP

कृषि विभाग

BISA



## हाजीपुर में कीट प्रबंधन पर आनलाइन प्रशिक्षण

संवाद सूत्र, वैशाली : कीट प्रबंधन विषय पर आनलाइन प्रशिक्षण का आयोजन जिले के कृषकों के लिए किया गया। प्रशिक्षण में जिले के 62 कृषकों, छात्रों एवं नवयुवकों ने भाग लिया। शुभारंभ डा. राजेन्द्र प्रसाद केंद्रीय कृषि विश्वविद्यालय के प्रसार शिक्षा निदेशक डा. एमएस कुंडू ने किया। उन्होंने कहा कि किसानों की सेवा के लिए कृषि विज्ञान केंद्र की टीम विश्वविद्यालय के कुलपति डा. रमेश चंद्र श्रीवास्तव के दिशा-निर्देश में लगातार अग्रसर है। डा. अनुपमा कुमारी, उप निदेशक प्रसार ने किसानों को इस प्रकार के प्रशिक्षण में भाग लेने के लिए प्रेरित किया।

कार्यक्रम के मुख्य वक्ता प्रेम प्रकाश गौतम ने समेकित कीट प्रबंधन हेतु जैविक कीट नियंत्रण के उपायों को अपनाने पर बल दिया। उन्होंने रासायनिक दवाइयों के प्रयोग से बचने की सलाह दी।

### Innovation 4: Soil health management for Cauliflower Seed Production

#### (I) DESCRIPTION OF INNOVATION:

The farmer was producing cauliflower seed but was not fetching good price from the market. He came in contact of Krishi Vigyan Kendra, Vaishali and was suggested organic farming due to which the yield increased 2.5 times by increase in seed boldness and increase in yield besides increase in brightness which helped him better return from the market. Latter he himself observed that the previous quality increased in later years did not continue until he was not increasing the dose of Vermi-compost. In one year he shows that around a spilled lump from Chaur land the plant vigor and yield was better from the adjoining plants with same dose of vermi-compost. From last year he is in practice of applying Chaur soil around 3-6cm thick on the soil surface during summer and before cultivation of cauliflower seed production. This practice reduced the oxidation of organic matter besides increasing the nutrient and water holding capacity of soil as seed

production is always practiced on upland soils which are normally light in texture.



## (II) PROBLEM STATEMENT:

- a. **Nature and intensity of the problem addressed:** Light soil having low nutrient and water holding capacity with reference to the particular crop requirement. District is cultivating cauliflower in 4600 ha out of which around 100 ha goes for seed production of early cauliflower.
- b. **Genesis of idea:** In very light texture soils on natural levies of rivers after flood many enterprising farmers in North Bihar go for this practice along with F.Y.M. to start cultivation. This practice is also followed in tobacco in the district.
- c. **Sources of information relevant to the innovation:** Many literatures available on compaction of light textured soils.
- d. **Original innovation or modification of any existing technology:** Application of existing technology to a new crop.

## (III) PROCESS OF TECHNOLOGY DEVELOPMENT:

- a. **Conceptualization of idea:** Around a spilled lump from Chaur land the plant vigor and yield was better from the adjoining plants with same dose of vermi-compost.
- b. **Scientific rationale about the innovation:** Compaction to a light soil increases soil health and production capacity.
- c. **Relative advantages of innovation:** Adaptable, eco-friendly, sustainable, economical viability, Benefit - Cost ratio etc.



## Innovation 5: Intervention of Resource Conservation Technologies

### Practical utility of innovation

Higher yield, less labour, time saving and lower seed requirement which ensures higher profitability. KVK, Vaishali is organizing regular training in collaboration with District Agriculture department and area under SRI is increasing day by day.

**DSR in paddy** is one of the major cropping system of Vaishali. It is a major system for food security and provides livelihood and income to farmers and labours. There is urgent need is being felt to explore the possibility of saving to critical input by adopting RCT such as zero tillage and DSR. For this KVK, Vaishali adopted two villages one is Faridpur and second only Senduari. Now in both villages more than 80% of farmers of uses RCT like DSR, SRI, Zero tillage and Raised bed maize planting.



### SRI in Paddy:

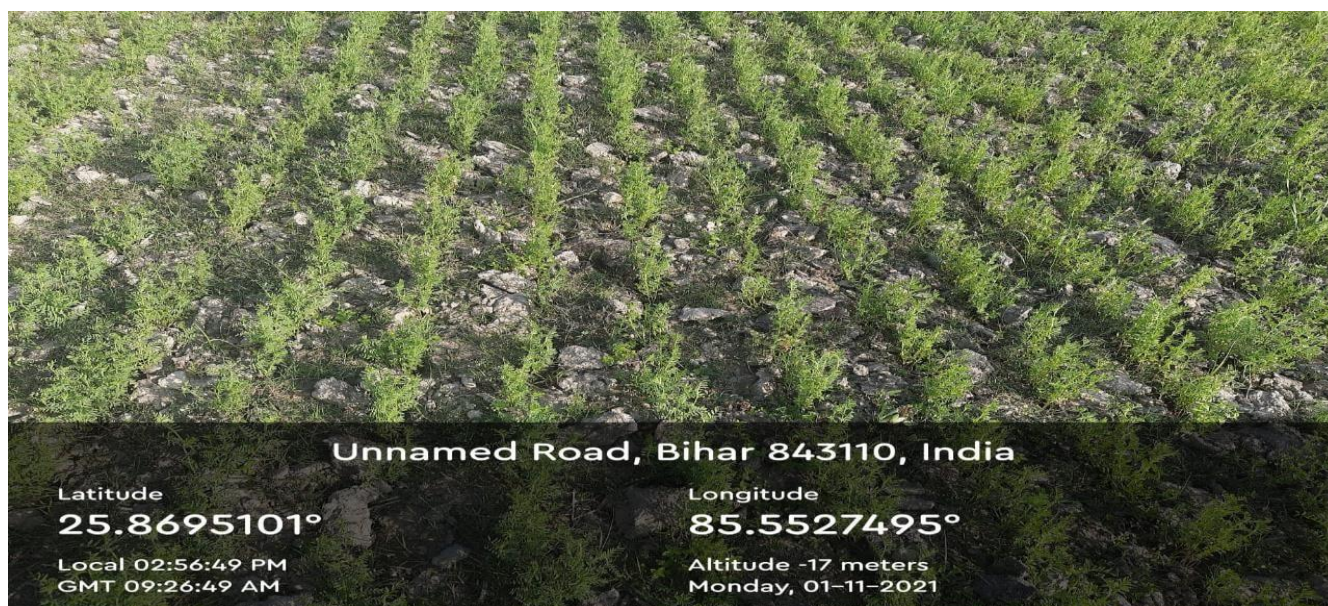
In this method selection of seed followed by seed treatment and then put seed in jute bag for sprouting for 24-36 hours. After that sown the sprouted seeds in prepared nursery bed taking care that seed should not touch each other. Transplanted 10 to 12 days old rice seedlings in the field at

spacing of 25X25 cm. with the help of markers. Weed management become easier with conoveeder / locally developed weeder. More no of tillers about 60-70 from the single seedling rather than



traditionally 15-20 tillers from 4-5 seedlings. Use vermi compost and green manure fertilizers. On an average farmers getting yield 80-90 q/ha. Which is three times higher than traditional method of cultivation and all the farmers who once cultivated this technique are get ready for ever. In this way the cultivated area of Paddy and wheat increases day by day. Now, this KVK is also awaring the labour about this technique through different training programme.

**Zero tillage in Wheat, Lentil & Gram**– Zero tillage an extreme farm of reduce tillage were wheat is planted in prepared soil after Rice harvest in a narrow slit wide enough to cover the seed without any tillage. It ensures timely planting improve soil condition due to slow decomposition of crop residues and High infiltration rate lesser soil compaction and less soil erosion due to crop residue mulch is other added advantage. In this system mechanical tillage is replaced by biological tillage there for it is eco friendly economy. This technology is a boon for farmers of Vaishali district where timely plating of wheat is not possible due to long duration variety of paddy. Demonstration on zero tillage wheat was started during rabi season of 2013. The first demonstration was planted in village Faridpur with a participatory farmer **Mr. Prabhu Dayal Singh** similar demonstration was laid at KVK farm in compression with conventional tillage wheat. The initial results were increasing and since then KVK had been trying to disseminate technology in nearby Faridpur village and other blocks of Vaishali around 1000 ha.



**Zero tillage in Lentil**





**Zero tillage in Wheat**



**Raised Bed Maize Planting**



### **Innovation 6:**

#### **Establishment of Horticultural Nurseries for the self employment**

In this innovation entrepreneurial training programmes conducted by the KVK. At present one block of district Vaishali is popularize for the production of Horticulture plants. Planting material supplied by these nursery growers to different states. Since last 3 years KVK has done major work in the production of good quality healthy planting material.

#### **METHODOLOGY FOR THE EXTENSION**

**Training Programmes:** KVK, Vaishali organized skill development training programmes for the farmers, rural youth and entrepreneurs.

**Table**

<b>S. No.</b>	<b>Name of specific technology/skill transferred</b>	<b>No. of trainings</b>	<b>No. of participants</b>
1.	Use of balance dose of fertilizer in Horticulture Garden.	34	714
2.	Cultivation of commercial flowers.	6	87
3.	Cultivation of Medicinal & aromatic plants in place of traditional crops.	3	70
4.	Establishment of Nursery	22	300
5.	Mali Training	2	60
<b>Total training</b>		<b>67</b>	<b>1231</b>

*In horticulture discipline 80 trainings conducted on different aspects out of them 67 trainings conducted on flower cultivation and nursery management only.*

KVK promoted nursery establish among the farmers. In this district per capita land availability is very low i.e. an average income per family is Rs.18500/-, therefore horticultural nurseries are the only source to increase income. Hajipur, Vaishali is the only district which is the highest producer of planting material. Plant

propagation techniques are adopted by this district farmer for preparation of Horticultural plants.

**Associated trained farmers with projects:** Farmers who were trained by the KVK technically supported and also associated with different projects On farm trials, front line demonstrations conducted with them. Pinching technology promoted among farmers.

**Awareness about technology through media**

KVK vaishali has given technical article in media for the dissemination of technology on large scale.



**Training to Rural youth for flower bed preparation in polyhouse**



**Training on flower cultivation**

**कृषि विज्ञान केंद्र हरिहरपुर हाजीपुर में गेंदा फूल के बारे में बताया गया**

जनादेश हाजीपुर। जो स्थानीय कृषि विज्ञान केंद्र हरिहरपुर हाजीपुर वैशाली में गेंदा फूल के बारे में केंद्र के वैज्ञानिक स्वापनील भारती एवं पीछा प्रचर्जन केंद्र हाजीपुर वैशाली के रामवीर कुमार चौधरी के बीच स्वच्छ हाट और गेंदे के वेबसाइट लरीकों से खेती के बारे में किसानों को जागरूक करने हेतु विचार विमर्श किया गया सातुम ही कि रामवीर चौधरी संभार किसान के फूलों की खेती एवं किसानों प्रचार प्रसार हेतु कई बार सम्मनित किए जा चुके साथ ही इस क्षेत्र में काफी अनुभवी भी है। हाईब्रिड गेंदे का बीज परीक्षा दे में अंकुरण प्रकार से बीज हट्टेड परसेंट अंकुरण लेता है और पीछा भी स्वच्छ एवं मजबूत तैयार होता है जिससे परचय यह होगी कि पीछा की गुणवत्ता अच्छी रहती है जिसमें खेत में लगाने में काफी अच्छा होगा जिससे किसानों को लाभ मिलेगा इस विषय में केंद्र के जरीय वैज्ञानिक अनिता कुशवाहा के साइड लाइन पर सभी प्रभितरील किसानों को केंद्र से जोड़ने का खो काई और न्याय से न्याय किसानों को जोड़ने का काम किया जाएगा फूलों की खेती कायम समय तक चर्चा की गई और अपने जिले में किसानों को यह ज्ञानकर जमूल करने के लिए के कहा गया जहां उपस्थित सुनीता, कुमारी नरेंद्र जी, प्रेम प्रकाश गौतम, प्रीति पल्पदी, नंदिनीशोर चौधरी, सजिव कुमार आदि मौजूद थे।



**Master trainers:** Being high demand of nursery or horticulture trainers KVK, vaishali developed master trainers. These master trainers trained by KVK first then they started and trained others. 5 master trainer's trained rural youth in Vaishali district and other districts also. They are also helped to the line departments.



**Master trainer Sri Rambir Chaudhary provided to the youth**



**Sri Jai Praksah nursery grower supported by KVK**

## Innovation 7: Use of Spent Mushroom Substrate by Vegetable growers

### Spent Mushroom Substrate Technology:

It is readily available (bagged, at nursery suppliers), and its formulation generally consists of a combination of wheat straw, cow dung and ground chalk, composted together. It is an excellent source of humus, although much of its nitrogen content will have been used up by the composting and growing mushrooms. It remains, however, a good source of general nutrients (0.7% N, 0.3% P, 0.3% K plus a full range of trace elements), as well as a useful soil conditioner. However, due to its chalk content, it may be alkaline, and should not be used on acid-loving plants, nor should it be applied too frequently, as it will overly raise the soil's pH levels.

- (i) **Training** - More than approx.2000 farmers were trained for this technology mushroom production technology and disseminated the technologies in all blocks of Vaishali district (16 blocks) with the help of Krishi Vigyan Kendra, Vaishali.
- (ii) **Demonstration conducted:** OFT, FLD conducted at farmer's field. They adopted the technology. Demonstration conducted on 6 locations Lalganj, Bhagwanpur, Mukundpur, Vidupur, Sarai and Hajipur.
- (iii) **Spent mushroom substrate application** - This spent substrate utilized in potato field at the rate of 6 tons per acre and observed that 10-12% increment in yield, desired uniform size of potato and better quality. Similarly, other vegetables crop like Brinjal, Cauliflower, Onion, Tomato, Lady finger etc. showed their quantitative and qualitative improvement.
- (iv) **Marketing Channel** – Linakge support provided to the mushroom growers for the marketing of this compost. All Spent Mushroom Substrate supplied to nursery growers who technically supported by the KVK. At present 2000 tones spent mushroom substrate is marketed by the farmers.





**Farmer with Spent Mushroom Substrate**

## **Innovation 8: Standardization of Mulching technology for vegetable cropping system.**

**Scientific relevance:** Yes, this is very relevant technology for Vaishali district and also for other parts of Bihar.

1. **Reduction of Weeds:** Mulching decreases the weed population year by year because weed seeds inside the mulch destroyed when they continuously receive moisture. Weed plants did not get light therefore their growth affected and these died.
  2. **Reduction in soil borne diseases and pest:** Soil solarisation done through plastics in summer. In case of plastic mulching same phenomenon repeated in the field. Insect's eggs destroyed because they do not found suitable environment for hatching of eggs inside the polythene.
  3. **Earliness in crop:** Regular availability of water and early germination enhances the earliness in crop. For example, Okra seed facing problem in seed germination in the month of January last week but if seeds are sown under plastic mulch germination occurs fast. Because it is find during experimentation soil temperature increases 3-4 °C. This temperature helps in rapid seed germination.
  4. **Soil health management (Increase soil flora & fauna):** Adequate soil moisture increases the population of microbes found in the soil. This microbial activity enhances the organic component in the soil. Now a day our soil is deficient in organic content, it happens due to imbalance dose of fertilizers and water management.
  5. **Water conservation:** Number of irrigations reduced in mulching technology because polythene sheet stopped loss of moisture through evaporation and flood irrigation.
  6. **Reduced in cost of cultivation:** Weed not grown, irrigation decreased, use of insecticides pesticide minimized, minimum labour, all parameters decreased the cost of cultivation.
  7. **Increase in the yield:** It is recorded that yield increased 3 times.
- A. **Socio-economic relevance:** It is very relevant to the Vaishali district farmers especially because 90 percent farmers of the district are marginal farmer's. Average land holding size

of the farmer in Vaishali district is 0.2 ha. They already growing vegetables, therefore it was easy to convince the farmers regarding technology. Now the situation has been changed.

### Appropriate plan /Methodology used for execution or implementation of work:

1. **Conducted Awareness Campaign about Importance & benefit of Mulching:** KVK started awareness programmes since year 2014 to till today continuously. We have conducted 8 programmes regarding this and 658 farmers benefitted by this programme.
2. **Demonstrations of technology:** KVK conducted Front Line Demonstration in the year 2020-21 at farmer's field.
3. **Conducted Training programmes:** KVK conducted 34 training programmes for Practicing Farmers, Rural Youth & Extension Functionaries within 5 years.



**Mulching demonstration at  
KVK, Vaishali**



**Demonstration at Farmers field,  
village: Faridpur**



### **Innovation 9: Introduction of Azolla Production as a Biofertilizer and cattle feed.**

For the popularization of Azolla cultivation a demonstration unit by established in 2016-17 by KVK. A large number of farmers including extension functionary's got training on Azolla cultivation and started their own unit of Azolla cultivation.

**Purpose of innovation:** Vaishali district is every year facing water logging in the fields during rainy

season. At that time fodder crises occurred in the district. Farmers do not have green fodder for their cattle, so that azolla would be a best source of green fodder during this critical period. **Quality of**



**fodder:** As we know that Azolla is a cheap source of micro nutrient and protein for cattle, goat, quail and fish. By feeding of Azolla farmer can save up to 10% on feed expenditure. This innovation helped farmers lot. 30 percent of the farmers of distirct now aware about azolla cultivation. 1000 Azolla unit established in the district.



**Azolla Unit at KVK for display**



**Azolla cultivation in paddy crop for biofertilizer**

## धान की बिक्री व अजोला उत्पादन पर प्रशिक्षण शुरू

**हाजीपुर | एक प्रतिनिधि**

लॉकडाउन से कृषि कार्य को अलग रखने व खरीफ में किसानों को बेहतर बीज उपलब्ध कराने के लिए सरकार के दिशानिर्देश पर तेजी से कार्य शुरू किए गए हैं। सोमवार को स्थानीय हरिहरपुर स्थित कृषि विज्ञान केन्द्र में उत्तम क्वालिटी के धान के बीज की बिक्री शुरू हो गई।

कोविड-19 के प्रभाव के कारण सामाजिक दूरी का पूरा ध्यान रखते हुए किसानों को बीज की बिक्री स्वपिनल भारती के द्वारा की गई। कृषि विज्ञान केन्द्र के वरीय वैज्ञानिक सह प्रधान नरेन्द्र कुमार ने बताया कि किसानों ने नकदी रहित विधि (डेबिट कार्ड, क्रेडिट कार्ड) द्वारा शुगतान किया है।

सभी किसान बीज पाकर उत्साहित थे। उन्होंने बताया कि बीज लगाने संबंधी जानकारी शस्य विज्ञान के वैज्ञानिक डॉ. सुनीता कुमारी ने पूर्ण रूप से दी। बीज उपचार के लिए बाविस्टिन नामक दवा का प्रयोग करने की सलाह किसानों को दी गई। नर्सरी में ही जींक का प्रयोग कराने की सलाह दी गई, ताकि पौधा स्वस्थ और उत्पादन अच्छा हो और खैरा रोग से बचाव हो सके। केन्द्र के प्रधान डॉ. नरेन्द्र कुमार ने बीज बिक्री के उपरोक्त सभी कृषकों को अजोला उत्पादन तकनीक पर एक प्रशिक्षण दिया तथा अजोला का धान पर उत्तम प्रभाव संबंधी जानकारी दी गई।

डॉ. नरेन्द्र कुमार ने बताया कि अजोला एक पशु चारा के साथ-साथ एक प्राकृतिक खाद्य भी है जो हवा से नाइट्रोजन लेकर जमीन में फिक्स करना है, जिससे जमीन की उर्वरा शक्ति बढ़ती है।

अजोला के कारण किसानों को कम खर-पतवार का सामना करना पड़ता है। इससे मजदूरी में बचत होती है तथा उत्पादन अच्छा मिलता है। धान के खेत से उत्पादित अजोला का पशु चारा के रूप में आसानी से उपयोग किया जा सकता है, जिसका अच्छा परिणाम दूध उत्पादन पर पड़ता है।

स्थानीय हरिहरपुर कृषि विज्ञान केन्द्र में धान बीज की बिक्री करते डॉ. नरेन्द्र कुमार व स्वपिनल भारती। • हिन्दुस्तान

## Innovation 10: Banana Fiber Extraction Technology

**Purpose of innovation:** Vaishali district is famous for banana cultivation. Pseudo stem of banana can be used for making fiber. For that purpose a large number of rural youth was trained on banana fiber extraction technique. Farmers harvested banana fruit after that they dumped banana thumb in road side areas for in the barren fields. They created bad odour and pollution in surrounding periphery.

Farmers were also paying prices for the dumping of this waste material.

**Identification of banana fields:** KVK Vaishali selected the areas where banana is growing.

Selected the farmers and trained them about banana waste utilization.

**Establishment of Banana Fiber extraction Unit at KVK:** KVK established one Banana Fiber Extraction Unit at KVK. This unit used for training and demonstration purpose.

**Technology provided:**

1. **Banana fiber extraction:** Banana thumb utilized in this process. With the help of banana fiber extraction machine fiber is making. KVK provided training to the farmers.
2. **Use of banana slurry in vermicompost:** Banana bi product i. e. waste after fiber extraction is now utilized by the farmers in vermicompost preparation. With in 3 months farmers are getting quality compost. There is one more benefit to the farmers i.e. volume of banana waste got reduced after converting into vermicompost. It will be just  $\frac{1}{4}$  of the actual volume.

Some of the innovative farmers after training established their on extraction unit at village-Vidupur, Block- Vidupur, Hajipur. They got success in making handicraft items and market their product at Patna and other places of Bihar.



Training in KVK for rural women for Banana fiber extraction and preparation of cord





## Innovation 11: Value Addition & Marketing linkages of Quail

KVK, Vaishali introduced quail farming in the district 2011-12 with the help of NABARD and RUDSET. Around 700 rural youth selected and trained (2012-20) for quail farming from hatchery to market. One of the innovative farmers Mr. Rajdev Rai established their hatchery unit at the Mukundpur Sarsai with hatching capacity of around 15000 quail egg in hatchery machine. Now he produced more than 10 to 15 thousand eggs per cycle and sell their chicks, adult birds to all over Bihar and UP. Quail farming is becoming more popular among rural youth because it is innovative and requires less investment as compare to poultry farming. Consumption of quail eggs increasing due to its nutritious value. Poor labours and farmers are keen to buy quail egg for their nutritional requirement. 13 SHG,s are working with 494 quail units. 2200 Farmers are getting employment through quail farming. This is the best suited innovation for the farmers. Marginal farmers adopted this technology on large scale.

Now farmer"s has been started processing of quail. On the online order or telephonic booking they supplied the all kinds of processed food items of quail like egg curry, quail tandoori, quail curry, quail mushroom curry etc. They provides the food items within one hrs door to door supply through Swiggy, Zomate and retail outlet like Restraunt. Quail producer started one retail out let at Hajipur in the technical support of KVK.



DEE, DDT and Director RGM, visited his processing outlet at Hajipur

बटेर पालन का रोजगार युवाओं के लिए लाभप्रद

संवाददाता, राजभाषाकार

वैशाली जिला राज्य में बटेर पालन में प्रथम स्थान पर है . कुषक औ रजनेव राव 4-5 वर्ष से बटेर पालन कर रहे है. साथ ही सभी लोगों को प्रेरित भी कर रहे है . कृषि विज्ञान केंद्र के बटेर पालन इकाई को देखने के लिए नजदीकी जिले के कुषक एवं बेरोजगार युवा समय समय पर भ्रमण करते रहते हैं . वैशाली जिले के बटेर पालक यहां से अन्य जिलों में पड़ोसी राज्यों में बटेर की पूर्ति को जा रही है शुक्रवार को बेगूसराय जिले के कुषकों ने कृषि विज्ञान केंद्र, हरिहरपुर, वैशाली में बटेर पालन इकाई का भ्रमण किया . बटेर पालन इकाई को भ्रमण करते समय कृषि विज्ञान केंद्र के वरीय वैज्ञानिक एवं प्रधान डॉ सुनीता कुशवाहा ने सभी कुषकों को बटेर पालन के लिए तकनीकी सलाह के साथ साथ बटेर पालन के लिए का एक अच्छा माध्यम है. युवा क्षेत्र में बटेर पालन का फार्म खोलकर मार्गदर्शन भी किया . तथा सभी किसानों बेरोजगार कुषक विज्ञान केंद्र में बटेर अच्छा अम्पटरी प्रणय कर को बताव कि बटेर पालन स्वरोजगार पालन का प्रशिक्षण लेकर अपने-अपने जीविकोपार्जन कर सकते हैं.

निरीक्षण करते कृषि विज्ञान केंद्र के वरीय वैज्ञानिक एवं प्रधान डॉ सुनीता कुशवाहा .

Work in Media

Innovation 12: Bee Keeping-An entrepreneurs flying with flies

Last few years new young youth is taking interest in the bee keeping. KVK conducted training programmes, Kisan Gosthi, Kisan Chaupal, Kisan Mela and FLD,s to popularize the technology and capacity building of the farmers. In village Sahdei, Nayagaon, village: Katarmala, Block: Goraul, so many farmers are doing bee keeping. At present approx.1500 farmers are involved in bee keeping work. ***They are contributing in 225 tones of Honey production. They are selling the honey in different states and contributing with Rs. 1.25 crores in the district economy.***



There are 25 bee keepers having more than 5,000 bee hives and selling their produce and getting Rs. 60,000 to 5 lakh/annual.

**दैनिक भास्कर** | 07-Jun-2020 | हाजीपुर Page 1

**कार्यक्रम • कृषि विज्ञान केंद्र से दस युवाओं को मिला मधुमक्खी पालन व विपणन को लेकर प्रशिक्षण**  
**रॉयल जेली हमारे स्वास्थ्य के लिए लाभदायक**

विदेशों में हे रॉयल जेली का अधिक मांग

प्रशिक्षण युवाओं को संबोधित करते हुए डॉ. कोट्ट कुमर ने कहा कि रॉयल जेली हमारे स्वास्थ्य पर बहुत अच्छा प्रभाव पड़ता है। इसकी मांग पूरे विश्व में है। इसका कार यूरोप में बहुत ज्यादा है। हमारे विज्ञान दूर जैसी को विचारकर विदेशों में बेचने में ले विदेशी मुद्रा में भी किसानों को अर्थ की सहायता है। मधुमक्खी प्रशिक्षण पर विज्ञान सहायक का भी विशेष ज्ञान है। मधुमक्खी पालन कार्य के साथ उन लोगों को जोड़कर इस व्यवसाय को बहुत अच्छे ढंग से विकसित कर सकते हैं। इस मौके पर पूरा विज्ञान वैज्ञानिक कार्य सुनवा, उद्योग वैज्ञानिक सतीश्वर भारती, संजीव कुमार, सुकन कुमार सहित अन्य प्रशिक्षु मौजूद थे।

हाजीपुर कृषि विज्ञान केंद्र में प्रशिक्षण पूरी करने वाले प्रशिक्षु प्रमाण पत्र के समूह।

**Innovation 13: Waste Bag method of Kitchen**

Kitchen garden has been developed in different villages of KVK Vaishali that includes Gurmiyan, Hariharpur, Balwan Kuwari, Subhai, Daulatpur and Saidpur Rajauli. Waste bag method of kitchen gardening withn minimal cost and for landless farmer. The main components are a waste plastic bag, soil, vermicompost and a 1.5 feet of bamboo and some seeds of seasonal vegetables especially climbers and creepers. A woman Anjali Bharti of Hariharpur village has successfully planted and growing vegetables as per family needs. 300 farm families are producing vegetables in waste bagsThe family comprises of five members and growing vegetables like Bottle gourd, lady finger, bitter gourd.



**KVK team monitoring waste bag at farmers house**





**Women Farmer with waste bag**

**Innovation 14: Introduced technology for the use organic products**

### **Herbal Gulal preparation technology**

In the year 2020-21 KVK, Vaishali introduced new innovation i.e. use of Herbal Gulal making technology among rural youth and women farmer for employment generation.

Methodology: KVK conducted survey and found that in village areas there is huge scope of herbal products preparation. Farmers are already producing vegetables, flowers and these are the raw materials for the gulal making.

**Types of Harbal Gulal prepared:**

1. **Gulal by turmeric:** In this technique KVK SMS prepared gulali through turmeric powder. As a base material Arrarote used in this
2. **Gulal by bean leaves:** Green colour gulal prepared by seim (bean leaves). Botanically known as lab lab.
3. **Gulal by Achiote plants (Sindoor) seeds:** Organge colour gulal prepared by seeds. This shrub botanical name is Bixa orenella. On the occasion of world environment day KVK provided these plants to the 100 farmers in the collbration of deparment of Forestry, Vaishali.

**Training to the farerms:** 4 trainings organized for gulal preparation. Initiatives for conservation of



natural resources have been taken up for improvement in soil health, water use efficiency, conservation practices, use of organic inputs by KVK.

### Herbal Gulal packets



**Programme of training telecasted on Doordarshan, Patna**



## Innovation 15: Community irrigation System

This programme implemented in 15 acres of land at Bakhri Barai, Faridpur village. There are 5 FIG's in which 30 farmers are associated. Project funded by DRPCA. In this programme major objective is maximum crops in irrigated conditions. Cropping intensity will increase up to 400%, though before execution the cropping intensity is 200% only. Now assured irrigation available to all 30 farmers because one bore well 150 feet deep provided to the farmers by the RPCAU, Pusa under Climate Resilient Agriculture Programme. KVLK conducted cropping system of 3 crops i.e. Paddy-Wheat and summer crops. Now there is 21-28 percent increase in yield of the farmer's crop.

**Table 33: Community irrigation demonstration (Paddy-wheat system)**

Sl.No.	Crop	Varieties	Season	Area (acres)	Yield (q/ha)		% increase in yield
					Demo	Control	
1	Wheat	HD-2967	Rabi 2020-21	30	51.75	42.60	21.47
2	Paddy	Rajendra Mansoori	Kharif-2020-21		52.30	40.70	28.50
3	Wheat	HD-2967	Rabi 2021-22		ongoing	-	-

There is significant increase in yield in this cropping system.



**Community irrigation boring at village**



**Paddy crop in CRAP village**

## TECHNOLOGY DEVELOPED BY KVK: MULTIGRAIN LADDOO FOR CHILDREN

A multigrain based laddoo developed at KVK for feeding under ICDS project in which the grains has been cleaned, washed, processed, dried and floured. This mixture can be use to make laddoo for childrens as well as can be prepared by cooking with sugar and milk for 2-3 minute. This prepared flour is ready to cook complementary food for childrens of poor families at very low cost and domestic level processing

### Processing of grain

Wheat + Maize (20gm) Ragi (20gm) + Mung (20gm)  
+

Cleaning of grains

Soaking Overnight

Washing & germinating

Drying

Roasting

Flouring



