

Success Stories/Cases of agricultural technology adoption and spread across the agro-climatic zones of Uttar Pradesh during 2015-16 and 2016-17

1. Bhavar and tarai Zone

i. Successful acceptance of wheat variety HD 3059 in Bijnaur district

Situation analysis/ Problem statements:- Technology (Variety) HD-3059 is developed by the IARI New Delhi and released during 2013. It has medium dwarf plant stature (Plant Height 93 cm) , 121 days seed to seed maturity. Quality wise it has displayed thermo- tolerance as reflected by minimum yield loss under very late sown condition. It has high protein content, high sedimentation value and good bread, biscuit and chapatti making qualities.

Plan, Implement and Support:- The area under wheat is about 118,000 ha in district Bijnaur, out of that about 70,000 ha area is under late sown condition due to Sugarcane – Wheat cropping system. Commonly grown late sown wheat varieties are PBW-226, DBW -16, PBW-373, and PBW-590. Variety **HD-3059** was introduced and demonstrated by KVK Bijnaur during Rabi 2014-15 at 05 farmer's field through OFT and 25 farmers field during 2015-16 through FLD.

Output:- The average yield at Farmers field was 45.30qt per ha (50.00 qt. maximum yield per ha.) with cost of cultivation of Rs. 39272.00per ha. The average net profit per ha was recorded Rs. 54635.50 per ha. Due to medium-dwarf nature the lodging in HD-3059 is less (0-4% in comparison to DBW-16 (18-25%). Maturing with 141-149 day crop duration, bold grained variety that possesses high degree of resistant against yellow rust and leaf blight (Yellow rust and blight incidence in HD-3059 is 0-5%, while it is about 15-22% in DBW-16).

Outcome:- This technology may be capable for increasing seed replacement ratio in district with extra net return. Due to higher demand of seeds of this variety emerged an entrepreneurship programme of seed production at farmer's field for better income.

Impact:- The area under this variety has now spread to more than 5500 ha in just three year and successfully 100% area of PBW-373 was replaced in district by this variety. Farmers are all satisfied with the yield of this variety and also claim that it is free from most of the disease. This variety increased seed replacement rate about 20 to 30 % in operational area of KVK and also emerged entrepreneurs of seed production of this variety. The successful farmer is Sri Jabar Singh Village – Mandewala, Block – Kotwali.



ii. **Potential of Doubling the farmers income through high yielding sugarcane variety Co-0238 in Saharanpur**

Situation analysis/ Problem statements:- District Saharanpur covered sugarcane area about 79634.00 ha. Farmers are growing sugarcane varieties CoSa 767, CoSa 8436, Coj-64 etc. Cosa 8432 variety is susceptible to diseases and Cosa 8436, Coj-64 are low yielding varieties. So that yield, income of crop is effected by this practices. To over come these problems KVK Saharanpur in 2014 introduce newly released sugarcane variety Co-0238. Considering the better possibilities of Sugarcane production in suitable conditions by providing sufficient training to the farmers by Krishi Vigyan Kendra, Saharanpur (UP) and also generate double income to the farmers through this technology. KVK Initiated the Varietal demonstraton on sugarcane production from Bedvi village through Shri. Sudhir Kumar. His successful production and its net income motivate to others farmers.

Plan, Implement and Support:- KVK Saharanpur try to make them aware regarding scientific cultivation of sugarcane production through variety Co.0238 from 2014. KVK provided technical support (Trainings, Demonstrations & Exposure visits) to the farmers with coordination of Sugarcane deptt. also for spreading the technology among the farmers.

Output:- Saharanpur KVK introduced newly released sugarcane variety Co-0238. KVK conducted demonstrations in different villages from 2014 to 2016 and continuously focused through demonstrations, trainings & goshies to popularization in the district Saharanpur. Resulting the area of Co-0238 variety increasing in the district and with in three years it covered 43006.00 ha out of 79634.00 ha of the total area of the sugarcane cultivation.

Outcome:- Co.0238 variety was released in 2008 and was demonstration started by KVK during 2014 at different farmers field. The average yield at farmers field was recorded 1375.00 q/ha with cost of cultivation of Rs. 151,960/-. The average gross profit per ha was recorded Rs. 4,12,500/- and the average net profit per ha. was recorded Rs. 260,540/-. The area under this variety has now spread to more than 43006 ha in just two years. The successful farmer is Sri. Sudhir Kumar Village - Bedvi, Block- Sarsawa, District - Saharanpur. Presently more than 71% farmers are growing this variety.

Impact:- The farmers of adjoining distt. Impressed by the successful Co.0238 variety sugarcane production in Saharanpur district, also willing to join this successful technology and now taking technical guidance and assistance from KVK (Plant Breeding). Around 32-40 % increasing rate of farmers are joining each year, and also joint awareness among sugar mill and line sugarcane deptt. Resulting the area of Co-0238 variety increasing in the district and with in three years it covered 43006.00 ha out of 79634.00 ha of the total area of the sugarcane cultivation.

The details of area expansion are given below:

S. No.	Year	Initial intervention			Horizontal spread		
		No. of villages	No. of farmers	Area (ha)	No. of villages	No. of farmers	Area (ha)
1.	2014 Sep.-October sowing	01	25	10	-	-	-
2.	2015 feb.-march	12	300	187	25	315	178
3.	2015 late sown	23	932	740	77	7280	2143
4.	2015 Sep.-October sowing	25	1230	953	152	7550	9050
5.	2016 feb.-march	45	2325	1540	450	28245	21078
6.	2016 late sown	87	5437	3204	557	49533	43006



KVK Scientist visit at farmer's field



Exposure visit at farmer's field

iii. Entrepreneurship promotion in rural areas of Saharanpur through White button Mushroom production.

Situation analysis/ Problem statements:- During the period of September to March month having temperature between 10°C to 25°C and humidity 70% to 90% in Saharanpur district. Considering the better possibilities of White Button mushroom production in suitable conditions by providing sufficient training to the farmers by Krishi Vigyan Kendra, Saharanpur (UP) and also generate employment to the farmers through these Training Camps from 2008. KVK Initiated the White Button Mushroom production unit from Madnuki village through Shri. Harpal Singh and Sri Satyavir Singh. His successful production and its net income motivates others too.

Plan, Implement and Support:- KVK Saharanpur try to make them aware regarding scientific cultivation of white button mushroom from 2008. KVK provided technical support on Preparation of huts for maintaining suitable temperature & humidity, compost preparation, spawning, casing, picking and other practices time to time.

Output:- During the year 2016-17, 91 farmers from different 21 villages motivated from Madnuki production growth and accepted these production techniques. White Button Mushroom produced 432175 kg from 92920 bags of compost and earned huge profit of 210.66 lakh by these farmers. Setup of 51 Mushroom production units, 3 Compost pasteurization tunnels (capacity of 20 Ton each) and 2 Air-conditioned chambers in Madnuki village. which is now popular name by Mushroom village MADNUKI of Saharanpur district. The Mushroom Utpadan Sangh is setup to provide proper market for these producers and also solve their queries through proper discussions. Their Medicinal and Nutritional benefits are promoting through print media, chopals and other means to attract more customers.

Outcome:- White Button Mushroom production generates youth employment in their own village and adopted this technique with agriculture as side production. Around 1500 persons are employed through these productions and lead better family annual income. Around 5 to 32 Quintals mushroom produced each day and enable the farmers to supply it nearby Districts and States also.

Impact:- The farmers of Western UP Impressed by the successful mushroom production in Saharanpur district, also willing to join this production unit and now taking technical guidance and assistance from KVK (Plant Protection dept.). Around 5-10 % increasing rate of farmers are joining each year, and also joint awareness among women are observed.

Year wise Production of white button Mushroom in Distt Saharanpur

Year	Village (N0)	Unit (No)	Bags (No)	Production (kg)	Total Income (Lac)	Cost of cultivation (lac)	Net revenue generated (Lac)	CB ratio
2011-12	6	23	18205	88690	88.69	26.60	62.09	3.3
2012-13	8	29	22250	110862	77.60	27.71	49.89	2.8
2013-14	9	65	57110	269952	175.46	62.09	113.37	2.8
2014-15	13	72	67050	319285	191.57	76.62	114.95	2.5
2015-16	16	80	92800	422175	204.66	99.75	104.90	2.0
2016-17	21	91	92920	432175	210.66	101.23	109.43	2.1



Sri M.P. Agarwal, IAS, Commissioner Saharanpur Division, SRE visited at mushroom production unit

iv. New lentil variety (L-4594) restored confidence of Lakhimpur kheri farmers

Situation analysis/ Problem statements:- In Lakhimpur kheri farmers are generally prefer small seeded varieties of lentil. L-4594 variety which is released in 2008 has the crop duration of 120-128 days and productivity of 18 q/ha. Lentil covers about 19672 ha area with production of 20540 quintal and productivity of 20.44 q/ha in the district.

Plan, Implement and Support:- Farmers do not know about varietal name usually buy the seed from private shop or their own grain as seed. Sometimes the seed not replaced, they also said that we have brought varieties five to six years ago from kisan mela or any place .Now the varieties which are released also have tolerance against wilt and rust.

Output:- On that basis KVK Lakhimpur kheri has brought the lentil seed(L4594) from NSC and demonstrated at farmers field comprises 63 farmers covers area of 16 ha. The villages comprises were Behta, Baharganj Bakhari, Dokarpur, Chintapurwa, Mahmaddpur, Pipraudhan, Bhatpurwa, Bijouli, Madrahi and Lahorinagar.

Crop demonstrated	Farmers variety	Existing yield(q/ha)	No. of Farmers (area in ha)	Avg.Yield obtained (q/ha)	Variety demonstrated	Farmers existing plot(Gross cost)
Lentil	PL-4	9.8	63 (16)	10.99	L-4594	23560

Gross return	Net return	B:C ratio	Demonstration plot(Gross cost)	Gross return	Net return	B:C ratio
71540	47980	3.03	26075	82425	56350	3.16

Outcome:- Performance of lentil variety L-4594 at farmers field is quite good as compared to variety PL-4 (farmer variety).Farmers had also fetches good price for their produce in the market. This variety has yield potential of 18 q/ha .At the farmers field yield ranges between 8.0 to 15.0 q/ha and also suited in this system.

Impact: - Lentil variety L-4594 has shown superiority over farmer variety PL-4 to the tune of 12.14% in term of yield and now this variety covers about 85% area among other varieties in village Behta of block lakhimpur.



2. Mid-Western Plain Zone

i. A shift from low income to high income crop through Groundnut cultivation in Shahjanpur

Situation analysis/ Problem statements:- Consumption of oil in human food is very important for growth and development of body and groundnut is richer source of oil and traditionally essential part of Indian food habit. Even the farmers of district Shahjahanpur were cultivated traditionally. The average yield of groundnut is very low due to various valid reasons.

Plan, Implement and Support:- To increase the area and productivity of oil seed - Groundnut cultivation the scientist of KVK motivated farmers for cultivating the crop in both seasons *i.e.* kharif and zaid. There are 50 farmers from 20 villages 05 blocks of Shahjahanpur district forwarded for groundnut in kharif season, While, 50 farmers cultivated Groundnut in Zaid Season under oilseed cluster demonstration with supervision of KVK scientists and provided them package of practices right from the seed treatment, nutritional management, weed management and irrigation method.

Output:- The farmers who followed wheat/paddy-sugarcane-ratoon in past and they were not able to procure even their input cost easily. Groundnut produced on an average 14.37 q/ha in

demonstration plots while 6.97 q/ha in farmers practice. The yields were increase over farmers' practice 106.20 per cent. The yield gapes were recorded in groundnut 24.37 per cent in case of yield gap-I while, 51.50 per cent in case yield gap-II. Groundnut Crop was obtained more yield 66.3 per cent and 41.3 per cent at district level and state level, respectively.

Outcome:- The farmers got relatively higher net return in Groundnut i.e. Rs 50635/ha by adopting improved technology of Groundnut cultivation than the Rs. 13135 per ha by using traditional technology in past years and this is at near four time fold from local practice return. The Net Return was 285 per more recorded in case CFLD demonstration fields. The B:C ratio was recorded higher 2.78 in adopting practices than the local practice 1.52. On an average per capita consume 19 kg oil/year while, presently per capita availability is 8 kg so, that much oil production will be sufficient to ensouer oil need of the human.

Impact:- Finally, it is concluded that the technology of cluster oil seed production technology highly impacted on yield, socio-economic status of the farmers of district Shahjahanpur. Farmers of the district will increase more area in kharif and Zaid oil seeds crops - Groundnut during next cropping season. It also recorded improvement in soil health and environment and increase the productivity of the land.



ii. Boosting family income by hybrid brinjal cultivation with FIRBS method: Shahjahanpur

Introduction

In district Shahjahanpur vegetable growers grow brinjal with traditional method of cultivation and use local variety of seed. In spite of investing much money, they are not able to get proper yield. Mohd. Safi S/o mohd. Rahmat Ali of village Shahbajnagar Block Bhawalkhera, District Shahjahanpur is a small vegetable grower, cultivating vegetables with local variety of seed and following traditional method of cultivation. He has about 3.0 acre cultivated land. He was struggling to fulfill the needs of his family.

KVK Intervention

One day he came to KVK and discussed with KVK scientists and needs training on advanced vegetable production, so that he can earn more and raise his social status. KVK scientist gave him training and also demonstrated advanced technology of brinjal cultivation by FIRBS method at his field.

Output

Before joining the KVK he was getting 104.0 q/Acre yield of brinjal and a net profit of Rs. 45600.00/Acre.

Outcome

KVK scientist advised him to adopt FIRBS method of cultivation with hybrid variety Pusa Hybrid-6. Now he is growing brinjal with latest package of practices, using hybrid seed, INM with micronutrient and IPM to save his crop. Now he is getting 170.3 q/Acre yield and a net profit of Rs. 80,580.00. He is getting a bonus of Rs. 34,980 by adopting new technology.

Impact

Mohd. Safi takes valuable advised from KVK scientists and visit KVK frequently. The vegetable growers of his village and nearby villages are very much motivated by his farming and adopting the technology at their field also. The adoption percent of the technology is 35% in Bhawalkhera block.



3. Western Plain Zone:

i. Enhancing household food security through kitchen gardening in Baghpat

Situation analysis/ Problem statements:- Adequate nutrition is very important during all the stage of life, as healthy life can not be sustained without adequate nourishment. Deficiency diseases caused by micro nutritive is one of the serious problem. Nutritional deficiency are most prevalent in rural areas where the habitual diet lacks variety and people can not afford to diversify their dies and unable to include fruit and vegetables in their diet. The sustainable solution to their problem lies in the improvement and diversification of household diet by growing kitchen gardening.

Plan, Implement and Support:- OFT (On Farm Trial titled enhancing household food security through nutritional kitchen garden with two treatment growing cucurbits and few green leafy vegetables as **T1** (women farmer's practice) in addition to growing seasonal fruits and vegetables as **T2**, was conducted in five locations of district Baghpat was conducted by Home Science unit of KVK, Baghpat with an aim to get fruits and vegetables throughout the year as to combat or mitigate malnutrition.

Output:- Result revealed that the growing seasonal fruits and vegetables during rabi, Kharif and zaid provided fresh vegetables almost 315 days i.e. almost throughout the year as compare to the farmer practice i.e. for 128 days only. As far as production in concerned in T2, 405 kg vegetables and fruits were obtained in a year where as in T1 it was only 85 kg. The cost of expenditure in T2 was Rs. 2505 which was higher than the cost of T1 i.e. Rs. 1050. But interesting phenomena is that C:B ratio is again more noticeable and almost higher in T2 than T1. It is 1:2.28 in T1 where as 1:4.8 in T2 along with 406.25% increase in yield in T2 over farmer's practice. Apart from that

improvement in general health and comparatively less incidence of diseases like common cold and anemia was reported with reduction of Rs. 1090 annually on family expense on fruits and vegetables.

Outcome Impact:- Total 84 number of families have been adopting kitchen gardening practices as recommended practice (T2) in 7 seven villages of district Baghpat. Thus, combating with malnutrition by bringing improvement in general health.



ii. Pungent Chilly gave taste of success to Bulandshahr farmers

Situation analysis/ Problem statements:- In district Bulandshahr there are majority of small and marginal farmers involved in Agriculture. It is really difficult to improve the falling socio-economic status of these farmers due to lack of resources required for farming. Diversification in agriculture is a big demand of today. Everybody who is involved in agriculture need to break the trend and step forward to raise the level of living.

Plan, Implement and Support:- Taking such points under consideration 4 years ago one such marginal farmer named Shri - Raj kumar s/o Sri- Amar Singh Vill - Baral , Bulandshahr village which falls under NCR region hence facilitated by good market, being one of the adopted village of KVK, Bulandshahr, started cultivation of green chilly in 2011 very small area (0.08 ha.). He contacted KVK scientists and attained trainings and demonstrations on chilly cultivation, like production technology, improved high yielding varieties, seed treatment, IPM practises and other such aspects.

Output:- In 2012 after regular visits of KVK Scientists he increased the area up to 0.20 ha and acquired yield of 120.8 quintals / ha with net profit of Rs 131955.00. Similarly, the next year 2016 again expanded area up to 0.50 ha and flourished yield of 145.0q / ha with net profit of Rs 190000.00 . At present time his crop is still there in the field and the area is 0.50 ha.

The details of cultivation is given below:

Year	Area (ha)	Yield q/ha	Gross Income	Cost of cultivation	Net income
2011	0.08	102.5	169125	85630	83495
2012	0.20	120.8	223480	91525	131955
2013	0.40	132.6	264000	98500	165500
2014	0.50	135.8	278000	103350	174650
2015	0.50	140.0	294000	111550	182450
2016	0.50	145.0	305000	115000	190000

4. North Eastern Plain Zone:

i. Increase of income by Bee Keeping in Mau

Situation analysis/Problem statements:- Sri Ashok Maura aged 38 year is one of the poor resource farmer. He lives with his 6 number of family. Previously he was practicing agricultural crop with goat farming. He could not able to manage feed and essential household commodities for his family. He lived in thatch house.

Plan, Implement and Support:- Sri Maurya came in contact with SMS (Plant Protection) during need based survey of the village for the purpose of conducting training programme for the practicing farmers in year 2009. It was found that the village covered by forest and vicinity farmers grown oilseed and vegetable crops. Due to small size of land holding, resource poor and ecological situation Sri Maurya was advised for adopting bee keeping to utilize very precious forest area and agricultural crops. Initially he refused to start beekeeping due to fear with rearing of honey bee. After continuous persuasion and training given to him on bee keeping he agreed to adopt this venture. Then a bee box with honey bee colonies given to him under FLD. After one year he satisfied and taken 20 bee box on finance with the help of KVK.

Output:- He earns Rs 3200.00 from each box/ year. Now he has 700 bee box. From this now he has able given good education to his children in spite of manages house hold commodities to his family. At present he has a brick house of two rooms.

Outcome:- After getting good return from bee keeping he added in farming system. These enterprises are not only the good source of good income but also generating the employment to the farmers.

Impact:- Sri Maurya is an example for other resource poor farmers in village. Many farmers are visited his bee keeping unit and start the bee keeping. Inspired from this venture all the villagers of his village engaged in bee keeping and always contracted to KVK' scientist about bee keeping.

ii. Hybrid Tomato provided a new source of income to farmers of Siddharthnagar

Situation analysis/Problem statements:- Krishi Vigyan Kendra, Sohna Siddharthnagar is established in 1992 under leond Tal Area Development Society in the Chairmanship of Late Shri Bhanu Pratap Singh, Ex Governor of Karnataka State and Ex State minister of Agriculture. He initiated the scientists of KVK to grow hybrid vegetables like Tomato, Brinjal, Cauliflower and Cucurbities in nearby areas of KVK. At that time the hybrid vegetable seed not available in the district. He talked to Dr. Man Mohan Akhtar, the chief of Indo American seed company Bangalore and he provided the hybrid seed of vegetable crops. In year 1994, the nurseries of hybrid vegetable were grown in KVK farm and distributed to the farmer under FLD programme. The programme were very successful at KVK farm and farmers field and farmers were fully convinced to the hybrid tomato cultivation.

Plan, Implement and Support:- In 1995, the KVK provided the seeds of hybrid tomato to the nearby 25 farmers for 10 ha land, and also trained them to cultivate the hybrid tomato successfully and time to time farmers field visited and technical advisory services provided them.

Output:- Hybrid tomato cultivation was started nearby kvk farmers by 10 ha lands and ets area gradually increases year wise in all 14 blocks of the district. KVK head quater is situated in Block

Bhanwapur and in this Block highest area covered under hybrid tomato cultivation (about 150 ha) followed by Khuniyaon, Jogia and Uska block. The total area under hybrid tomato cultivation is about 550 ha in the district.

Outcome:- In the district about 1250 farmers grow hybrid vegetables and KVK scientist collected the following information from one farmers of each block which is shown in following table:

Sl.No.	Farmers name	Block	q/ha	Expenditure (Rs./ha)	Gross income (Rs/ha)	Net income (Rs./ha)
1.	Ram Das Maurya	Bhanawapur	610	116000	366000	250000
2.	Ram Kishor Chaudhary	Khuniyaon	540	108000	324000	216000
3.	Brijesh Bahadur Singh	Mithwal	525	107000	315000	208000
4.	Munna Singh	Itwa	450	950000	279000	189000
5.	Haider Alam	Bharhni	465	90000	279000	189000
6.	Ram chandra chaudhary	Shouhratgarh	580	105000	348000	243000
7.	Harish chandra Mishra	Naugarah	550	110000	330000	220000
8.	Atal Vihari	Bansi	570	112000	342000	230000
9.	Om Prakash Gupta	Domariganj	470	102000	282000	180000
10.	Sant Ram	Uska	520	110000	312000	202000
11.	Luxam Chaudhary	Birdpur	565	120000	229000	219000
12.	Sri ram Kesh	Jogia	540	112000	324000	212000
13.	Rajendra Pandey	Khesaraha	480	90000	288000	198000
14.	Shiv Sankar Pandey	Loten	475	95000	285000	190000
	Total		524	1051420	314400	209428

It is shown from above table that the average net income is Rs. 209428/ha. The maximum yield was recorded 610 Qtl./ha by Shri Ram Das Maurya with the net income Rs. 250000/ha followed by Ram Chandra Chaudhary e.i. 580 qtl./ha and Rs. 243000/ha. The lowest yield was found 450 qtl./ha with the net income Rs. 175000/ha.

5. Impact:- The hybrid tomato cultivar have been socially and economically sound. Now they mostly using bike, T.V. and having Pakka house. Their childran studying in good school and colleges. The farmers are realizing that the vegetable farming can be used to get more returns from unit area of land in comperision to cereals and other crops.

5. Central Plain zone:

i. Candle making for Income Generation among women farmers of Kannauj

Situation analysis/ Problem statements:- Smt. Pushpa Kushwaha living in Pachpukhra village of Jalalabad District- Kannauj came in contact of KVK in 2011 during a training programme and showed her interest to start small scale income generating activity to support livelihood of her family.

Plan, Implement and Support:- KVK scientist demonstrated candle making technology and also helped her in purchase of raw materials. Candle making mould was issued to her from Krishi Vigyan Kendra itself so that she can start her work with minimum investment. She started candle making in the month of October for sale in Deepawali.

Output:- In about one month of working for three hours a day she produced 480 large packets and 288 small packets of candle out of 60 Kg paraffin wax. She sold large packets of Rs 14,480 @Rs.30 and small packets Rs. 8,640 @Rs.30. In total she earned Rs. 23,040 out of investment of Rs.13, 736. This way she earned net profit of Rs9, 304 in one month.

Economics of candle making

Material	Paraffin wax	Oil Color	Thread roll	Fuel	Labour	Packing	Total
Cost(Rs.)	4800	100	100	1200	6000	1536	13736

Packet Size	No. of candle /kg.	No. of candles /60 kg.	Packets prepared	Rate/packet (Rs.)	Income(Rs.)
Small(20 candles)	48	5760	288	30	8640
Large(6 Candles)	96	2880	480	30	14480
Total	144	8640	768	-	23040

Outcome:- From candle making she gained her own earning which raised her self-confidence and status of family in society. Since then every year in the month of September and October she prepares candle and sell it in market. She is now having her own bank account and save money for any emergency.

5. Impact:- After getting success in this work she is now planning to start some other seasonal activity for income in rest of the year. She has also been trained by KVK in Mushroom cultivation, Fabric bag making, Masala processing etc.




← Rural women in candle making

ii. Adoption of ICM technologies benefitted the Sesame growers in Kaushambi

Situation analysis/ Problem statements:- Sesame is an important oilseed crop in kharif season of district Kaushambi. The total area under this crop is near about 3025 ha. with 3.30 q./ha productivity. The average productivity of the crop is very low due to the Improper cultivation practices provided by the farmers. The major factors of the production i.e. soil, quality seed and balance nutrient management. If these factors of production of these particular crop taking into the consideration certainly the productivity of the crop can be increased. Keeping these views KVK conducted field demonstration of sesame during 2014-15 and 2015-16.

Plan, Implement and Support:- Krishi vigyan Kendra Kaushambi conducted the front line demonstration during kharif 2015 and 2016 on Nutrient Management (Use of sulphur @20kg/ha) in Sesame crop. The total area under th demonstration was 20 ha. with 44 farmers field. Newly improved variety RT 346 was taken in the demonstration that has good yield and oil content. Some of the specific characters of this variety are given below-

Specific characteristic	Performance/Yield/disease Management (q/ha)	Quality photographs
<ul style="list-style-type: none"> • 82-86 days crop • Oil content 49-51% Resistant to leaf curl disease • Plant Height 100-105 cm having 2.3 branches / plant • Capsule are hairy, compact long & having yield potential of 8.0q/ha 	<ul style="list-style-type: none"> • Setting of capsule from bottom to top in the branches having to maximum capsule comparative to check plot • No disease occurred during the crop period. Only minor attack of leaf folder insects which was controlled by spray profenophos @ 2.25 l/ha. • Yield 7.4Q/ha 	 <p>Critical input-seed, chemical, sulphur, insecticide and regular monitoring of demo field by KVK scientists</p>

Output:- The performance of the technology were very encouraging. The yield was observed in demo plot was 7.4q/ha compared to check 5.20q/ha. The total cost of cultivation was Rs 17800/- in RT-346 and Rs 13820 in check plot with net profit if Rs 41400 at demo and Rs 27780 at local field respectively.

Outcome:- Adoption of recommended package and practices for cultivation of sesame crop and awareness about the package of practices time to time to the farmers are given by KVK scientist. Farmers also show their knee interest about the programme and many farmers were agreed that use of sulphur under nutrient management may be the reason for higher yield of sesame.

Impact:- With the adoption of ICM technologies farmers are encouraged to obtain additional return in the sesame cultivation. The migration from the village has reduced and employment generation has been created. Thirty man days were created/ha for sesame cultivation at village level. This technology is spread neighboring five villages and 54 farmers were adopted. Innovative Farmers Groups have been developed with the participation of the farmers who are helping each other for cultivation of crop at their own level.



KVK Scientist showing the specific character, pod formation in Sesame variety RT-346 to Director , ICAR-ATARI under cluster demonstration of oilseed

iii. जैव खाद एवं उर्वरकों के प्रयोग से बढ़ा गन्ना उत्पादन : सीतापुर-ii

स्थिति विप्लेषण:- सीतापुर जिला मुख्यालय से करीब 25 किमी दूर उत्तर पूरब दिशा में बिसवां ब्लॉक के बखरिया गाँव में रहने वाले सफल किसान अब्दुल हादी (47 वर्ष) पलहे प्रचलित पारंपरिक ज्ञान के आधार पर ही गन्ने की खेती करते थे, जैसे ही उन्होंने वैज्ञानिक सलाह और अपने पारम्परिक ज्ञान के मेल से खेती शुरू की, सफलता हाथ लगी। हादी सफल उदाहरण हैं कि वैज्ञानिक सलाह कैसे खेती को मुनाफ के व्यवसाय में बदल सकती है। हादी अब मानने लगे हैं कि किसानों को बुआई के लिये अच्छे बीज का चयन करना चाहिये। कमजोर बीज नहीं बोना चाहिये इससे उत्पादन घटता है। गन्ने की बुआई गहराई में करनी चाहिये इससे जब गन्ना बढ़ा हो जाता है तो पलटता नहीं है। गन्ना अगर पलट गया तो भी उत्पादन घट जाता है। किसान कई बार इन छोटी-छोटी बातों पर ध्यान नहीं देते हैं जिससे उत्पादन घट जाता है। फसल कोई भी हो अगर उसकी बुआई सही समय पर और सही विधि से की जाए और फसल को सही समय पर खाद-पानी दिया जाए तो जाहिर सी बात है, पदावार अच्छी होगी।

योजना, कार्यान्वयन एवं सहायता:- अब्दुल के पास कुल 14 एकड़ जमीन है, जिसमें से 12 एकड़ में वो गन्ने की खेती करते हैं अब्दुल पिछले करीब दो वर्षों से धीरे-धीरे रासायनिक खाद का इस्तेमाल जैविक खाद उपयोग कर घटा रहे हैं, वर्ष 2012-13 में 100 प्रतिशत रासायनिक खाद का इस्तेमाल किया था। किन्तु कृषि विज्ञान केन्द्र कटिया के वैज्ञानिकों द्वारा अग्रिमि पकति पदार्शन एवं निरन्तर प्रोत्साहन से जैविक खाद एवं जैव उर्वरक तकनीक अपनाकर अगले वर्ष (वर्ष 2013-14 में) 50 प्रतिशत रासायनिक और 50 प्रतिशत जैविक खाद का इस्तेमाल किया तथा उत्पादन भी बढ़ा।

परिणाम:- तीन वर्षों से निरन्तर जैविक खाद प्रयोग करने से विगत वर्ष 2015-16 में 2950 कुन्तल गन्ने का रिकार्ड उत्पादन हुआ। 2012-13 के मुकाबले 2013-15 एवं 2014-15 में खाद, कीटनाशक, मजदूरी, सब कुछ महंगा हो गया था उसके बावजूद प्रति एकड़ खर्चा 50 हजार रुपए की बचत हुयी। वर्ष 2014-15 में कृषि विज्ञान केन्द्र कटिया में एक प्रतियोगिता कराई गयी थी, जिसमें करीब 70 किसानों ने भाग लिया था। इस प्रतियोगिता में अब्दुल हादी को प्रथम अवार्ड मिला। अब्दुल अब धीरे-धीरे पूरी तरह से रासायनिक खादों व कीटनाशकों का इस्तेमाल करना बन्द कर रहे हैं। वो रासायनिक खद की जगह जैविक खाद का इस्तेमाल करते हैं, जिसे वो खुद अपने घर पर तैयार करते हैं।

निष्कर्ष:- अपनी खेती में हमेशा कुछ नया करने के जुनून ने अब्दुल हादी को सफल किसानों की श्रेणी में लाकर खड़ा कर दिया है। हादी ने औसत से चार गुना गन्ने का उत्पादन कर एक नया रिकार्ड बना दिया है। इसके लिये वो अब तक कई अवार्ड भी जीत चुके हैं।

प्रभाव:- गन्ना उत्पादन के लिए राज्य स्तर पर द्वितीय पुरस्कार प्राप्त करने के साथ ही जिला स्तर पर प्रथम पुरस्कार के विजेता बने। अब्दुल हादी को वर्ष 2016-17 में गन्ना प्रजनन संस्थान कोयंबटूर तमिलनाडु में आयोजित दो दिवसीय राष्ट्रीय किसान मेले में कृषि वैज्ञानिकों द्वारा बेस्ट शुगर केन फार्मर अवार्ड से सम्मानित किया गया। यह पुरस्कार भारतीय कृषि अनुसंधान परिषद द्वारा गन्ने की अच्छी पैदावार के लिए किसानों को दिया जाता है। गन्ना फसल के प्रति हादी का समर्पण सराहनीय है। अब्दुल हादी अपने गन्ने की आपूर्ति बिसवां चीनी मिल को करते हैं। सेक्सरिया चीनी मिल बिसवां ने गत पेरार्ड सत्र में पूरे प्रदेश में चीनी रिकवरी में प्रथम हासिल किया था। अब्दुल हादी गन्ने के साथ-साथ अब सहफसली के रूप में मक्का, अरहर, गेहूँ, मूंगफली, उर्द, मूंग, भिण्डी, लोबिया, एवं सरसों की फसल लेकर अतिरिक्त आय प्राप्त कर रहे हैं।

iv. गाय पालन- अतिरिक्त आय का माध्यम: कानपुर देहात

स्थिति विप्लेषण :- खेती के साथ कृषकों की अतिरिक्त आय का बहुत अच्छा माध्यम है। शहर के पास होने पर दुग्ध उत्पादन की महत्ता और बढ़ जाती है।

योजना, कार्यान्वयन एवं सहायता:- श्री सन्तोष कुमार ने गाय पालन वर्ष 10-11 में प्रारम्भ किया । श्री सन्तोष के 0वी0के0, दलीप नगर वैज्ञानिकों द्वारा प्रशिक्षणों में दी गयी जानकारी व उनके सम्पर्क में आकर प्रभावित हुये व गौशाला प्रारम्भ की।

परिणाम:- श्री सन्तोष को गौशाला से अतिरिक्त आय प्राप्त करने का माध्यम प्राप्त हुआ तथा गौशाला से प्राप्त गोबर से खाद बना कर जैविक खेती का कार्य प्रारम्भ किया है जोकि बहुत उपयोगी है।

निष्कर्ष:- श्री कुमार अच्छी खेती के साथ ही गाय पालन करके अतिरिक्त लगभग रु0 100000.00 प्राप्त कर रहे हैं। जिससे उनकी सामाजिक व आर्थिक स्तर में बढ़ोत्तरी हुयी है।

प्रभाव:- कृषक गोष्ठियों, प्रशिक्षणों, किसान मेलों, समाचार पत्रों आदि के माध्यम से संकर गायों के पालन व रख-रखाव का प्रचार प्रसार किया जा रहा है।



v. सब्जी उत्पादन- अतिरिक्त आय का माध्यम: कानपुर देहात

स्थिति विप्लेषण :- खेती के साथ अतिरिक्त आय व पारिवारिक जरूरतों को पूर्ण करने के लिये सब्जी उत्पादन बहुत अच्छा माध्यम है। सब्जी उत्पादन के माध्यम से वर्ष भर ताजी व गुणवत्तायुक्त सब्जियों की उपलब्धता के साथ अतिरिक्त आय प्राप्त करने का अच्छा साधन है।

योजना, कार्यान्वयन एवं सहायता :- श्री अजय कुमार ने वर्ष 2010 में के0वी0के0, दलीप नगर के वैज्ञानिकों के सम्पर्क में आये तथा श्री कुमार ने केन्द्र के उद्यान वैज्ञानिक से नई-2 कृषि तकनीकों की जानकारी प्राप्त की व प्रभावित हो कर सब्जी उत्पादन का कार्य प्रारम्भ किया।

परिणाम :- इसके माध्यम ये वर्ष भर सब्जियों की उपब्धता के साथ कानपुर नगर के समीप होने व बाजार उपलब्ध होने के कारण नकद आय प्राप्त करने का अच्छा माध्यम प्राप्त हुआ।

निष्कर्ष :- सब्जी उत्पादन से श्री अजय कुमार को वर्ष में रू0 3-4 लाख की अतिरिक्त आय प्राप्त हो जाती जिससे उनके सामाजिक व आर्थिक स्तर में बढ़ोत्तरी हुयी है।

प्रभाव :- कृषक गोष्ठियों, प्रशिक्षणों, किसान मेलों, समाचार पत्रों आदि के माध्यम से प्रचार प्रसार किया जा रहा है।

vi. Enterprenurship through gladiolus production in Kannauj

The KVK Kannauj imparted skill oriented training for post harvest handling of gladiolus spikes and conducted demonstration on nutritional and disease management for production of healthy spikes for wider market acceptability. Gladiolus cultivation has been adopted by 127 farmers of Prempur, Madhonagar and Nagla Bhaja. They were not much aware about the post harvest management of spikes. So, they were trained by KVK scientists about handling, packing and transportation. This skill reduced losses from harvest to market and gave Rs. 0.30 to 0.50 /spike. In this process two persons are spending about 3-4 hours per day/ha and resulted additional employment for 15-20 mandays/ha. They are producing seeds of varieties prosperity , friendship and white purple and earning additional Rs 1.0 lakh/ha. Area of gladiolus is increasing in other parts of district also due to technology dissemination and motivation by KVK during training, meetings and gosthies in the district. Now, farmers are getting net income Rs. 3.36 lakh/ ha from flower only.



Twelve farmers have established small units and getting average income of 15,000-20,000/year. They are basically using in their own fields for cultivation of crops and vegetables.

6. South western semi-arid zone:

i. Manual Groundnut Decorticator accepted by the farmers for high capacity and less grain damage in Etah

Situation analysis/ Problem statements:- In Etah area under ground nut cultivation is about 2350 ha. Farmers were facing problems in decorticating of ground nut because at the time of sowing of ground nut large amount of ground nut is required to be decorticated. The farmers of local region had no option of preparing seeds except to break the groundnut pod by pressing it by hand fingers which is really very tedious, time taking and whole family members' engagement work. A farmer who planned to grow groundnut crops in large area was compelled to prepare groundnut seeds, needs weeks together. To make this work easy two Groundnut decorticators have been evaluated over farmers practice.

Plan, Implement and Support:- CIAE Manual Groundnut Decorticator has been refined at KVK, Awagarh, Etah with inclined concave opening instead of horizontal concave opening.

Output:- In inclined opening grain damage was 2% however in horizontal opening it was 7% and in farmers' practice (pressing of pod by hand) it was 0.5%. Decorticating capacity has been increased up to 548% over farmers' practice.

Table 1: Performance of Groundnut Decorticators for separation of groundnut kernels from pods over farmers' practice.

Technology option	Decorticating capacity(KgPod/hr)	Grain damage (%)	Decorticating cost (Rs /qt.)
CIAE Groundnut decorticator with horizontal concave opening	108	8	18.20
Refined Groundnut decorticator with inclined concave opening	108	2	18.20
Farmers' practice (Pressing by hand)	16.20	0.5	117.50

Outcome:- Five farmers Sri Devendra Singh, Sri Sammi Khan, Sri Rakesh Kumar, Sri Darshan Pal and Sri Pramod Kumar of village Nagla Fateh have started custom hiring services of Refined groundnut decorticator for decorticating of groundnut and earning Rs15000 to Rs25000 per year from single Groundnut decorticator mainly in sowing time of groundnut in Febraury, March and July.

Impact:- One manufacturer M/S Gandhi Workshop at Awagarh has started manufacturing of Refined groundnut decorticator for small scale production and in a year 2015-16. About 82 Groundnut decorticator have been produced and sold at the cost of Rs. 3250 per machine.



Inclined concave opening (Refined Groundnut decorticator)

7. Vindhyayan Zone:

i. Ensuring higher Profits in farmin by enterprise diversification in Mirzapur

Situation analysis/ Problem statements:- Shri Seeta Ram Singh of Village- Nadihar in block Rajgarh of district Mirzapur was an ordinary farmer a few months ago. He came in contact with the activities of BHU-Krishi Vigyan Kendra and with improved technological knowhow; he is now considered a progressive farmer of the area. On the advice of the scientists of the KVK, he adopted diversifying his venture with associating more enterprises with it. He came out of the traditional cultivation of rice-wheat prevalent in the region and started incorporating more type of crops including pulses, oilseeds, vegetables (for the local market), fruits including lemon and fig. As he started making this idea operational, he started witnessing almost stabilized profits, thus, reducing the risks from a single enterprise. Also, he increased his income by identifying the relative economic potential of each enterprise and allocating inputs to them on this basis. Now, he has become the satellite farmer of KVK and has set an example before the youth of the region to return to technologically strong agriculture for better profits. He is a regular visitor of Farmers fair of Northern Indian parts including, those held in GBPUA&T, Pantnagar, IARI, New Delhi, IIVR, Varanasi, NDUA&T, Kumarganj, Faizabad and CSAUA&T, Kanpur.

Plan, Implement and Support:- Regular Monitoring of implementation of the recommendations and based on that, newer technological input is provided by the KVK.

Output:- Stabilization and increase in the profits from agriculture and associated enterprises

Comparative Economic analysis of traditional vs. improved mode of farming:

Particulars	Income (Rs.) in Traditional Farming	Particulars	Income (Rs.) in Improved Farming	Increase in Net profits (%)
Rice+Wheat	1,11,000.00	Rice+Wheat+Oilseeds +Pulses+Vegetables+Fruits	1,52,000.00	153.51
Total Income	1,11,000.00	Total Income	1,52,000.00	
Total Expenditure	88,325.00	Total Expenditure	94,516.00	
Net profit	22,675.00	Net Profit	57,484.00	

Outcome:- Stabilization of profits and considerable increase in the income

Impact:- Motivation for the farmers of the region to adopt new technological advances in agriculture.

8. Eastern plain zone:

i. High yielding mustard variety (NDR-8501) convinced farmers for its high yielding trait in Ghazipur

Situation analysis/ Problem statements:- Mr. Sanjay Singh, village Khajurgaon, Post:Indore block:Mardah, district:Ghazipur, a farmer who was selected for this demonstration. He was earlier involved with local variety of mustard Pusa Bold or Varuna. These varieties were low in yield

Plan, Implement and Support:- KVK Ghazipur tries to make them aware regarding scientific cultivation of mustard. That starts from land preparation to harvesting. This KVK has encouraged the farmer for soil testing and on the basis of that farmer was advised for balanced dose of chemical fertilizer with high yielding varieties Pusa Tarak. That was sown on 01-11-2016 with line sowing and fertilizer application was done with basal application in which half dose of nitrogen full dose of SSP and full dose of MOP as recommended. Rest nitrogen used after first irrigation.

Output:- Mr. Sanjay Singh adopted the the balanced dose of chemical, fertilizer (N:P:K:S::150:40:40:30) kg/ha in mustard crop as per suggestion of KVK's scientist for his 0.25ha land. His local yield was 3.85 qt with recommended technology. His yield increased by 33.76% with yield 5.15 qt. The economical gain in terms of per unit expenditure gross income, net return and BCR are recorded. Rs 6975, Rs. 18857, Rs. 11882 and 2.70 correspondingly.

Outcome:- Mustard crop is the major oilseed crop of the district. KVK Ghazipur conducted 322 demonstrations in 87 villages during 2004-05 to 2016-17 in an area of 89 ha at farmers' field with using HYV NDR-8501, Pusa Tarak and balanced dose of chemical fertilizer (N:P:K:S::150:40:40:30) kg/ha. This variety has been disseminated in 170 villages of the district in area of approximately 900ha. The outcome of this demonstration motivated the farming communities to replace their old varieties, non-descriptive varieties. Mr. Sanjay Singh is very happy on improvement in their income, livelihood and set forth example for others.

Impact:- Mr. Sanjay Singh is becoming one of the progressive and learned farmers for others with regards to popularization of Pusa Tarak. This technology helps him for livelihood, empowerment and make him enthusiastic regards oilseed production. He is one of the progressive farmer after a becoming a part of KVK activities and get their effectiveness for his own development. Mr. Sanjay Singh is very happy with this improved production and management technology and set forth example for other farmers of the district.



A farmers with KVK's scientist



Mustard Crop Pusa Tarak

ii. Varietal replacement with IPM strategies enhanced chickpea Productivity in Ghazipur district

Situation analysis/ Problem statements:- Ghazipur district comes under Eastern Plain Zone. The soil is alluvial type and fertile because of low level of floods continuously replenish the soil. This makes agriculture the most important profession of the people. The major existing farming system/enterprises are cereals + vegetables/fruits, pulses + coarse cereals, pulses + cereals, etc. Rice-wheat cropping system is pre-dominant. Ghazipur has a humid sub-tropical climate with large variation between summer and winter temperature. Summers are long from early April to October with intervening monsoon season. Cold waves from the Himalayan region cause temperature to drop across the city from December to February. The temperature ranges between 32°C to 46°C in the summer and -1°C to 15°C in winter. The average annual rainfall is 1110mm. Fog is common in the winter while hot dry winds called loo blow in the summer.

Chickpea is a major pulse crop of Rabi season. Chickpea area under cultivation is about 4218 thousands ha with a production of 3887 metric tons in district Ghazipur of Uttar Pradesh, however its average productivity is 9.22 q/ha (District Sankhyikiya Patrika 2013-14, <http://www.ghazipur.nic.in>). The biotic stresses such as Gram pod borer, Gram semilooper, Termite, Wilt, Collar rot, Black rot, Stem rot, Ascochyta blight and Botrytis grey are responsible for low yield of chickpea. Among these biotic stresses, the gram pod borer is a major pest accounting for 21 per cent yield losses and 50-60 per cent pod damage in the crop. To combat the causes of yield erosion in chickpea, KVK Ghazipur assessed IPM strategies in chickpea under real farmer's conditions.

Plan, Implement and Support:- Thirty seven trials in an area of 15 ha on varietal replacement with IPM strategies in chickpea were conducted during 2016-17 in district Ghazipur. The HYV GNG 1581 with different IPM strategies i.e. proper tillage, line sowing seed treatment with Carbendazim 50% WP @2g/kg seed for management of collar rot, Profenophas 50%EC @ 2litre/ha at 50% flowering and Spinosad 45% SP @150ml/ha at 50% pod filling were comprised under the trial. Mostly the crop was sown in the first and second week of November according to previous crop harvest. Eleven villages of six blocks were covered by the demonstration. Participating farmers were trained by the KVK experts on what to do and what not to do. Observations and data were recorded and analyzed.

Output:- There was less insect-pests infestation of plant/m² and pod/plant with application of IPM strategies in chickpea. The average 42.50 per cent affected plant/m² and 35.50 per cent affected pod/plant minimized with use of IPM strategies during technology assessed period. The highest yield was recorded 24 q/ha and minimum yield was 16q/ha. On the basis of thirty seven farmers, average yield was 20.22 q/ha as compare to existing practices (15.79.00 q/ha) and thereby recorded average yield advantages 28.06 per cent more over farmers practices. Economic returns as a function of grain yield and maximum sale price of chickpea was Rs4000/q. The economic analysis reveals that the average gross returns Rs 80880/ha was recorded under trials as compared to farmers practices (Rs 63160/ha) and net returns of Rs 55380/ha recorded with use of IPM strategies as compare to farmers practices (Rs 39460/ha). The 3.17 benefit cost ratio was received under demonstrated plots while 2.66 BCR was under farmers' practices. The overall results shows that the chickpea variety GNG 1581 have more potential to produce higher yield if sown either timely or mid late conditions. A climatic condition was most favorable during crop growth period (season 2016-17) for higher production.

Outcome:- The maximum yield and net returns under varietal replacement of chickpea with integrated pest management strategies is quite encouraging to partner farmers as well as neighboring farmers of cluster villages. The partner farmers and neighboring farmers were fully convinced with HYVs of chickpea and use in their cultivation practices.

Economic analysis:

Year	Cost of cultivation (Rs./ha)		Gross return (Rs./ha)		Net return (Rs./ha)		BCR	
	Demo.	Farmers practice	Demo.	Farmers practice	Demo.	Farmers practice	Demo.	Farmers practice
2016-17	25500	23700	80880	63160	55380	39460	3.17	2.66

Impact:- The partner farmers and neighboring farmers were fully convinced with HYVs of chickpea and use in their cultivation practices. Farmers becoming aware about precautionary pest management practices. Farmer's confidence improved with KVK scientist to have face-to-face discussion and facilitated sharing of knowledge with experiences. Farmers convinced about technology and appreciated. Encouraged the farmers to act their farm work in a more systematic and specific manner. Farmers are reducing plant protection input costs and providing various environmental benefits.

iii. कृषक गठ जोड़ बनी सफलता की कुंजी : फैजाबाद

स्थिति विप्लेषण :- जनपद अल्मोड़ा (उत्तराखण्ड) के हवालबाग विकासखण्ड में अल्मोड़ा दौलाघट मार्ग पर एक गांव चौना है जो समुद्र तल से लगभग 1200 मीटर की ऊंचाई पर स्थित है। गाँव में करीब 190 मवासे हैं जिमें आजिविका का मुख्य साधन कृषि है। गांव पर्वतीय क्षेत्र के ज्यादातर अन्य गांवों की तरह इस गांव की भी कृषि वर्षा आधारित है। यद्यपि कुछ कृषक नजदीक से बह रही नदी से पानी खींचकर अच्छी खेती भी करते हैं। इसी गांव के एक निवासी हैं श्री पूरन सिंह बोरा पुत्र स्व श्री अमर सिंह बोरा। लगभग 60 वर्षीय बोरा जिनके पास कुल 36 नाली भूमि है, खेती से पूर्व देहरादून में प्राईवेट पोल्ट्री फार्म में कार्य करते थे, जो उन्हें रास नहीं आ रहा था। अतः देहरादून से वर्ष 2002 में गांव आ गये और अन्य ग्रामवासियों की भाँति परम्परागत कृषि करने लगे। पर्वतीय क्षेत्रों की विभिन्न फसलें जैसे चैती धान, मडुवा, मादिरा, भट्ट गहत, गेहूँ, मसूर आदि फसलों से उन्हें बहुत कठिन परिश्रम के बाद भी उचित लाभ नहीं मिल रहा था अतः धीरे-धीरे उनका मन कृषि से हटने लगा था। इसी दौरान दूरदर्शन, कृषि गोष्ठी, समाचार पत्र इत्यादि से उन्हें जानकारी मिली कि बेमौसमी सब्जी उत्पादन, जैविक कृषि आदि से वो उन्नत खेती कर सकते हैं। चूँकि उन्हें परम्परागत खेती से लाभ नहीं मिल रहा था और वो स्वयं भी कुछ नया करना चाहते थे जिससे समाज में उनकी पहचान बने। अतः बेमौसमी सब्जी उत्पादन उन्हें उपयुक्त विकल्प लगा।

योजना, कार्यान्वयन एवं सहायता:- वर्ष 2008-2009 में सरकार द्वारा चलाये जा रहे कृषक महोत्सव के दौरान वे कृषि विज्ञान केन्द्र के वैज्ञानिकों कृषि एवं उद्यान विभाग के अधिकारियों के सम्पर्क में आये और उनसे अपनी इच्छा व्यक्त की। वैज्ञानिकों और अधिकारी वर्ग से उन्हें सकारात्मक सहयोग का आश्वासन मिला और विभागीय अधिकारियों से उन्होंने वर्मी कम्पोस्ट यूनिट, पॉलीहाउस, उन्नत यंत्र पर दिये जा रहे अनुदान के बारे में जानकारी ली और सर्वप्रथम अपने प्रक्षेत्र में अनुदान का लाभ उठाते हुए वर्मीकम्पोस्ट यूनिट लगाये। तत्पश्चात उद्यान विभाग के सहयोग से एक पॉलीहाउस लगाये वैज्ञानिकों से बढ़ते सम्पर्क और उन्नत खेती ने उनकी खेती के प्रति रुझान एक बार पुनः बढ़ा। वैज्ञानिकों के सलाहनुसार आज वो टमाटर, शिमला मिर्च, मैरो, खीरा, लौकी, कद्दू, मटर, प्याज, लहसून आदि की खेती कर रहे हैं।

परिणाम:- पर्वतीय क्षेत्र में जाड़ों में पानी की समस्या को दृष्टिगत रखते हुए आपने जल संरक्षण टैंक बनवाया जिससे वो टपक सिंचाई द्वारा सब्जी मटर, प्याज, धनियाँ, लहसून आदि की सिंचाई करते हैं। आपके पूरे प्रक्षेत्र में रासायनिक उर्वरक एवं पौध सुरक्षा रसायन का प्रयोग निषेध है। दूसरे शब्दों में कहा जाये तो आप पूर्णतया जैविक खेती करते हैं। पहले जहाँ तकनीकी जानकारी के अभाव में श्री बोरा टमाटर, शिमला मिर्च, फ्रासबीन, मैरो, खीरा, लौकी, मटर, प्याज की परम्परागत/स्थानीय प्रजाति का प्रयोग करते थे जिससे कम उपज मिलता था। वही कृषि विज्ञान केन्द्र के वैज्ञानिकों के सलाह पर नवीनतम विकसित प्रजातियों का प्रयोग करना प्रारम्भ किये जिससे पैदावार में 2-2.5 गुना वृद्धि हो गयी। आप सब्जियों में अच्छी तरह से सड़ी गोबर की खाद एवं वर्मी कम्पोस्ट खाद का प्रयोग करते हैं। सब्जी को कीट-रोग से बचाने हेतु आपने एक अपनी परम्परागत तकनीक ईजाद कर रखी है जिसके अन्तर्गत स्थानीय वनस्पति बिच्छू घास (*Urtica dioica*), बकैन (*Melia azedarach*) की पत्तियों को गोमूत्र में मिलाकर एक घोल तैयार रखते हैं और आवश्यकतानुसार उसका प्रयोग करते हैं। आप वाष्पीकरण विधि से गोमूत्र का अर्क तैयार कर पंतजलि को आपूर्ति करते हैं जिससे इनकी निरन्तर आय होती रहती है।

निष्कर्ष:- श्री बोरा के बगीचे में 5-6 आड़ू (रैडजोन) के पेड़ हैं जिससे भी उन्हें प्रतिवर्ष आय होती है। गायत्री परिवार से जुड़ाव होने के कारण आप अपने प्रक्षेत्र पर विभिन्न औषधीय एवं सगन्ध पौध जैसे ब्राम्ही, अश्वगंधा, वक्ष, गिलोय, निर्गुण्डी, तुलसी इत्यादि लगा रखे हैं और भ्रमण करने वाले

ग्रामीण व अन्य अतिथियों को इसके होने वाले लाभ के बारे में बताते हैं। आप बताते हैं कि प्रतिदिन निर्गुण्डी के पौध/ टहनी से यज्ञ/ हवन करते हैं, जिससे पूरा वातावरण शुद्ध रहता है और कीट-रोग का न्यूनतम प्रकोप होता है। अभी हाल ही में आप यौगिक कृषि प्रारम्भ किये हैं, जिसमें पॉलीहाउस एवं गौशाला में गायत्री मंत्र जाप का संगीत चलाते रहते हैं। आपका मानना है कि गायत्री मंत्र से उत्पन्न तरंगों से पौधों का अच्छा विकास होता है, फलतः अधिक उपज प्राप्त होता है। आपके पास दो गाय एवं 2 बछड़े भी हैं जिनसे शुद्ध दूध मिलता है। इसके घरेलू प्रयोग के पश्चात 2-3 लीटर दूध का प्रति दिन बिक्रय भी करते हैं जो आय के निरन्तरता में मदद करती है। आप के 0वी0के0, कृषि एवं उद्यान विभाग के प्रशिक्षण तथा गोष्ठियों में भाग लेते रहते हैं और कृषि की नयी-नयी विधाओं के जानकारी हेतु सदैव उत्सुक रहते हैं। विगत वर्ष आपको आत्मा परियोजना, अल्मोड़ा से प्रगतिशील कृषक के रूप में सम्मानित किया गया है। आप यह भी बताते हैं कि प्रारम्भ में 2-3 वर्षों में उन्हें विपणन की समस्या आयी और वो स्थानीय बाजार में दुकान इत्यादि में सब्जी रखवा कर बिक्रय किये। इससे दुकान वाला ज्यादा आय ले लेता और उन्हें कम मिलता। परन्तु अब वो कही नहीं जाते और अपनी शर्तों पर स्थानीय बाजार के दुकान वाले एवं अल्मोड़ा में आसानी से विपणन हो जाता है। श्री बोरा बताते हैं कि सब्जी, फल, दूध, गोमूत्र के अर्क आदि से प्रति वर्ष उन्हें लगभग रु. 1.00 लाख की आमदनी हो जाती है। और उन्हें कहीं जाना भी नहीं पड़ता है।

प्रभाव:- वर्तमान में श्री बोरा का अपने गाँव व समाज में एक अलग पहचान व ऊँचा स्थान है। वे दूसरे कृषकों को भी नई तकनीक अपनाने को प्रेरित करते रहते हैं। इसके अतिरिक्त अपने अनुभव व कृषि के क्षेत्र में दक्षता के चलते अन्य कृषकों द्वारा पूछे गये कृषि संबंधी समस्याओं का निराकरण भी करते हैं। इस तरह वो क्षेत्र में “कृषि ज्ञान केन्द्र” के रूप में भी जाने जाते हैं।



iii. Ensuring livelihood security of medium and small farmers through crop diversification in Azamgarh

Introduction: Diversifications of existing cropping system determine the path of food security, economic development and also improve the livelihood security of farming community. The country is endowed with a rich diversity of natural resources. Therefore, there is need to develop a crop diversification model for improving the socio-economic status of small and marginal farmers.

Sri Ram Surat Chauhan belongs to a resource poor marginal farmer living in village Chak Khairullah, Block- Rani Ki Sarai, District- Azamgarh of Uttar Pradesh. He generates income from 2.1 hectare from cultivated land with one milch cattle and any how meet out the need of his family. The available land utilized for production of cereals, pulses and oilseeds etc. In spite of the importance of said production, he did not generate sufficient income to uplift living standard and to provide better education for children's.

KVK intervention: He came in contact with KVK, Azamgarh during 2008-09 through a vocational training where information about establishment of agro based enterprises along with other technical knowledge were being given by the scientists. They also provide detail mandatory work of KVK in the district. As he felt that I am fortunate because a real farmers helping institution is establishing only 1.5 km away from my village. Being and enthusiastic nature, he attended frequently more number of seed production, diversification farming, dairy development, bio fertilizer/ organic manure etc and finally decided to diverse own traditional farming system starting from rabi 2008-09.

Output: Initially he started poultry production with 500 birds and got some more profit and as a resultant he enhanced the rearing capacity to the extent of 2000 birds. The end products like litter used directly for vermi composting. As he receiving good income he constructed 20 vermi compost pits for better recycling of huge quantity of poultry byproducts. Country needs to export and generate more foreign exchange by producing chemical/toxic free agro-products. So in that way the sufficient production and use of compost leads to achieve the goals, keeping this theme he is now producing and using much quantity of valuable vermi compost in crop production and also earns Rs. 80000 by selling in the market.

In dairy component, three cows' & buffaloes are producing approximately 25 liter milk/day. He used to sold milk in the market after own use for cash earning. A huge quantity of rotten FYM is obtain as by product of dairy unit which also encourage to adopt sustainable farming by reducing pressure of chemical fertilizer in crop production sector.

He also established horticultural nursery in which teak, papaya, mango, guava, aonla, bael and seasonal vegetables are developed commercially. It also provides daily income along with full utilization of available resources leads to build an ideal nursery in coming future. In crop production sector he commercially raised rice, wheat, pigeon pea, gram, urd for meeting the daily need of food requirement and rest quantities are sell in the market for income.

Outcome & impact: Out of the agro-based enterprises/entrepreneurship development for income generation and wide adoptability that ETV Hyderabad and Doordarshan Mau has covered his efforts and broadcast on respective channels as a model for diversification of existing system.

By observing such a success and property achieved by sri chauhan, other farmers Sri Markandey Singh village Sikraur & Sri Mangal Deo Tiwari village Gopalpur were also motivated and came into contact with KVK. Looking to the interest and curiosity among the farmers of nearby villages, the KVK organized trainings and other extension activities from time to time. The details about income generation during 2015-16 of each entrepreneur from different enterprises are given as hereunder & the values are in tables also based on farmer perception.

S. No.	Name of Village	Enterprises developed	Gross production (q)	Gross income (Lakh)	Cost of production (Lakh)	Net income (Lakh)
1.	Chak Khairulla	Seed production	68	1.45	4.59	0.99
		Nursery & vegetables saplings	-	3.02	0.78	2.23
		Vermicompst	16.5	0.80	0.13	0.68
2.	Sikraur	Seed production	142	2.96	1.03	1.93
		Orchard	84	1.86	0.25	1.62
		Sugarcane	1120	2.41	0.74	1.68
3.	Gopalpur	Seed production	128	2.15	0.89	1.27
		Orchard	32	0.82	0.87	0.73
		Dairy	28 lit/day	840/day	304/day	536/day

Marketing: All the seed & orchard based produce is being sale out to the bulk buyer as per the rate prevailed in the local markets. The nursery of fruits, timber plants, medicinal

plants and vegetable saplings are to the visitors/ interested peoples/road moving peoples etc. Thus marketing issue became easy. The KVK always provided technical support on regular basis by visiting the units.



iv. Turmeric (var. Narendra Haldi 1) Cultivation Turned into Profitable Venture in Faizabad

Sri Sadhu Ram Chaurasia living in village Malethu Bujurg, Block Haringtonganj of Faizabad district was planning to cultivate a crop which may be more remunerative than the prevailing rice-wheat cropping system, but he was totally clueless on what to cultivate. Rice-wheat cropping system did not give him much benefit to feed his family member. The soil of the block Haringtonganj is saline and sodic soils, which provide very less productivity to various field crops. He started turmeric cultivation with some hope.



Intervention of KVK :



Initially, the seed rhizomes of turmeric var. NDH 1 of half quintal provided to him through on farm trial programme of KVK, so that confidence may be developed to him and in the other villagers. He produced half quintal seed to 10 quintals of raw turmeric. He dried about 05 quintals of turmeric and powdered it for domestic use to himself and other villagers of his village so that quality of turmeric powder can be judged. There was good response of quality turmeric powder and superiority with other powders available in the market was observed. He was now convinced that this cultivar of

turmeric gave him the better profit after commercialization.

Outcome and impact:

Thereafter, he continuously grew turmeric in 0.5 ha area and commercialized the products with the help of local market alongwith the selling of seed rhizome. With 0.5 ha area he earned a profit of Rs. 50,000/- every year with the cultivation of turmeric crop. From last three years (2012-13) he also harvested turmeric oil from its leaves and provided to nearby villagers with a remunerable rates. He now earned extra Rs. 15,000/- every year with the oil of turmeric crop.

Maturing in 230 days under irrigated conditions, NDH 1 gave an average yield of 25-28 tonnes per hectare with a dry recovery of 17.8 per cent. Relatively higher levels of curcumin (4.25%), oleoresin (10.6%) and essential oil (5.5%) make NDH 1 a better choice for industrial, medicinal and culinary purposes. This high curcumin variety of turmeric was developed by N.D.U.A. & T. Kumarganj.

Regarding the future course of action, Sri Chaurasia has well thought out plans. He strongly feels that NDH 1 turmeric powder and oil should be marketed in the household as a unique branded product, owing to its better culinary properties. Current year he started to establish a processing plant for the processing of turmeric.

v. Large scale adoption of Zero Tillage Technology in wheat: Jaunpur

Zero-tillage planting of wheat after rice has been the most successful resource-conserving technology in the North India Plains. Zero-tillage wheat has a number of advantages, alleviating a number of constraints in the rice-wheat system: it permits earlier wheat planting, helps control weeds like *Phalaris minor*, reduces costs, and saves water. Adoption of zero tillage for wheat in district Jaunpur (U.P.) started in the year 2005-06 and accelerated in the years of 2014-15. During this period KVK has been organized different programme under RCT like On Farm Trial, demonstration, field day, training and goshi. The KVK also provide ZT machine to farmer on custom hiring services.



Year wise Impact of ZT Technology in wheat

Year	No. of Village	No. of Farmer	Area (ha)
2009-10	181	273	890
2011-12	232	1466	1215
2012-13	314	1840	1576
2014-15	416	3820	8542

The effect of ZT technology and were also studied by the KVK scientists.

Effect of ZT technology	Outcome of Technology
<ul style="list-style-type: none"> * Advance seeding: 10-15 days * Placement of seed & fertilizer in right depth and place * Saving 30% seed and 40% irrigation water * Reduce 35-40% weeds * Gain additional yield of wheat : 2.2q/ha * Saving cost of cultivation: Rs. 4750/ha * Gain additional net profit: Rs. 6850/ha 	<ul style="list-style-type: none"> * Total ZT provider under custom hiring services: 38 * Average area sown by each ZT provider: 41ha * Average gross income gain by each ZT provider in one rabi season Rs. 61500 * Average net income gain by each provider in one rabi season Rs.34750

vi. Improved Poultry Enterprise for employment and income generation in Ambedkar Nagar

Introduction-

Majority of farmers are not aware of the recent advances in agriculture. In allied activities most of the farmers rearing traditional and non descriptive breeds of milch animals and poultry birds. The total live stock population in district is about 10.7 lacks consisting of buffaloes, cows, sheeps, goats and pigs & poultry birds. Marginal farmers and landless laborers rear local goats and poultry birds (backyard poultry) as source of income.

There is few well devolved poultry farm (broiler/layer) in district but marginal farmers and landless laborers reared Desi non- descriptive breeds through traditional methods for eggs and meat purpose. In backyard poultry, farmers used to rear 30-100 birds only under the management of women. The backyard poultry owners did not provide quality and management. The rate of growth of poultry birds very slow and took 3-4 months to attain 1-1.5 kg. body weight. Due to these reasons, the income from poultry was only Rs. 1500-3000 per annum of those people. To adopt poultry as business was not priority of rural youth of district in spite of migration in Maharashtra, Delhi to earn their livelihood.

KVK intervention -

KVK provided the technical backup for improving the poultry farming. Various dissemination mechanisms including trainings, demonstrations, Mass campaign and personal counseling etc. were used to provide technical support in preparation of projects, fallow up with respective bank, construction of poultry unit and their management to the interested groups.

Since 2012-2015, KVK organized 7 vocational trainings courses on poultry farming of 4-5 days and total 189 farmers, farm women and rural youths participated in trainings and all technical skill oriented knowledge given on improved poultry farming with introduction of fast growing broiler strain (rate of weight gain 1.5-2.0 kg within 35-40 days), adequate housing, feeding and diseases management .

Output -

Total 85 trainees have started broiler farms of different capacities ranging from 1000-5000 birds in their villages. About 53.13 % trainees started poultry farm after attending trainings organized by KVK. There was an establishment of more than 287 broiler farms within a period of 4 years 2012-13 to 2015-16. Most of poultry farm owners started their farm of 1000-2000 birds. However 22% of farm owners enhanced their farm capacity 2-4 times and 19.52% farm owners increased their farm size 5-6 times. It means, rest of poultry farms established, were the impact of technology disseminated by farmers to farmers, print media as well as poultry feed, chicks seller and other agencies.

The main occupation of all the poultry owner is agriculture. Handsome income with short period of 2-3 months with small investment in broiler farming at village level motivated the rural youths towards the broiler farming. The poultry owners collected technological knowledge of broiler farming from different source. KVK played a key role in motivation of farmers and providing technical know haw by organizing vocational trainings and demonstrations for adopting poultry farming as a source of extra income along with their existing occupation. Some rural youths got inspiration through their neighboring poultry owners and some from feed and chick supply agencies

Outcome -

It can be seen from the data that the average production cost of 2.0 kg range d from Rs. 90-102 and net profit par bird varied from Rs. 15-25 and 20.5% of broilers is consumed in the district and 73.5 % is disposed to other adjoining districts

9. Bundelkhand Zone:

i. Income enhancement using recommended practices in Jhansi

Shri Raj Kumar Dubey a permanent resident of village Dhikauli post office Raksha distt. Jhansi came into the contact to the scientists of KVK, Bharari, Jhansi in the year 2008-09. At that time Shri Dubey with five members of his family used to do agriculture & animal husbandry traditionally. In spite of doing hard work & having tractor, cultivator, ferti-seed drill, thresher, solar pump, tube well & canal sources of irrigation, 30 buffaloes & two cows his livelihood was not running smoothly because of his unsatisfactory financial position.

In the year 2009-10 Shri Dubey started to adopt high-tech recommended practices in agriculture as well as in animal husbandry in a very small area based on Bundelkhand Agro climatic situations viz, soil nutrient application on the soil test report basis, to grow short duration crops & their varieties, sprinkle method of irrigation, in corporation of organic matter in soil, pulse based crop rotation practices along with raising higher milch breeds of buffaloes & cows.

In the Rabi 2015-16 he grew wheat variety PBW- 550 in 1.84 ha. Chick pea var. KWR-108 in 0.8 ha. lentil var. DPL-62 in 0.12 ha., mustard variety NDR-8501 in 1.2 ha. barseem var. JHB -146 in 0.2 ha. Now this time he is getting 60 lit. milk per day. He has a garden of guava, aonla, citrus & turmeric in an area of 0.4 ha.

Social & economic Analysis:

Shri Raj Kumar Dubey at present is a popular president of Bundelkhand Harit Kisan Mandal which is running in more than 30 villages having 450 farmers. A lot of farmers are being benefitted with him from agriculture, horticulture & animal husbandry.

Details of Annual income:

1. Income in Kharif -	Rs. 124618.00	Expenditure Rs. 81536.00
2. Income in Rabi	Rs. 296074.00	Expenditure Rs.132757.00
3. Income in Horticulture	Rs. 64865.00	Expenditure Rs. 32138.00
4. Income in dairy & AH	Rs. 206348.00	Expenditure Rs. 144850.00

Net annual income: Rs. 3.0 lakh.