

Krishi Vigyan Kendra - Vyara

ALWAYS CROWDED BY FARMERS, OFFICIALS, AND NEEDY CLIENTLES





Case Studies

- **Natural havoc by ice fall at Velda**
- **Hazardous effect of injudicious use of Weedicide at Nizar**
- **Entrepreneurship Development of Tribal Farm Women**
- **Inclusion of poultry rearing extension activities for rural livelihood**
- **Dahyabhai Madaribhai Chaudhary, An Innovator of Dual purpose Pigeonpea (Var. Vaishali) production in Tribal area of Tapi Districts**
- **Pravinbhai Harishbhai Chaudhary, An Innovator for Scented Paddy (Var. PRH 10) production in Tribal area of Tapi Districts**
- **Ajitbhai Maganbhai Gamit, An Innovator for Paddy (Var. NAUR-1) production in Tribal area of Tapi Districts**
- **Bhavik Natubhai Bhakta, An Innovator for mixed cropping**

- **A scientific Dairy Entrepreneurship-Sunitaben Kamleshbhai Konkani**
- **Papaya crop - A boon for increasing socioeconomic status of Bahurupa village**
- **“Ramakantbhai Patel: Innovative farmer for raising socio-economic status of Bahurupa”**
- **New report of occurrence of Pentatomid bug, *Cyclopelta siccifolia* Westwood (Dinidoridae: Heteroptera) on Pigeonpea in Gujarat, India**
- **Sujitbhai Thagelabhai Chaudhari, an Innovator for Scented Paddy (Var. PRH 10) production in Tribal area of Tapi Districts**

- **Increase awareness among farmers about biological control of sugarcane Pyrilla by using its natural parasitoid *Epiricania melanoleuca***
- **Integrated approach for Brinjal Cultivation**
- **Highly beneficial - Preparation of Herbal Hair Oil by Tribal Farm woman for domestic consumption**
- **Integrated Nutrient Management in Okra**
- **Dissemination of Pheromone trap technology for mass trapping of paddy yellow stem borer in tribal belt of Tapi district**
- **South American tomato pinworm, *Tuta absoluta*: A New invasive pest recorded first time on tomato in Tapi districts of South Gujarat**
- **Plug Nursery is the key of success in life of Naranbhai**

1 - Natural havoc by ice fall at Velda

**Rs. 42.00
lakh**



NATURAL CALAMITY

Immediate Response of KVK

**Damage to Papaya
crop due to**

KVK become popular...



**Damage on maize
crop**



2 - Hazardous effect of injudicious use of Weedicide at Nizar

Differentiate the insecticides and weedicides.....



Visit to weedicide affected cotton field



Discussion of KVK scientists

MAN MADE CALAMITY



Field visit at papaya farmer of Nizar

Estimated loss Rs. 25.00 lakh

3 - Entrepreneurship Development of Tribal Farm Women

1. **Name of tribal women** : **Smt.Chhayaben Shyambhai Naik**
2. **Village** : **Bhitbudrak**
3. **Taluka & District** : **Uchchhal, Tapi**
4. **Month & Year of Training** : **Jan.'09 to Mar.'09**
(Three months)
5. **Activity before Training(from sewing)** : **Cloth repairing**
6. **Sewing machine held before Training** : **Yes (Cost of machine: Rs.5200/- with motor)**
7. **Income before Training (From sewing)** : **Rs.100-150 per month**
8. **Supplementary income after training from sewing** : **Rs.2000-2200 per month**
9. **Marketing arrangement** : **Use of village & social contact / Religious contact/Sakhi Mandal members**



Vocational Training Programme on Sewing Work organized at Bhitbudrak village of Uchchhal Taluka



- 1. Name of tribal women** : **Miss Sumitraben Karmabhai Gamit**
- 2. Village** : **Fulwadi**
- 3. Taluka & District** : **Uchchhal, Tapi**
- 4. Month & Year of Training** : **Jan.'09 to Mar.'09**
(Three months)
- 5. Activity before Training** : **Daily wages labour work in farm**
- 6. Income before Training** : **App. Rs.600-800 per month**
- 7. Sewing machine purchased after Training** : **Rs.4200/- from internal lending through Self Help Group**
- 8. Supplementary income from sewing work** : **Rs.1200-1500 per month**
- 9. Marketing arrangement** : **Use of village & social contact/
Self Help Group members**

4 - Inclusion of poultry rearing extension activities for rural livelihood

During the year 2012, the poultry keepers of the adopted villages were trained at KVK as well as at their farms and significant results in terms of better production and reduced poultry mortality was gained.



TABLE : OFF CAMPUS TRAININGS

Sr. No.	Title of the training programme	Total No. of participants
1	Profitable poultry production and management alongwith dairy animal management	42
2	Vaccination & its importance	29
3	Management practices of backyard poultry farming	31
4	Care and management of poultry house during cold weather	20
5	Care of Poultry during summer and vaccination care	24
	Total	146

TABLE : ON CAMPUS TRAININGS

Sr. No.	Title of the training programme	Total No. of participants
1	Backyard Poultry care	30
2	Poultry enterpreneurship development through scientific approach	40
3	Care & hatching of eggs, processing of meat & marketing	20
4	Poultry production- Entrepreneurship approach & care during summer (Sponsored training by NAIP-Navsari)	28
	Total	118

TABLE : DIAGNOSTIC VISITS

Sr. No	Advice given on Topic	Beneficiaries
1	Wart like lesion on mouth of poultry	5
2	Economic assistance information for poultry	10
3	Guidance about egg cracks	12
4	Guidance about lameness in poultry	8
5	Guidance about mortality in poultry chicks	6
Total		41

TABLE : FARMERS VISIT TO KVK

Sr. No	Advice given on Topic	Beneficiaries
1	Information about source for goat and poultry purchase	12
2	Information about loan/financial assistance from Govt. for poultry set up	7
3	Sudden death in poultry	13
4	Presence of worms in intestine	5
Total		37

Parameter	Previous Production	Effective Production
No. of eggs per year	116	145
Body weight at 90 days	1.2 kg	1.5 kg



5 - Dahyabhai Madaribhai Chaudhary, An Innovator of Dual purpose Pigeonpea (Var. Vaishali) production in Tribal area of Tapi Districts



Village	Kalakava
Seeds given by KVK	Pigeonpea (Variety-Vaishali), (5 kg free under FLD)
Total area sown	0.48 ha
Season	Kharif 2012
Total production	500 kg

Market price	Rs.800/- per 20 kg
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Total Income	Rs. 20000/-
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After harvesting of main crop, ratooning is taken and due to this in the next season they will get more pods as a vegetable purpose. Looking to the success of Mr. Dahyabhai surrounding 20-25 tribal farmers are ready to adopt Vaishali in next kharif and already taken the seed from Mr. Dahyabhai. Fragrance of Vaishali is also spread in surrounding villages.

6 - Pravinbhai Harishbhai Chaudhary, An Innovator for Scented Paddy (Var. PRH 10) production in Tribal area of Tapi Districts



➤ Village	Kalakava
➤ Total area	8 acre
➤ Main crop	Paddy and sugarcane
➤ Seeds given by KVK	Paddy (PRH 10 -scented), 4 kg
➤ Total area sown	0.24 ha
➤ Sowing method	line sowing
➤ Spacing	15 cm intra row
➤ Season	Kharif 2012
➤ Total production	1200 kg

Paddy selling rate	Rs.300/- per 20 kg (paddy whole)
After milling	farmer got market price @ Rs. 20 per kg in traditional variety, while in case of scented variety (PRH 10) he got @ Rs. 60 per kg
Straw production	Produced 25 % higher than the traditional variety.



This scented rice variety introduced first time in this village by Mr. Pravinbhai. Whole village attracted towards this scented variety. Moreover, five tribal farmers collected seeds from Mr. Pravinbhai by barter method. About 20-25 farmers will adopt same variety in next season. This may be due to constant follow up and live contact of KVK Scientists.

Thus, The KVK, Vyara changed the life of normal tribal farmer to an innovated hitech farmer



7 - Ajitbhai Maganbhai Gamit, An Innovator for Paddy (Var. NAUR 1) production in Tribal area of Tapi Districts



Village	Vadapada
Total area	1.2 ha
Seeds given by KVK	Paddy (NAUR 1), 2 kg
Total area sown	0.4 ha
Sowing method	SRI method
Spacing	25cm x 25cm spacing
Season	Kharif 2012
Total production	2000 kg
Paddy selling with market price of	Rs.224/- per 20 kg

In Vadapada village, the other **neighbor farmers** of Mr. Ajitbhai **attracted** towards his field and made enquiry regarding name of the variety, sowing method, source from where he got seeds, cultivation practices and so. Like this, all farmers were satisfied and immediately made booking towards Mr. Ajitbhai regarding seeds of NAUR 1 variety for sowing in the next season in their own field.

By this way, in next season **about 30-35 farmers** will adopt NAUR 1 variety for planting in this village. Her mother advised other farmers to adopt the same.



8 - Bhavik Natubhai Bhakta, An Innovator for "Mixed Cropping"



Village	Ambach
Age	27
Education	B. Com.
Total land	18 acres
Cropping system adopted	Mixed cropping
Total mix cropped area	4 acre
Crops	Cucumber, cowpea, brinjal and bitter gourd
Main crop	Brinjal
Intercrop	Cucumber
	He sown cow pea as gap filling in main crop brinjal
Planting Season/month	January 2012
Total Income	10 lakh

Cultivation practices	
Fertilizers	Applied through fertigation
Irrigation	100 % drip irrigation
Mulching, if any	Plastic mulching
Trap cropping	Marigold and sweet corn
Plant protection practices	Neem oil spray, installed various types of pheromone traps, yellow sticky traps, fruit fly trap, spraying of NPV



Total Expenditure	5.0 lakh (from land preparation upto market)
	Due to mixed cropping and good post harvest management he got maximum profit. Out of 10 lakh he got maximum return of 3 lakh from bitter gourd which grown as intercrop. Due to sound post harvest management practices including grading, packing all vegetable produce becomes popular among traders in Sardar Market, Surat. Whole mass of labour also well trained for good post harvest management.
Ratooning of Brinjal	Mr. Bhakta has also taken brinjal ratooning in August month
Intercrops	In brinjal ratooning, he has also taken cucumber as intercrop
Cultivation practices	As per the main crop (in January to August)
Plant protection practices	as per the main crop (in January to August)
Total income	6.0 lakh (cucumber + brinjal)
Total expenditure	2.0 lakh
Net profit	9.0 lakh (from both main crop + ratooning)



➤ **The whole technical guidance of mixed cropping, INM, IPM, post harvest management and value addition in ecofriendly manner was given by KVK, Vyara**

Mr. Bhakta has also taken care of his produce during transportation.

➤ **Used wetted gunny bags**

➤ **The freshness of his vegetable produce was also maintained without loss of shining and quality of product.**

➤ **Mr. Bhakta is now became an innovator for the mixed cropping in district**

➤ **Youth farmers are attracted towards his visionary and profitable farming.**

➤ **Quality of the produce, shining, and taste of all vegetable product are appreciated by all the visited farmers, internal traders as well as exporter traders in Surat market.**

➤ **Mr. Bhakta has created his own market chain by sound management and post harvest practices and he was able to get highest market price of his vegetable products.**

➤ **His success story is also printed in ICAR publication regarding SRI technology in Paddy. He got 10 tons paddy production/ha.**

- **Each and every corner of his farm along with roadside and hedges are also covered by vegetable crops.**
- **Looking to the success of Mr. Bhakta, in Krishi Mahotsav District administration also to motivate other farmers towards profitable vegetable cultivation.**
- **He also visited the progressive farmers of Gujarat and Maharashtra.**
- **All family members are also satisfied by his efforts and supported to him at each and every cultivation and post harvest practices including grading, packing and transportation.**
- **It is a unique example for other farmers to get higher income from unit area through mixed cropping in the lie of Mr. Bhakta.**



9 - A scientific Dairy Entrepreneurship - Sunitaben Kamleshbhai Konkani



Name and Photo of farmer	Sunitaben Kamleshbhai Konkani
Village	Degama
Age	35
Education	B. Com.
Total land	8.75 ha
Total Dairy animals	13 1. In Milk Cow:6 2. Heifer:5 3. Male Calf: 2
Area of Expertise	Dairying
Per day milk production	33 liter (Morning 17 liter and evening 16 liter milk)
Price of the milk /liter	28 Rs. Approx/liter milk
In come earned per month from milk:	27700 Rs
Total Expenditure per month	8000 Rs.
Net income from milk/ month	19000 Rs.



Training on Dairying



Successful Dairying



Livestock owner – Scientist Interaction



Scientist guiding Livestock owner

1. General description of Dairying Practices

She is having total 13 dairy animals. She has developed dairying in professional manner by adoption of scientific breeding, feeding and managemental practices as suggested and trained by KVK animal science experts.

The total milk production per day is 33 liter which can give her 19000Rs,. Net Monthly income from milk in addition to farm yard manure. Following scientific dairying practices were adopted by her.

2. Animal Feeding Practices:

She has adopted mineral mixture feeding @ 50 gm/animal/day daily for better production and reproduction efficiency. The concentrate (Sumaul Dan TM) was fed 400 gm/liter milk yield in addition to 1- 1.5 kg to effectively comply nutrition requirement. This has resulted in improved milk production .No milch animal was observed to suffer from production associated problems due to improved care in feeding practices.

She has enthusiastically adopted by pas fat feeding technologies for their milking cows, which has resulted in improvement in fat percentage and over all better milk yield. Moreover this was helpful in improving reproduction efficiency by counteracting negative energy balance after parturition.

Dairying Practices

3. Breeding Practices:

She was well trained about benefits of scientific breeding practices like artificial insemination; hence she has adopted artificial insemination for dairy animals and has kept the records neatly. The anoestrus and repeat breeding incidences were considerably reduced.

4. Managemental Practices:

She has made cement concrete made pakka animal house having 24 feet length and 20 feet width alongwith sloped arrangement for urine and wastage for protection of animal from adverse climatic effect. The liquid animal wastage was given direct outlet to the farm for farm yard manure preparation.



Housing of Cattles



Scientist guiding for managemental practices

10 - Papaya crop - A boon for increasing socioeconomic status of Bahurupa village

- ◆ **Mr. Ghanshyambhai Shrirambhai Patel**, a resident of Bahurupa and presently involved in agriculture. His father, **Shrirambhai** is also a farmer and engaged in farming for last 40 years.
- ◆ He has 100 acres of cultivated land. Before intervention of papaya, he cultivated cotton, sugarcane, wheat, and castor and he got maximum yield of 12 Qt in cotton, 40-45 tonnes/acre in sugarcane, 15-18 q/acre of wheat and 22-25 q/acre of castor.
- ◆ Right now, he changed his cropping system and cultivated sugarcane, papaya, watermelon and muskmelon crops on 50, 30, 10 and 10 acres, respectively.
- ◆ The source of irrigation is tube irrigation is also installed in all these crops.



- ❖ Before cultivation of papaya, **Ghanshyambhai** first prepare the land by deep ploughing followed by furrowing 2-3 times and enriched the soil by application of 5 tonnes of press mud per acre.
- ❖ He brought seedling of papaya variety, **Red lady 786**, and planted in last week of April to first week of May.
- ❖ He applied 9-10 bags of DAP, 10 bags of murate of potash, 6 bags of urea and 25kg of micronutrient at different interval suggested by KVK scientist. He also applied water soluble fertilizers viz., 00:52:34, 12:61:00, calcium nitrate, magnesium sulphate and boron through drip irrigation (i.e. fertigation).



- ❖ KVK also supplied the different bio-fertilizers, bio-pesticides viz, *Trichoderma* powder etc. As per the suggestion given by KVK scientists he also carried out plant protection measures timely.
- ❖ After 11 month harvesting was commenced and total 8-10 pickings were carried out. In all the pickings he got **35 tonnes** of papaya per acre. After each picking he carried out paper packing and then sent for market.
- ❖ Close to papaya there were no any market facilities, so he sent in Mumbai market, markets of north Indian cities viz., Delhi, Punjab, Uttar Pradesh and Haryana through various merchants.





- ❖ During papaya cultivation, the total **cost of production** was **Rs 65000** and he got maximum **gross return** of **Rs. 260000** per acre. By this way, from all the available resources **Mr. Ghanshyambhai** got net profit of **Rs 195000** per acre.
- ❖ Ghanshyambhai also cultivated **watermelon** and **muskmelon** as summer crops by intervention of new technologies *viz.*, drip irrigation, mulching with plastic paper and fertigation. From watermelon and muskmelon he got net profit of **Rs. 50000** and **Rs. 65000** per acre, respectively.

- ◆ Now, Mr. Ghanshyambhai is become an **innovator** for other farmers for papaya cultivation in the region. Under his guidance total **25 farmers** are growing papaya.
- ◆ At present in Bahurupa, area covers under papaya crop is about **120 acres**. The other three farmers which are the close friend of Ghanshyambhai also got maximum return by growing papaya.
- ◆ The details are mentioned below :

Sr. No	Name of farmer	Area (Acre)	Production (t/acre)	Gross return (Rs./acre)	Gross Cost (Rs./acre)	Net return (Rs./acre)
1	Omprakashbhai Sakharambhai Patel	3	38	250000	63000	187000
2	Deepakbhai Tumbabhai Patel	20	30	225000	60500	164500
3	Ravindrabhai Mangeshbhai Patel	5	30	225000	60500	164500

11 - "Ramakantbhai Patel: Innovative farmer for raising socio-economic status of Bahurupa"

Name of Farmer	:	Shri Ramakant Patel
Village	:	Bahurupa, Nizar Block
Age	:	37 years
Total Land	:	50 acre own + 30 acre land on lease from villagers
Source of irrigation	:	3 tube well, 1 khet talavadi, 1 deep open well
Major Crops	:	Muskmelon, watermelon, papaya, banana, Pomegranate, onion, cotton, turmeric, sugarcane and Jowar.



- ◆ He became handicapped in accident since last 8 years, but due to his interest and willingness to do something new in agriculture for every day new in agriculture, change all cropping pattern from cereal crops to high valued horticultural crops.

- ❖ From the last year he was started ***muskmelon cultivation cv. Kundan.***
- ❖ In year 2013-14 he cultivated the muskmelon in 8 acres area in the month of February with raised beds along with mulching as well as maintained Fertigation scheduled.
- ❖ Before making beds mix FYM, DAP and Potash than silver polythene spread on beds in 7X3 feet distance.
- ❖ Also used ***NAUROJI fruit fly traps for control fruit flies.***





- ❖ In year 2013-14 he produced **15 tones** of muskmelon per acre and average price **Rs. 18/kg.**
- ❖ Total cost of production 70000 per acre (including land preparation, cost of seed, fertilizer application, plant protection measures, drip irrigation, mulching, harvesting and transport.
- ❖ By this way of cultivation Ramakantbhai got gross return of Rs. 2,00,000/- per acre and net income Rs. 1,30,000/- only in 75 to 80 days.

❖ He has maintained all records i.e. labour sheet, pesticide spray register and Fertigation schedules. Every new technology and new crop 1st coming in Bahurupa through Ramakantbhai.



❖ He also developed good rapports with merchants of Bombay market and they collected their muskmelon from his farm only with higher prices.

❖ Mr. Ramakantbhai is the best example of the proverb: ***“When there is will, a way is always there”***.

❖ ***In his success the role of KVK, Tapi is also memorable. He is also awarded by KVK, Tapi a, NAU, Navsari and District administration for his successful journey towards muskmelon cultivation.***

❖ ***By his efforts total 150 acres of area of the same village came under muskmelon cultivation***

12 - New report of occurrence of Pentatomid bug, *Cyclopelta siccifolia* Westwood (Dinidoridae: Heteroptera) on Pigeonpea in Gujarat, India

Background :

- ❖ The village Ucchamala is situated in Block Vyara of Tapi district. It is located 12 km away from block place, district place and also from Krishi Vigyan Kendra, Vyara.
- ❖ In the year 2010, KVK, Vyara has adopted the village Ucchamala to carry out different extension activities and also to transfer new technologies related to agriculture and allied sector.
- ❖ **Ranjitbhai Hirjibhai Gamit** is a resource person and also an innovative farmer of this village.



Microscopic view of adult

Intervention :

- ❖ KVK, Vyara have been demonstrated a new pigeon-pea variety- '***Vaishali***' released by Navsari Agricultural University, Navsari among farmers of Tapi districts since last 3 years.
- ❖ Regular field visit were also carried out by KVK scientists to record varietal response to pest and diseases.
- ❖ During monitoring, an insect pest was observed by Mr. Ranjitbhai which feed on pigeonpea crop (*Vaishali*) grown by his neighboring farmer.



Adult congregating in colonies on main stem, branches, and leaf rachis

- ◆ He also observed this pest in other 3-4 farmers field
- ◆ Immediately, he visited to KVK, Vyara and inform to **Dr. S.M. Chavan, SMS (Plant Protection)** about the same. Instantly, **Dr. S.M. Chavan, Pravin Kumar Modi, SMS (Horticulture)** and **Dr. N.M. Chauhan, Programme Coordinator**, arranged a field visit to Ucchamala and also nearby villages and noticed the sporadic infestation of unidentified pentatomid bug feeding on pigeon-pea (***Vaishali***).



Adult in colonies congregating on main stem and branches

Impact & Result :


- ❖ SMS (Plant Protection) collected insect samples and send it for identification to Bangalore.
- ❖ Subsequently, the insect was identified as ***Cyclopelta siccifolia* (Westwood) (Dinidoridae: Heteroptera)** by **Dr. C.A. Viraktamath**, Principal Investigator, ICAR Network Project on Insect Biosystematics, Department of Entomology, University of Agricultural Sciences, GKVK, Bangalore.
- ❖ Furthermore, we also take minute observation on behaviour of this insect in field condition wherein it revealed that adults of these bugs were found in colonies congregating on main stem; branches and rachis of leaf (see photographs).



Nature of damage seen on main stem and branches

- ◆ Although, exact numerical count could not be estimated in this ecosystem, there were roughly 150-200 bugs observed within first 1m from the base of plant and these were seen in clusters.
- ◆ It has also been pointed out that the colony may also be so crowded that the bodies of bugs may also overlap and that these insects have pungent odour.
- ◆ Both nymph and adults suck the sap from main stem, branches and rachis of leaf and ultimately plant shows wilt like symptoms (yellowing followed by wilting) (see photographs).
- ◆ Perhaps, this is the first report of infestation of these bugs on pigeon-pea in this ecosystem. We are greatly thankful to Dr. C.A. Viraktamath, for correct identification of the specimen.
- ◆ In infested area, **Dr. S. M. Chavan** suggested farmer for spraying of chlorpyrifos 20 EC, 20 ml per 10 lit of water as a spot application on infested plants and also the nearby few plants for the management of *C. siccifolia*.

13 - Sujitbhai Thagelabhai Chaudhari, an Innovator for Scented Paddy (Var. PRH 10) production in Tribal area of Tapi Districts

Name of farmer	Sujitbhai Thagelabhai Chaudhari	
Village	Sirma, Ta. Vyara	
Total area	5 acre	
Main crop	Paddy and sugarcane	
Seeds given by KVK	Paddy (PRH 10 –scented), 4 kg	
Total area sown	0.24 ha	
Sowing method	line sowing	
Spacing	15 cm intra row	
Season	<i>Kharif 2013</i>	
Total production	1100 kg	
Insect pest infestation / disease, if any	Normal stem borer infestation, no any disease	

Insecticide applied, if any	Phorate 10G
	whole paddy grain milled
Paddy selling rate	Rs.290/- per 20 kg (paddy whole)
After milling	farmer got market price @ Rs. 14.50 per kg in traditional variety, while in case of scented variety (PRH 10) he got @ Rs. 63 per kg



**Straw
production**

Produced 33 % higher than the traditional variety.

This scented rice variety introduced first time in this village by Mr. Sujitbhai. Whole village attracted towards this scented variety. Moreover, five tribal farmers collected seeds from Mr. Sujitbhai by barter method. About 20-25 farmers will adopt same variety in next season. This may be due to constant follow up and live contact of KVK Scientists. Due to continuous and heavy rainfall all of the paddy varieties more or less effected by serious diseases and pests. Due to constant follow up and live contact of the said farmer timely precautions are made and the demonstration field was escaped from diseases and pests epidemics. The cost of cultivation is reduced due to adoption of scientific package of practices and he was able to get higher market price by PHT and scented variety. Looking to the success of Mr. Sujitbhai many other tribal farmers attracted towards PRH-10 variety of paddy alongwith scientific cultivation of paddy.

14. Increase awareness among farmers about biological control of sugarcane Pyrilla by using its natural parasitoid *Epiricania melanoleuca*

Regular field visits were carried out by KVK scientists to record varietal response to pest and diseases. Sugarcane is the major cash crop and ranked second in area of cultivation after paddy. During *kharif*-2014, in the month of August, infestation of sugarcane pyrilla, *Pyrilla perpusella* was observed by the neighboring farmers of Ranjitbhai, Ucchamala on variety **Co 86032**. Immediately, Ranjitbhai visited the field and he observed that the infestation was more in nearby 5-6 farmers' fields (around 2 ha area was heavily infested). On the next day he visited KVK, Vyara and informed **Dr. S.M. Chavan, SMS (Plant Protection)** about the same. Instantly, **Dr. S.M. Chavan** and **Pravin Kumar Modi**, SMS (Horticulture) arranged a diagnostic visit to Ucchamala and observed the heavy infestation of sugarcane pyrilla.

During the diagnostic visit he also told that, in heavily infested areas, along with different life stages of pyrilla, the eggs and cocoons of *E. melanoleuca* were also found. By monitoring such infested areas, first collect the egg masses and cocoons of *E. melanoleuca* along with leaf (with the help of scissors) and release or staple such egg masses and cocoons equidistantly in the field. By this way, awareness among farmers of Ucchamala village was achieved regarding biological control of sugarcane pyrilla by using its natural nymphal-adult parasitoid, *Epiricania melanoleuca*.

Case study-Increase awareness amongst farmers about biological control of sugarcane pyrilla by using its natural parasitoid *Epiricania melanoleuca*



Diagnostic visit at farmers field



Farmersd-Scientis interaction about identification of pyrilla and its nature of damage



Severe infestation of sugarcane pyrilla



Scientist guide frmers about live life stages of parasitoid, *E. melanoleuca*



Method demonstration of installation of egg masses and cocoons of *E. melanoleuca*



Egg mass of sugarcane pyrilla



Egg mass of *E. melanoleuca*



Cocoon of *E. melanoleuca*

15. Integrated approach for Brinjal Cultivation

Name of farmer	Sureshbhai B. Gamit
Village	Ghata
Block	Vyara
Address	At.Po: Ghata, Block: Vyara, Dist. Tapi (Gujarat)
Landholding (in ha.)	5
Irrigated (in ha.)	4.4
Un-irrigated (in ha.)	0.6
Brief about individual / group (about 250 words)	Shri Sureshbhai B. Gamit, born in 1972 in Ghata, Village of Vyara block in Tapi district of Gujarat State. He is educated upto B.Com. and doing job as clerk in Senior Secondary School. He has cultivated 20 bigha lands own. He has grown paddy and sugarcane since long time and take average production of sugarcane (>60 tonne/acre) as well paddy (10-15 tonne/acre). In year 2013-14 he was decided for brinjal cultivation with high-tech system. for that discuss with KVK scientist in the month of March.



Write up on of success story

For cultivation of brinjal he has to booking 11000 seedlings grown in plug trays at NHM model nursery KVK, NAU, Vyara 30 days before planting. During that time he has to cultivate and prepare ridge and furrow with mixture FYM, DAP, Potash, Sardar amin and dripper lines on bed and on the bed spread mulching. Prepare hole on mulching 3.5 feet distance. Spacing between plant to plant and row to row 3.5 feet. at the time of planting dipping of seedling in the solution of bio-fertilizers and bio pesticides *i.e.* Azotobactor, PSB, Potash mobilizer and trichoderma (100 ml each/3ltr. of water) also same drenching to each and every plant through drip. During vegetative growth application of Urea, Amonium sulphate, Potash, 19:19:19 and 0-52-34 fertilizers through Fertigation and during reproductive stage foliar spray through Fertigation application of 0-0-50, 13-0-45 and micronutrients every 15 days interval. After 42 days plants become comes under reproduction and harvest every three day. His highest production 500 kg in a day and minimum 300 kg from 11000 plants. Total 40 picking, average production 300 kg per picking and total production 12,000 kg. Total cost of production of brinjal in two bigha 80,000 and total income 4.20 lakh as well as net income 3,40,000 from 1 acre only in 220-240 days. During whole crop cycle he was relax about labour for weeding and pesticides spray. Whole produced from their farm with well packaged in polybags transferred to APMC, Surat for fetches good price.

During whole 7.5 month only 5-6 spray of chemical pesticides required. Memorable guidelines for that cultivation with less cost and higher return.

Factors responsible for success

Individual efforts, innovativeness, quality planting material, bio-fertilizers and pesticides (Integrated nutrient management) and technical guidance from KVK, Vyara

Impact of success story on other farmers in locality

Mr. Sureshbhai is the progressive farmer who changes his cropping pattern and takes all different crops for getting higher return. For updating his knowledge he refers Agro sandesh (Gujarati publication), periodicals, books and also the KVK scientist. Now, he became an progressive farmer and the best guide for farmers of Tapi for brinjal cultivation. He also developed good rapports with merchants of Surat market with higher prices. By his efforts total 10 acres of area of the surrounding village came under brinjal cultivation.

Impact factors

Before Adoption

After Adoption

Crop / Agricultural Practice

Sugarcane

Brinjal

Yield of crop / product

60.00 t/acre

12.00 t/acre

Sale Value

Rs. 2200/tonne

Rs. 3.5/kg

Input Cost

Rs. 40,000/acre

Rs. 80,000/acre

Labour Cost

Plant protection measures

Total Income

Rs.1,32,000/-

Rs.4,20,000/-

Net Saving/ Net Profit

Rs. 92,000/-

Rs. 3,40,000/-

Duration

400 days

220-240 days

16. Highly beneficial – Preparation of Herbal Hair Oil by Tribal Farm Woman for domestic consumption

1.	Name of Tribal Farm woman	:	Chaudhari Nutanben Pravinbhai
2.	Village	:	Kalakava
3.	Taluka & District	:	Vyara, Tapi, Gujarat
4.	Age	:	49 yrs
5.	Membership details	:	Secretary in Shivshakti Self Help Group, Kalakava and Member in Milk co-operative society
6.	Activities of Tribal Farm woman	:	Works regarding Agriculture & Animal Husbandry, Household work
7.	Family income(Annual)	:	Rs.75000/-
8.	Month & Year of Vocational Training on preparation of Herbal Hair Oil	:	24-26, February' 2014
9.	Technical guidance	:	Krishi Vigyan Kendra, NAU, Vyara, Tapi
10.	Materials/ raw materials used for Herbal Hair Oil preparation	:	Coconut oil, Gingelly seed oil, Castor oil, Aonla, Bottle gourd, <i>Bhrungraj</i> , <i>Brahmi</i> , various Ayurvedic <i>Churan</i> (<i>Jatamasi</i> , <i>Vaj</i> , <i>Nagarmoth</i> , <i>Jethimadh</i> , <i>Agar</i> , <i>Anantmul</i> , <i>Sandal</i>), <i>Jaran</i> , Neem leaves, Henna leaves etc.

11.	Total Cost of Homemade Herbal Hair oil	:	Rs.350/liter
12.	Market Price of different Herbal Hair Oil	:	Rs.800 to1200/liter i.e. Average Rs.1000/liter
13.	Economic Benefits for tribal farm woman	:	Rs.650/liter
14.	Benefit Cost Ration (BCR)	:	1:1.86



17. Integrated Nutrient Management in Okra

Introduction

Tapi district is well known district in India for off season vegetables cultivation specially okra. But excess use of chemical fertilizers and pesticides for taking production in winter season is reason for reduction in growth and yield of okra. As per farmers' feedback, scientist of KVK-Vyara diagnoses cause of reduction in growth and yield of okra. K.V.K. scientists prepared road map to overcome the problem in year-2013.

KVK intervention

To overcome the problem of decreasing production, demonstration on Integrated Nutrient Management technology in okra with application of recommended dose of fertilizers with biofertilizers *i.e.* Azotobactor for nitrogen fixation from environment, Phosphate Solubilising Bacteria (PSB) for solublize phosphorus in soil which fix with soil colloids and unavailable to plants, Potash Mobilizing Bacteria (KMB) for solubilize potash and provide potash in available form to the root zone of the plants (each 3 ltr/acre) drenching around the plants and foliar spray of Novel organic liquid fertilizer (3 ltr/acre) had taken.



FLD on INM in Okra - Input distribution



Effect of INM on yield and quality of Okra

Output

Due to the application of such inputs, there was very drastic change in growth and yield of okra as well as reduction in application of chemical fertilizers, pesticides and fungicides. Results showed as per below table.

Crop	Season	Average yield (q/ha)	Local check (q/ha)	Percentage increase in productivity over local check
Okra	Rabi-2013-14	142	113	25.66
Okra	Rabi-2014-15	90	81	11.11

Outcome

Due to such intervention, reduce cost of inputs *i.e.* chemical fertilizers and pesticides and increase production that's why increase in net income of farmers. Reduction in chemicals application also reduces risk on human health. As a result of INM technology in okra, improve soil fertility as well as reduction in pale yellow gall like symptoms on okra fruit.

Impact

Horizontal and vertical Spreading of Integrated Nutrient Management technology in okra in Tapi district of Gujarat from last two years 2014-15 and 2015-16 as per below table.

Technology demonstrated	Horizontal spread of technology		
	No. of villages	No. of farmers	Area in ha
Integrated nutrient management	20	450	60

18. Dissemination of Pheromone trap technology for mass trapping of paddy yellow stem borer in tribal belt of Tapi district

Introduction

In 1959, Karlson and Butenandt coined the term Pheromone, a chemical that is secreted into the external environment by an animal and that elicits a specific response in a receiving individuals of the same species. Sex pheromone, a type of pheromones, released by one sex only triggers off a series of behaviour patterns in other sex of the same species and thus facilitates mating. The male insects respond to the odorous chemical released by the female. Pheromones have been successfully used in insect control. This is a behavioral method in which the insects positive anemotactic orientation is exploited in making it approach the trap laid. Population control is achieved by destruction of males within the pheromone baited trap.

The traditional use of insecticides continues to be practiced in the control of insect population; the newer methods such as the application of pheromones in the crop protection have gained prominence in the recent years. Since the pheromone have to be made available synthetically for the application in field, there synthesis has attracted considerable attention and played a vital role in their overall development in the integrated pest management. In the present era of organic farming, exclusive dependence on chemical pesticides is not likely to provide sustained solution to all our pest problems. Therefore, safer and effective alternatives to chemical control are needed as a part of interdisciplinary approach to insect pest management, resulting in emergence of new concept i.e. **Integrated Pesticidal Management (IPM)** and pheromone trap is one of the effective components of IPM.



On campus training on IPM in paddy



Off Campus Training



Method demonstration of installation of pheromone traps during off campus training



KVK intervention

The paddy crop is mainly grown in *kharif* as well as in summer season in Tapi districts of south Gujarat. **Of the twenty insect pests recorded as major ones, five pests are of national significance. Among these, rice stem borers have been mainly responsible for keeping the crop under stress over the years and across rice ecosystems in Gujarat and also throughout the country. During PRA survey of adopted villages it was found that, to manage *S. incertulas*, farmers usually opt chemical pesticide as a first line of defense. The massive overuse and frequent misuses of synthetic organic insecticides has led to problems of 3R's viz; Resistance, Resurgence and Residues as well as toxicity hazards to man, plants, domestic animals and wildlife resulting in environmental degradation (Dhaliwal and Arora, 1990). This is often beyond the capacity of the poor farmers. The biological control through natural enemies is an ideal method but it is yet not popular among the farmers and not easily applicable. Moreover, this pest is an internal feeder and so it is not much affected by insecticides. Under these circumstances, Krishi Vigyan Kendra, Vyara has been made an effort to disseminate pheromone trap technology through various extension activities in different villages of Tapi district.**



Distribution of pheromone traps during off campus training



General view of demonstrated field with farmer

Subsequently, **District Rural Development Agency (DRDA) Mission Mangalam**, Tapi district also planned one project entitled '**MARU KHETAR KARE SAT VAKHAT VAVETAR**'. Accordingly, in collaboration with DRDA, we have planned to disseminate pheromone trap technology by giving technical guidance to paddy growing farmers of Tapi district. DRDA selected five villages from five blocks. Thirty farm women were selected from each village. By this way, total 150 farm women were selected from five blocks (Table 1). On and off campus training were also planned in collaboration with DRDA. Six funnel type pheromone traps with 18 *Scirpolures* were distributed to each farm women at free of cost. The total costing of pheromone trap with lures was Rs. 46,800/-.

Subject Matter Specialist (Plant Protection) gave technical guidance through training programmes (on/off) to increase awareness about "**Pheromone trap technology**" among farmers. During training programmes, he mainly emphasized on '**Pesticide Residues**' in different crops due to pesticide load and guide farmers about the different component of IPM *viz.*, cultural practices, mechanical and physical practices; use of botanical pesticides, biological agents and lastly use of chemical pesticides. Consequently, method demonstration was also carried out for operation and installation of pheromone traps during training. Constant follow up visits, farmers meeting, visit to demonstrated plot and other extension activities have been concentrated. Initially, farmers were hesitating in adopting this technology but with constant encouragement, KVK scientists are successful in building up confidence in them. SMS (Plant Protection) also guide farmers about the identification of insect pests of paddy, their bio agents, and also the life stages of both.

Table 1: Details of dissemination of pheromone traps in different villages of Tapi district in collaboration with DRDA during 2014-15

Sr. no.	Name of Block	Name of village	Total beneficiaries	No. of Pheromone traps distributed /beneficiary	Total no. of traps distributed	No. of Scirpolure distributed /beneficiary	Total no. of Scirpolure distributed
1	Valod	Ambach	30	6	180	18	540
2	Vyara	Raygadh	30	6	180	18	540
3	Songadh	Ukhaldra	30	6	180	18	540
4	Ucchhal	Karod	30	6	180	18	540
5	Nizer	Toranda	30	6	180	18	540
		Total	150		900		2700

Table 2: Performance of pheromone trap technology

Sr. No	Name of Block	Name of village	Yellow stem borer infestation				Yield (Q/ha)		% increase in yield	
			% Dead Heart		% white earhead		Demo. Field	Local check		
			Demo. Field	Local check	Demo. Field	Local check				
1	Valod	Ambach	6.4	9.6	5.8	8.7	42.5	39.4	7.87	
2	Vyara	Raygadh	5.8	9.0	6.0	9.4	40.3	36.8	9.51	
3	Songadh	Ukhaldra	4.5	8.5	5.2	7.9	38.5	35.8	7.54	
4	Ucchhal	Karod	6.0	8.8	5.8	9.0	40.5	37.4	8.29	
5	Nizer	Toranda	5.5	8.3	6.2	9.5	38.4	35.0	9.71	
							Average	40.04	36.88	8.58

Output: By adopting pheromone trap technology, grain yield of paddy was obtained higher in demonstrated field (40.4 Q/ha) than local check (36.88 Q/ha) (8.58 per cent increase in yield was obtained than local check) [Table 2].

Outcome: It was concluded that use of pheromone trap is an IPM component which attract maximum number of male moth of *Scirpophaga incertulas* and thereby less damage was observed in field. So, pheromone trap technology can be used as an alternative method to health hazardous chemical pesticides.

Impact: By the principle '**Seeing is Believing**', other neighboring farmers visited to demonstrated field. They also see the effectiveness of this technology and made enquiry about the pheromone traps and also its source of availability. The farmers from neighboring villages were also attracted and associated with the KVK for adopting pheromone trap technology.

19. South American tomato pinworm, *Tuta absoluta*: A New invasive pest recorded first time on tomato in Tapi districts of South Gujarat

South American tomato pinworm, *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) also known as the tomato leaf miner is one of the destructive invasive pest observed for the first time infesting tomato crop in Maharashtra, India. This pest has been classified as the most serious threat for tomato production worldwide. The pest has spread from South America to several parts of Europe, entire Africa and has now spread to India. Plants are damaged by direct feeding on leaves, stems, buds, calyces, young fruit, or ripe fruit and by the invasion of secondary pathogens which enter through the wounds made by the pest. It can cause up to 90% loss of yield and fruit quality under greenhouses and field conditions (**ICAR, Pest Alert News, 2015**).

The pest was initially observed in Pune on tomato plants grown in polyhouse and fields during October 2014. Subsequently the pest was observed in the farmer's fields in major tomato growing districts of Maharashtra *viz.*, Pune, Ahmadnagar, Dhule, Jalgaon, Nashik, and Satara. Severe infestation (>50% plants affected) was observed in several tomato fields.

KVK interventions

Following the reports of Maharashtra and announcement of pest alert of this pest in India from ICAR, New Delhi recent surveys conducted in Tapi district of South Gujarat where maximum seedlings brought from Maharashtra particularly from Nasik region. Pheromone lure specific to *T. absoluta* (Supplier: Pest Control India, Bengaluru: **Commercial name: Catch Tuta-9**) was used along with funnel type pheromone trap to confirm the incidence of the insect in this South Gujarat Ecosystem. Two traps per acre were installed in the tomato growing farmer field. It is noticed that the male adults of this insect was trapped in pheromone trap.

The insect was subsequently identified as *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) by the Insect Identification Service, Division of Entomology, Indian Agricultural Research Institute, New Delhi, India. Moreover, the damage was also observed in field.

This is the first report of occurrence of Tomato pin worm, *T. absoluta* on tomato in Tapi districts of South Gujarat and perhaps in Gujarat state.



Installation of pheromone traps at farmers field for monitoring



**Adults of
Tomato Pin
Worm, *Tuta
absoluta***

Damage on leaf



**Damage
on Stem**



20. Plug Nursery is the key of success in life of Naranbhai

Introduction

Tapi district is well known district in India for vegetables cultivation *i.e.* brinjal, chilli, tomato, cucurbitaceous vegetables, cole crops and onion. But farmers suffer from very long time to availability of quality planting material in Tapi district. **Naranbhai J. Gamit** is 59 years old and retired forester. After retirement he commenced cultivate (October-2013) to his own farm but due to lack of quality planting material he was failed. Due to that he was decided to do something for production of quality planting material for farmers of Tapi district. For that he visited model nursery at KVK, N.A.U., Vyara-Tapi.

KVK intervention

For providing quality planting material to the farmers of Tapi district model nursery established at KVK, Vyara in very well condition and serving quality planting material to the farmers since 2012-13. SMS, Horticulture, demonstrate all procedure, technology and required material for production of quality planting material at KVK, Vyara to Naranbhai. Method demonstration of media mixture, filling and seed sowing done at his farm. Also aware to him about benefits of plug nursery *i.e.* saving of seeds, water, labour *etc.* and earlier comes in reproduction as well as soil born diseases and nematode transfer from one field to another field reduced. Consequently, by the principal *Seeing is Believing* he decided to establish small scale plug nursery for production of quality planting material.

General view of Plug Tray Nursery established by Naranbhai Gamit



Output

He has started nursery (1 acre area) in December, 2013 with two low cost poly house (50 X 15X8 ft) and two net house (50X15X8 ft) (1 lakh plants capacity). From April, 2014 onwards, farmers visited to nursery and advance booked seedlings of different vegetables, flowers and fruit crops grown in plug tray. He has also started production of vermi-compost on commercial basis (300 bag/month capacity).

Results of plug nursery showed as per below table:

Particulars	Year-2014-15	Year-2015-16	Total (lakh Rs.)
Total Cost		5 lakh	
Total seedlings produced	2.40	2.65	
Total income (lakh Rs.)	2.50	2.80	7.06
Vermi compost (kg)		800 bag (40000 kg) (1.76 lakh)	
Farmers benifited	800	1200	

By adoption of this technology started regular income and satisfaction due to provide true to type and quality planting material to the farmers.

Outcome

Due to such intervention reduce rate of mortality and 90-95% plants survive in field and plants came earlier into reproduction. Farmers of surrounding taluka's and Naranbhai also confident and satisfied about quality of seedling grown in plug trays.

Impact

Naranbhai get very handsome income from plug nursery 5.30 lakh only from 24 months and also 1.76 lakh from vermi-compost from one acre area. He also aware to farmers about true to type and quality planting material. He build good rapport in Tapi and surrounding districts. By his effort 100 ha area of surrounding taluka's planted such planting material grown in plug tray. 15 farmers of Tapi district started plug nursery for own use. Horizontal and vertical Spreading of plug nursery technology established by Naranbhai from last two years 2014-15 and 2015-16 as per below table:

Technology demonstrated	Horizontal spread of technology		
	No. of villages	No. of farmers	Area in ha
Plug nursery technology	30	2000	100

*Coming together is
Beginning*

*Teaching together is
Process*

*Keeping together is
Progress*

*Working together is
Success*



 **Visit to KVK, Tapi** 