CONTENTS

KRISHI VIGYAN KENDRA, KATIHAR

INTRODUCTION

Krishi Vigyan Kendra, Katihar established in March 2004 is situated in the district of Katihar in Kosi Zone in the North-East alluvial plain of North Bihar. During short span life of seven years Krishi Vigyan Kendra, Katihar has shown its presence in the district by imparting short and long term vocational training to farmers', rural youth and farm women. The recent technologies for sustainable agriculture were disseminated to the extension personal posted in the district. Front Line Demonstration on oilseeds, pulses and other crops were conducted successfully. This K.V.K. will go a long way for extension activities in the district.

SITUATION

Krishi Vigyan Kendra, Katihar is situated in the south-eastern portion of North Bihar plain between North Latitude Between *25* °32*' and 26* °31*' East Longitude Between 87*° 35 *' and 88*° 35 *'*and about 3 KM from the Katihar Railway Station which falls with in Agro-climatic Zone-II. The climate is sub-tropical humid having mean maximum and minimum temperature between 46^{o}C and 4.10^{o}C respectively. The average annual rainfall in the district is about 1298 mm. The maximum rainfall occurs during monsoon period. The soil of the districts generally sandy to sandy loam having alluvial properties due to three major rivers Mahananda, Kosi and Ganga. Low lying areas have clay loam to clay soils. Up lands shows micronutrient deficiency such as zink, sulphur, Boron etc. The cropping system varies depending on rainfall, land situation and water accumulation in the locality. There are three distinct farming situations having specific characteristic which determine crop sequence/cropping pattern which are : Sandy upland :

Characteristics by nitrogen deficiency and light texture. This situation needs to exploited and suitable agricultural technologies should be tested. Medium lowland : Water accumulation upto 0.5 meter water coupled with acidic and salinity, alkalinity patches and low availability of phosphate and other nutrient should be identified and steps to eliminate the problem should be chalked out. Diara land of Ganga, Kosi and Mahananda. Deep Water areas (Chour & tall) and diara areas of Kosi, Mahananda and Ganga should be identified and measures for suitable cropping pattern should be adopted. The low lying areas of this district has already been replaced by Boro Rice. Suitable varieties and fruitful technologies should be tested. Cultivation of Makhana and Waternuts should be popularized and advanced technologies evolved should be adopted and farmers should be made well acquainted by training and demonstrations.

PROBLEM IDENTIFIED

Bhola Paswan Sashtri, Agriculture College, Purnea organizes Zonal Research and Extension Advisory Committee meeting twice in a year in which Scientists working in Kosi Zone, Extension Officers and Officers of Agricultural Department and progressive farmer's of the zone participate. The problems raised by the farmers and Extension Officers are scrutinized and selected as per mandate. New problems identified are tackled by the scientists posted in the zone. Such meetings should also be organized at KVK Katihar and problems raised by farmers should be solved by the scientists of different discipline.

Apart from the above, problems are being identified at district level Kharif and Rabi Workshops organized by the District Agricultural Officer, other department dealing with farmers problems should be identified and regular and close contact is being maintained.

THRUST AREA

i. Soil test based nutrition management in crop plants of the district
ii. Promotion of Banana , Makhana based farming system and jute cultivation
iii. Promotion and adoption of Integrated farming system for the district
iv. Development of Suitable cropping system for diara ,tal and alkaline land of the district
v. Implementation of women programmes in relation to food, nutrition and drudgery
vi. Technology dissemination through production and supply of plant and seed materials

Krishi Vigyan Kendra, Katihar

Abstract of Training Programme: Action Plan (2013-14)

Discipline	Duration (days)	Participants		
		Male	Female	Total
A. Practicing farmers				
Horticulture	44	278	97	375
Home Science	44		350	350
Agronomy	28	224	101	325
Extension Education	42	261	114	375
Soil Science	31	201	74	275
Total	**189**	**964**	**736**	**1700**

B. Rural Youth				
Horticulture	30	136	64	200
Home Science	26	1	224	225
Agronomy	17	84	41	125
Extension Education	18	69	31	100
Soil Science	13	68	32	100
Total	**104**	**358**	**392**	**750**
C. Extension Functionaries				
Horticulture	4	41	9	50
Home Science	9	78	42	120
Agronomy	26	78	42	120
Extension Education	12	78	42	120
Soil Science	9	78	42	120
Total	**60**	**353**	**177**	**530**
Grand Total (A+B+C) :	**353**	**1675**	**1305**	**2980**

Details of Training Programme-(2013-14)

Details of training programme-(2013-14)													
Discipline	Qrt No. & Month	Thematic area	Course Title``	Duration (days)	Venue off/on campus	Participants trainees (Nos)							
For Practicing Farmers & Farm Women						SC		ST		Others		Total	
						M	F	M	F	M	F	Total	
Horticulture	I April to June 13	Nursery raising	Nursery raising of solaneceous vegetable crops	3	Off	8	2	2	-	13	-	25	
		Grading and standardization	Grading and standardization of solenaceous crops	3	On	9	1	1	4	8	2	25	
		Training and Pruning	Training, pruning and nutritional requirement of Litchi and Mango	2	Off	8	2	1	4	8	2	25	
		Plant propagation techniques	Air Layering in Guava and Litchi	2	Off	9	1	1	4	8	2	25	
		Training on grafting	Production techniques of plant materials	3	On	9	1	1	4	8	2	25	
	II July to Sept.'13	Making banana fiber products	Production technique of banana fiber products	15	On	8	2	1	4	8	2	25	

		Production of low volume high value crops	Production technique of tomato	3	On	9	1	2	3	8	2	25
		Production and management of spices & aromatic plants	Production technology of coriander, Turmeric, Ginger	3	On	9	1	2	3	8	2	25
	III Oct Dec 13	Production of exotic vegetables	Production techniques of rare vegetables	2	Off	9	1	2	3	8	2	25
		Seed production	Seed production techniques of potato	2	Off	7	2	1	4	8	3	25
		Production of low volume high value crops	Management of summer vegetables	2	Off	9	1	2	3	8	2	25
		Production of low volume high value crops	Production technique of tomato	3	On	9	1	1	4	8	2	25
		Grading and standardization	Grading and standardization of solenaceous crops	5	On	9	1	1	4	8	2	25
	IV Jan ,March 14	Layout and management of orchard	Layout of new orchard, pit preparation and use of manures and fertilizers	2	Off	9	1	1	4	8	2	25
		Protective cultivation	Protected cultivation of vegetable crops	2	On	7	2	1	4	8	3	25
Agronomy	April to June 13	Nursery raising	Nursery raising of paddy	3	On	9	1	1	4	8	2	25

	`	Management in Boro rice	To acquaint the farmers with irrigation management in boro rice	2	Off	7	2	1	4	8	3	25
		Storage management of rabi grains	To acquaint the farmers with spoilage of grain in storage and management	2	On	9	1	1	4	8	2	25
		Pulse cultivation	To increase the skill of farmers about mung cultivation	2	Off	7	2	1	4	8	3	25
	July to Sept 13	Nursery management in kharif paddy	To enrich the knowledge of farmers about nursery management of kharif paddy	3	On	9	1	1	4	8	2	25
		Insect and disease management in Paddy	To improve the knowledge of farmers about pest management in paddy	2	Off	7	2	1	4	8	3	25
		Management of arhar crop	To improve the knowledge of farmers about management arhar crop	3	Off	8	2	1	4	8	2	25
	Oct. to Dec. 13	Weed Management in Wheat	Weed Management in wheat	2	On	9	1	1	4	8	2	25
		Irrigation Management in wheat	To increase the skill of farmers about Irrigation Management in wheat	1	Off	8	2	1	4	8	2	25
		Cultivation of rabi puses	To increase the skill of farmers for cultivation of rabi pulses	1	Off	9	1	1	4	8	2	25
	Jan to march,14	Pest Management in Wheat	Plant health Management	2	On	8	2	1	4	8	2	25
		Cultivation of boro rice	To increase the skill of farmers for cultivation of boro	2	Off	9	1	1	4	8	2	25
		Cultivation of maize	To increase the skill of farmers for cultivation of maize	3	On	8	2	1	4	8	2	25
Extension		Formation and management	Gender Empowerment	3	Off	8	2	1	4	8	2	25

Education	April - June, 13	of SHGs										
		Income generation through back yard poultry	Upliftment of economic status of landless/small farmers	3	On	9	1	1	4	8	2	25
		Entrepreneurship Development among Women's	Gender Empowerment	3	Off	8	2	1	4	8	2	25
		System of Rice Intensification	Enhance the productivity of paddy	4	Off	9	1	1	4	8	2	25
		Formation and management of SHGs	To impart knowledge on the self help groups and self sufficiency of women's, landless farmers	2	Off	8	2	1	4	8	2	25
		Utilization of ICT by the farmers	Promotion of Mobile SMS for agricultural advisory services	2	Off	9	1	1	4	8	2	25
	July - Sept., 13	Bee- keeping	Income generation ways of farmers for livelihood security	2	Off	8	2	1	4	8	2	25
		Integrated Pest management	To impart knowledge on IPM	3	Off	9	1	1	4	8	2	25
		Integrated Nutrient Management	To impart knowledge on INM	3	Off	8	2	1	4	8	2	25
		Integrated farming System	To Impart Income generation among small and marginal farmers.	4	Off	9	1	1	4	8	2	25

	Oct. - Dec,13	Entrepreneurial development of farmers	To Impart Income generation among small and marginal farmers for Sustainable Livelihood security.	2	Off	8	2	1	4	8	2	25
		SWI method of Wheat cultivation	To impart knowledge on the System of Wheat Intensification and its importance to increase productivity in wheat crop	2	Off	8	2	1	4	8	2	25
		Productivity enhancement through Bio - fertiliser	To impart knowledge on the use of Bio – fertilisers for improving productivity.	2	Off	9	1	1	4	8	2	25
	Jan. - March, 14	Integrated farming system	To Impart Income generation among small and marginal farmers	2	Off	8	2	1	4	8	2	25
		Formation and management of SHGs	To impart knowledge on the self help groups and self sufficiency of women's, landless farmers	5	Off	9	1	1	4	8	2	25
Home Science	April – June, 13	Preparation of Potato chips, Badi & papad	To develop knowledge and skill of trainees regarding	4	On	-	10	-	5	-	10	25
			Preparation of Potato chips	3	On	-	10	-	5	-	10	25
			Preparation of Badi	3	On	-	10	-	5	-	10	25
		Use of Tomato	To develop knowledge and skill on better utilization of perishable Tomato	3	ON	-	10	-	5	-	10	25

		Preparation of Tomato sauce	3	ON/ OFF	-	10	-	5	-	10	25
		Preparation of Tomato Pickle	3	ON/ OFF	-	10	-	5	-	10	25
	Preparation of Pickle	To develop knowledge and skill of trainees regarding different types of seasonal pickle making	3	ON/ OFF	-	10	-	5	-	10	25
July - Sept, 13	Preparation of Jam/Jellies of mango fruit	To develop knowledge and skill of trainees regarding	3	On/ Off	-	10	-	5	-	10	25
	Preparation of Jam/Jellies of Papita & Guava	To develop knowledge and skill of trainees regarding	3	On	-	10	-	5	-	10	25
		Preparation of Jellies of Guava	3	On	-	10	-	5	-	10	25
		Preparation of Jam of Papaya	3	On	-	10	-	5	-	10	25
Oct. - Dec., 13	Care of children and preparation of some nutritional recepies like weaning food	To develop knowledge and understanding of farm women about preparation of weaning food & care of children	3	ON	-	10	-	5	-	10	25
	Mashroom production and its products	To develop knowledge of mashroom production and its products.	15	ON	-	10	-	5	-	10	25

	Jan. - March, 14	Proper utilization of Aonla	To develop the knowledge and skill of preparation of Amla murabba & pickles	3	ON	-	10	-	5	-	10	25
Soil Science	Apr.'12 to Jun'13	Soil and water sample collection	To develop knowledge and skill of Soil and water sample collection	3	On	8	2	2	-	13	-	25
		Vermicompost	Vermicompost Production Technique	3	On	8	2	1	4	8	2	25
		Bio- Fertilizer	To develop knowledge and understanding and use of bio fertilizer	3	On	9	1	1	4	8	2	25
	July to Sept 13	Fertilizer management	Fertilizer management in kharif crops	3	On	9	1	1	4	8	2	25
		Micro nutrient management	Micro nutrient management in crops	2	Off	8	2	1	4	8	2	25
		INM in paddy	To develop knowledge and understanding about INM in paddy	3	On	9	1	1	4	8	2	25
	Sept to Nov 13	INM in maize	To develop knowledge and understanding about INM in maize	3	On	9	1	1	4	8	2	25
		INM in wheat	To develop knowledge and understanding about INM in wheat	2	Off	8	2	1	4	8	2	25

	Dec 13 to march 14	Organic farming	To develop knowledge and understanding of organic farming	3	On	9	1	2	3	8	2	25
		Soil health management	To develop knowledge and understanding about Soil health management	3	On	9	1	2	3	8	2	25
		Fertilizer management in boro rice	To develop knowledge about Fertilizer management in boro rice	2	Off	8	2	1	4	8	2	25

3. Training for Rural Youth

Discipline	Qrt No. & Month	Thematic area	Course Title``	Duration (days)	Venue off/on campus	Participants trainees (Nos)						
						SC		ST		Others		Total
						M	F	M	F	M	F	
Horticulture	April to June13	Production of low & high value crops	Production technology for summer vegetables	5	On	9	1	1	4	8	2	25
	July to Sept 13	Production and management technology	Seed production coriander & Mangerella	3	On	7	2	1	4	8	3	25
		Protective		5	On	9	1	1	4	8	2	25

	Oct to Dec 13	cultivation	(leaf mulch, straw mulch, polythene mulch etc.)									
	Jan13 to March 14	Plant propagation techniques	Detachment of Litchi, Lemon and Mango grafts from mother plant and planting in nursery	4	On	7	2	1	4	8	3	25
Agronomy	April to June 13	Seed production	To generate entrepreneurship	3	ON	7	2	1	4	8	3	25
	July to Sept. 13	Types of weedicide and precaution taken during teir uses	To assure safe and appropriate application of weedicide	3	ON	9	1	1	4	8	2	25
	Oct. to Dec. 13	Types of sprayer and dusters and their uses	To assure careful handling of these instruments	4	ON	7	2	1	4	8	3	25
	Jan 13.to March,14	Storage of grains	To generate entrepreneurship	3	ON	9	1	1	4	8	2	25
Home Science	April - June, 2013	Tie and Dye	To develop knowledge & skill for subsidiary family income from Tie & Dye	4	On	-	9	-	5	-	11	25

		Painting (Mithila Painting on cloth)	To develop knowledge & skill for subsidiary family income from painting	4	On	-	10	-	5	-	10	25
		Preparation of different types of pickles	To increase knowledge about better nutrition and use of vegetables at the time of glut	3	on	-	10	-	5	-	10	25
	July - Sept., 13	Preparation of Jam & Jellies	To increase knowledge and skill about better use of fruits & vegetable at the time of glut	3	On	-	9	-	5	-	11	25
		Lack of Nutrition and disease caused by them	To increase knowledge about better nutrition and use of vegetable at the time of glut	3	On	-	10	-	5	-	10	25
	Oct. - Dec., 13	Cutting & Stitching of ladies garments	To increase the knowledge & skill and for subsidiary income	3	On	-	9	-	5	-	11	25
		Importance of Kitchen garden & its Management	To increase knowledge & skill for subsidiary income	3	On	-	10	-	5	-	10	25
	Jan. - March,14	Making of Aonla Murabba & Pickle	To make more value added products for higher net return	3	On	-	9	-	5	-	11	25
		Establishment and Management	To improve status of farming community through farmer's club	4	On	9	1	1	4	8	2	25

		of Farmer clubs										
Extension Education	April to June13	Farm planning and budgeting	To improve skill and knowledge upon farm planning	2	On	9	1	1	4	8	2	25
	July to Sept 13	Establishment and Management of Farmer clubs	To improve status of farming community through farmer's club	5	On	7	2	1	4	8	3	25
	Oct to Dec 13	Awareness programmes on different employment generative activities	To improve opportunities among rural youth	7	On	8	2	1	4	8	2	25
	Jan 13to March 14	Establishment and Management of Farmer clubs	To improve status of farming community through farmer's club	4	On	9	1	1	4	8	2	25
Soil science	April to June 13	Vermicompost production	To generate entrepreneurship	3	ON	7	2	1	4	8	3	25
	July to Sept. 13	INM	To assure safe and appropriate application of fertilizers	3	ON	9	1	1	4	8	2	25
	Oct. to Dec. 13	Biofertilizer	To assure careful handling of natural	4	ON	7	2	1	4	8	3	25

			resources									
	Jan 13.to March,14	Organic farming	To generate entrepreneurship	3	ON	9	1	1	4	8	2	25

4 Training for Extension Functionaries

Discipline	Qrt No. & Month	Thematic area	Course Title`` (days)	Dura-tion (days)	Venue off/on campus	Participants trainees (Nos)						
						SC		ST		Others		Total
						M	F	M	F	M	F	
Horticulture	April to Sept 13	Production and management technology of spices	Scope and importance of medicinal and aromatic plants cultivation	2	On	7	2	1	4	11	5	25
	Oct to March 13	Layout and management of orchard	Management of Young orchard	2	On	8	2	1	4	11	4	25
Agronomy	April to June 13	Boro rice cultivation	To increases knowledge about better cultivation of boro rice	3	ON/ OFF	7	2	1	4	11	5	30
	July to Sept. 13	Seed production	Seed production of paddy	2	ON/ OFF	8	2	1	4	11	4	30
	Oct. to Dec. 13	Seed production	Seed production of wheat	2	ON	7	2	1	4	11	5	30

	Jan.13 to March 14	Crop rotation	To increases knowledge about Crop rotation	2	ON	8	2	1	4	11	4	30
Home Science	April to June 13	Lack of nutrition and disease caused by malnutrition	To increases knowledge about better nutrition and use of vegetable at the season	7	ON	7	2	1	4	11	5	30
	July to Sept 13	Women and child care and preparation of weaning food of children	To develop knowledge and understanding of farm women about hygiene	6	On	8	2	1	4	11	4	30
	Oct to Dec 13	Storage of grain	To develop knowledge and skill of trainees regarding storage of grain	7	Off	7	2	1	4	11	5	30
	Jan 13 to March 14	Lack of nutrition and nutrition caused by malnutrition	To increases knowledge about better nutrition and use of vegetable at the season	6	Off	8	2	1	4	11	4	30
Extension Education	April to June 13	Management of Parthenium	Awareness for loss from parthenium	2	On	7	2	1	4	11	5	30
	July to Sept 13	Extension approaches for productivity enhancement	To enhance the productivity	3	On	8	2	1	4	11	4	30
	Oct to Dec 13	Extension Approaches for productivity enhancement	To enhance the productivity	3	On	7	2	1	4	11	5	30
	Jan13 to March 14	Self Help Group and its importance	To development of weaker section from SHG	4	On	8	2	1	4	11	4	30

Soil science	April to June 13	INM	To increases knowledge about INM	3	ON/ OFF	7	2	1	4	11	5	30
	July to Sept. 13	Biofertilizer	Use and benefits of bio fertilizer	2	ON/ OFF	8	2	1	4	11	4	30
	Oct. to Dec. 13	Organic farming	To increases knowledge about Crop rotation	2	ON	7	2	1	4	11	5	30
	Jan.13 to March 14	vermicompost	Production and utilization of vermicompost	2	ON	8	2	1	4	11	4	30

5. Sponsored

Thematic area	Course Title (days)	Dura-tion (days)	Participants trainees (Nos)						
			SC		ST		Others		Total
			M	F	M		F	M	F
Post Harvest Technology	Post harvest management of Vegetables & grains	2	7	2	1	4	11	5	30
Gender empowerment	Formation and management of SHG's	2	8	1	4	1	12	4	30
INM	INM in crops	2	8	1	4	1	12	4	30
Layout and management of orchard	Management of Young orchard	2	8	1	4	1	12	4	30
IWM	IWM in major crops	2	8	1	4	1	12	4	30

6. **Vocational Training**

Thematic area	Course Title (days)	Dura-tion (days)	Participants trainees (Nos)						
			SC		ST		Others		Total
			M	F	M	F	M	F	
Mushroom Production *	Cultivation of Mushroom for the livelihood promotion of Farmers	6	7	2	1	4	11	5	30
Beekeeping*	Production & management of honey	6	8	1	4	1	12	4	30
Vermiculture*	Production of vermicompost	7	8	1	4	1	12	4	30
Grafting and gouty (Planting materials)	Scientific production of planting material of Mango & Guava.	6	8	1	4	1	12	4	30
Seed production	Seed production of paddy and wheat	6	8	1	4	1	12	4	30

*Thematic area to be matched with annual report format

7.

Block level training programme on package of practices for SRI with the collaboration of State Agriculture Department, Govt. of Bihar During Kharif 2013			
Name of Block	Date & Month	Name of Block	Date & Month
Korha	10 May	Falka	11May
Barari	13May	Sameli	14May
Kursella	15 May	Mansahi	16May
Manihari	17 May	Amdabad	18May
Dandkhora	20 May	Pranpur	13 May
Hasanganj	11May	Balram Pur	15May
Kadwa	14 May	Barsoi	17 May
Azamnagar	16May		

8. Frontline demonstration

Season	Crop	Component/Variety	No. of demonstration	No. of area (ha)
Kharif	Paddy	Sahbhagi	30	8
			20	20
	Jute	Jro128	15	5
	Til	Krishna	15	5
	Arahar	NDA-1	-	
Rabi	Wheat	HD-2733	30	8
	Maize	Pendimethline	30	30

	Mustard		Pendimethline	10	10
		Brinjal	Rajendra Baigan 2	15	2
			Sel-1	15	2
		Tomato			1
		Lady finger	Hisar Unnat	15	1
		Oal	Rajendra Oal -1	15	1
		Turmeric	Rajendra Sonia	15	

- Seed and planting material production

Seed			Planting material		
Crop	Variety	Area(ha)	Crop	Qt	Area
Paddy	Sahbhagi	3	Mango	5000	-
Wheat	HD-2733	3	Guava	5000	-
Arhar	NDA-1	1	Litchi	1000	-
			Lemon	5000	-

9 .Extension Activities

Activities	No.	Participants
Field Days	12	1112
Kisan Mela	1	540
Kisan Ghosthi	6	625
Exhibition	2	587
Organisation of special events like world food day, Women in Agriculture day, Parthenium Awareness Week	3	340
Scientist, visit to farmer's field	300	300
Farmer's visit to KVK farm	525	525
Farmer's Meeting	25	672
Animal Health Camp	5	600

10. On-farm trials to be conducted

OFT (Horticulture)

Title : Assessing the technological options for Makhana Based cropping system in terms of yield & net return.

Problem Identified : Makhana is a most popular peculiar crop of Koshi Zone of Bihar. Area under Makhana cultivation is about 13,000ha. in Bihar. In Katihar district Makhana cultivation recently started in field instead of Ponds for the higher yield & profit. But in Katihar district farmers getting Makhana from the field and rest time they are growing Mustard in that field or fallow the land Makhana cultivation in cropping system mode is not popularize and farmers are not aware about the other cropping systems. So that there is an urgent need to popularize Makhana cultivation in cropping system mode.

Hypothesis formulated : Now on the view of above problem this is very important to develop cropping system to Makhana cultivation for the Katihar district farmers. So there is an urgent need to provide suitable Makhana cultivation in cropping system node.

1. Design : RBD
2. Micro farming situation : Irrigated medium to low land.
3. Possible solution to be compared : Increase in yield with the of better utilization of land and net return from the given area.
4. Technical option (TO) :

   TO-1 Farmers practices (Makhana + Mustard)
   TO-2 Makhana + Ber seem
   TO-3 Makhana + Rice + Wheat

5. Source to Technology : Research centre for Makhana- Darbhanga
6. Replication : 10
7. Plot Size : 0.5 acre
8. Duration of trial : 12month
9. Cost of each intervention : 2000/-
10. Total cost of intervention : 20,000/-
11. Out put : Increase in yield & net return/ acre of land.
12. Performance Indicator :
    a. No. of seeds per berry.
    b. Diameter of Berry per plants.
    c. Number of Berries per plants.
    d. Yield (q/ha)
13. Economic Indicator :
    1. Cost of intervention
    2. Net return
    3. B/c ratio
14. Farmers Reaction
15. Feed Back.
16. Approach : Multi disciplinary
    a. Dr. Sunita Kushwah (Horticulturist)
    b. Dr. Sushil Kumar Singh (Agronomist)
    c. Dr. R.K. Singh (Soil Scientist)

OFT (Horticulture)

Title : Assessment of different Bio pesticides against case worm (Elophilla Crisonalix W) and root borer (Donacia delesserti) in Makhana crop.

Problem identified : Euryale ferox Salisb (makhana) is an important aquatic crop, belonging to family Nympheaceas . Makhana seeds are also called as black diamond. Like other crops, Makhana is also attacked by number of insect- pesting is found that case worm and root borers have been found to cause the damage to flower and root organs, respectively. Farmers facing a critical problem of those insect and they came in trouble after uses any chemical. They do not know which chemical is suitable for the Makhana & Micro flora & fauna Aquatic crops have so many other beneficial organisms in the water so there is issue of application of suitable pesticide. Farmers have an urgent need for the suitable recommendation of bio pesticides; those would be safest for the aquatic crops. i.e. Makhana

1. **Hypothesis for mulated :** Now on the view of above problem there is urgent need to a suitable package for the bip pesticide to control / the case worm and root bore in Makhana crop.
2. **Design :** RBD
3. **Micro farming situation :** Medium to low irrigated land.
4. **Possible solution to be compared :** In case in yield with the use of bio pesticide/ in Makhana crop.
5. **Technical option :**

TO-1- Farmers practices (using chemical insecticide)
TO-2- Spraying of 0.3% aqueous solution of neem extract (Neem Oil) in standing crop.
TO-3- Application of 25 Kg Neem cake as basal dose during final preparation of field .

TO-4- Spraying of 0.3% aqueous solution of Neem extract (Neem Oil) in standing crop + application of 25Kg Neem cake as basal dose during final preparation of field.

6. Source of technology: Research centre for Makhana – Darbhanga, Bihar
7. Replication: 10
8. Plot Size: 0.5 acre.
9. Duration of trial: 6 months
10. Cost of intervention: 500/-
11. Total cost of intervention : 5000/-
12. Output: In one acre in yield by the control of insect pest.

13. Performance Indicator:
    1. Percentage of insect infestation.
    2. Percentage increased yield over control
    3. Yield (q/ha)
14. Economic Indicator
    1. Gross income (Rs.)
    2. Net Income
    3. B/C ratio
15. Approach:

Dr. Sunita Kushwah (Horticulture)
Dr. I.N. Sharma (Entomologist)
Senior scientist, BPSAC, Purnea
Dr. Santosh Kumar (Plant pathologist),JRS, Katiahr

OFT (Agronomy)

Title: Assessment of rice-wheat cropping system in Katihar district.

Problem Identified: In Katihar district farmers are taking long duration rice varieties (MTU 7023) which results in lower yield of wheat.

Hypothesis formulated: Now on view of above problem selection of medium duration variety is most important for getting letter yield of rice-wheat cropping system.

Micro-farming situation: Medium irrigated land

Design: RBD

Technical option (TO)

TO-1 - Farmers practice (MTU 7029) paddy followed by wheat

TO-2 - Medium duration paddy followed by wheat

TO-3 - Medium duration paddy (hybrid rice) followed by wheat.

Source of technology: BAU, Sabour

Replication – 10 Farmers

Plot Size - 0.10 ha

a. Performance indicator

    i. No. of effective tillers
    ii. Grain weight
    iii. Straw weight

b. Economic indicator :

i. Cost of cultivation (Rs./ha)
ii. Net return (Rs./ha)
iii. BC ratio

c. Farmer's reaction :
   i. Adoption of technology by different group of farmer
   ii. Risk involved
   iii. Any alternative suggestion from farmers
d. Feed back- to research/extension/policy planning about the performance o f technology :
   i. If do not satisfied the reason for it
   ii. Suggestions for refinement if any

OFT (Agronomy)

Topic :Assessment of time of sowing for better production of rabi maize.
Problem identified: Rabi maize is the major crop of Katihar district. But farmers are facing lower yield due to unfilled grains in cobs when maize is sown earlier(Before 15 oct.)
Hypothesis formulated : In view of above problem time of sowing is the most important to overcome the above problem.
Micro-farming situation : Medium irrigated land.
Possible solution : To improve the grain filling by manipulation sowing time.
Design : Randomized Block Design
Technical option (TO) :
TO-1 = Farmer's Practice (15-20 oct.)
TO-2 = 30 Oct.
TO-3 = 15 Nov.

TO-4 = 20 Nov.
Source of technology : RAU, Pusa
Replication : 10
Plot size : 0.10 ha
Duration of trial : 6 months
Performance indicator :

e. Technical observation
   i. Plant height
   ii. No. of cobs/plant
   iii. No. of grains/cob
   iv. 1000 grain weight (gm)
   v. Grain yield (q/ha)
f. Economic indicator :
   iv. Cost of cultivation (Rs./ha)
   v. Net return (Rs./ha)
   vi. BC ratio
g. Farmer reaction :
   iv. Adoption of technology by different group of farmer
   v. Risk involved
   vi. Any alternative suggestion from farmers
h. Feed back- to research/extension/policy planning about the performance o f technology :
   iii. If do not satisfied the reason for it
   iv. Suggestions for refinement if any

OFT (Home Science)

Title :Dehydration of Mushroom.

Problem: Unscientific preservation of Mushroom then resulting in poor quality & small shelf life.

Details of technology selected for assessment:

TO_1 : Farmer Practice (Washed + cut into small pieces + dry in sun rays)

TO_2 : Washed + cut into small pieces + treated from KMS + dry in sun rays.

TO_3 : Washed + cut into small pieces + blanched (salt) + treated with KMS + dried sun rays.

TO_4 : Washed + cut into small pieces + blanched + treated with KMS + drey into sun rays.

Source of technology : RAU Pusa

Thematic area : Preservation

Performance indicator:

i. Reduce weight
ii. Colour Produce
iii. Keeping quality
iv. Shelf life

Replication: 5 farmers.

Duration of trial: 6 month

Total cost: 10,000/-

Design: RBD

Economic Indicator:

i. Cost of intervention.
ii. Other cost of preparation.
iii. Net return (Profit) in Rs/ unit
iv. B.C ratio.

Farmer's reaction :

i. Adoption of technology by different group of farmers.
ii. Comparison with prevalent practices.
iii. Risk involved.
iv. Any alternative suggestion from the farmers.

Feed Back: To research/ extension/ policy planning about the performance of the technology.

OFT (Home Science)

Title : Assessment the preparation of pickle of Mushroom.

Problem : Mushroom has maximum production at season and it create market glut leading to low market price or create poor quality then develop small shelf life.

Details of technology :

TO_1 : Farmer Practice (Washed + cut into small pieces and used as vegetable.)

TO_2 : Washed + cut into small pieces + blanched + prepared pickles.

TO_3 : Washed + cut into small pieces + blanched +prepared pickle + pickles treated with vinegar (acetic acid)

Source of technology: RAU Pusa

Thematic area: Preservation

Parameter indicator: Shelf life, flavor, keeping quality.

Total cost: 10,000/-

Design: RBD

Replication: 5 farmers

Economic Indicator:

v. Cost of intervention.
vi. Other cost of preparation.
vii. Net return (Profit) in Rs/ unit
viii. B.C ratio.

Farmer's reaction :

i. Adoption of technology by different group of farmers.
ii. Comparison with prevalent practices.
iii. Risk involved.
iv. Any alternative suggestion from the farmers.

Feed Back : To research/ extension/ policy planning about the performance of the technology.

OFT (Extension Education)

Title - To test the effect of Bio- fertilizers on the yield performance of wheat crop.

Problem identified – High dose of fertilizers& Lower productivity of crops

Hypothesis Formulated –
Shifting of wheat crop into Rabi maize due to lower productivity of Wheat and there will be an urgent need of management of Fertilizer technology to improve the structure of soil with proper use of Biofertilisers for appropriate Farming system development

Micro-farming situation:-Medium irrigated land
Possible solution to be compared: To improve the soil and yield of wheat crop
Design: - Randomized Block Design.
Technical option (TO)

T_1 Farmers practice (no use of biofertiliser)
T_2 Seed treatment with Azotobacter and PSB
T_3 Soil treatment wih Azotobacter and PSB

Source of technology: - RAU, Pusa
Replication: - 10 Farmers.
Plot size: - 0.20 ha
Duration of trial: - 5 months
Performance indicator
(a) Technical observation

1. Plant Height
2. No. of tillers/Plant
3. No. of seed/spikelet
4. Yield
5. Net return (Rs/ha)
6. BCR

(b) Economic Indicator

1. Cost of Cultivation
2. Net return
3. BCR

(c) Farmers reaction: -

i. Adoption of technology by different farmers group.
ii. Risk involved
iii. Any alternative suggestion from the farmers.

(d) Feedback: - To research/extension/ policy planning about the performance of the technology.

i. If do not satisfied the reason for it
ii. Suggestions for refinement if any.

OFT (Extension Education)

Title - Varietal evaluation

Problem identified – To Study the comparative performance of different Jute varieties

Hypothesis Formulated –
Decreasing the Jute cultivation area due to non-avaibility of any new jute variety in Katihar district. Cultivated area under r JRO- 524 is more than 75% and there will be an urgent need to replace this variety which is continuing from the era of 50s to save this crop.
Micro-farming situation:-Medium irrigated land
Possible solution to be compared: To improve the fibre percentage and fibre quality of jute crop.
Design: - Randomized Block Design.
Technical option (TO)

T_1 JRO-524 (farmers practice)
T_2 JRO-66
T_3 S-19
T_4 JRO-128

Source of technology: - CRIJAF
Replication: - 10 Farmers.
Plot size: - 0.40 ha
Duration of trial: - 6 months
Performance indicator

(a) Technical observation

1. Plant Height
2. Fiber percentage
3. Fiber quality
4. Yield
5. Net return (Rs/ha)

6. BCR

(b) Economic Indicator

1. Cost of Cultivation
2. Net return
3. BCR

(c) Farmers reaction: -

i. Adoption of technology by different farmers group.
ii. Risk involved
iii. Any alternative suggestion from the farmers.

(d) Feedback: - To research/extension/ policy planning about the performance of the technology.

i. If do not satisfied the reason for it
ii. Suggestions for refinement if any.

OFT (Soil Science)

Title –

To assess the technological option by utilizing Zn & Bo on growth and yield attributes in Paddy (*Oryza sativa* L)

Problem identified –

Paddy (*Oryza sativa* L.) is a leading food grain crop and a staple food for half of the world's population and provides dietary energy and protein up to 2.5 billion people in the world. Rice provides 23% of the global human per capita energy and 16% of the per capita protein (IRRI, 1997). The soils of Katihar district are mostly coarse to medium textured, acidic to neutral in reaction and yellowish white to light gray in colour. In basin shaped flood plains, soils are gray coloured, medium fine textured and shallow to medium deep soils over sand. The up land coarse textured soils are poor in fertility status as compared to low land soils. Fertilizer used in these soils predominantly contains nitrogen (N), phosphorus (P) and potassium (K) with minimum or no use of micronutrients. In Koshi region, micronutrient deficiency, including zinc & B in rice is causing substantial yield losses. Micronutrient deficiencies are not only hampering crop productivity but are also deteriorating quality. So, keeping in view the importance of micronutrient, the present On Farm Trails was undertaken to assessment of the effect of Zn & B on agronomic and biological attributes in rice crop of Koshi resion.

Hypothesis Formulated –

Now on view of the above problem farmers are not getting good return with paddy. They need a technology for improve the production capacity of paddy. They wanted the perfect remedy to overcome this problem. There is an urgent need to the farmers to know about the best package of integrated nutrient management to prove its efficiency.

Micro-farming situation:-Medium irrigated land

Possible solution to be compared:

To improve yield performance of paddy by the use of recommended doses of fertilizers with micronutrients particularly Zn and Bo.

Design: - Randomized block design.

Technical option (TO)

TO_1= Farmers Practice (100 kg N/ha through urea and DAP,
40 kg P_2O_5 through DAP and
20 kg K_2O through Mureat of Potas)
TO_2= TO_1 + Zinck Sulphate @ 25 $kgha^{-1}$
TO_3= TO_1 + Borex @ 15 $kgha^{-1}$
TO_4= TO_1 + Zinck Sulphate @ 25 $kgha^{-1}$ + Borex @ 15 $kgha^{-1}$

Source of technology: - BAU Sabour

Replication: - 10 Farmers.

Plot size: - 0.10 ha

Duration of trial: - 6 months

Cost each of intervention:-Rs.1000/-

Total cost of intervention:-Rs.10000/-

OFT (Soil Science)

Title: - To assess the effect of Iron, Manganese and Zinc foliar application on growth and yield attributes of wheat.

Problem identified –

World health organization reported deficiency of Zinc, Iron , Manganese and vitamin-A in human population of developing countries. Zinc deficiency is the fifth major cause of disease and deaths in these areas. Most of the population of north india depend on wheat for meeting their food requirements. Consumption of wheat which is deficient in Zinc, Iron and Manganese causes nutritional disorders in human beings. The uptake of micronutrients by plants especially Zn, Fe and Mn is influenced by pH, calcium carbonate ($caco_3$) and soil texture. Usually micronutrient deficiency problems are highly found in calcareous soils of arid and semiarid regions. Micronutrient deficiency is also reported in Sandy soils of Koshi region in Bihar. Wheat grown under micronutrient deficient soils has low yield levels and low in micronutrient contents in grains. Consumption of these grains has resulted into malnutrition in human beings. Hence to address the problem of micronutrient deficiency there is need for conducting On farm trial with the title "To assess the effect of Iron, Manganese and Zinc foliar application on growth and yield attributes of wheat".

Hypothesis Formulated –

Now on view of the above problem farmers are not getting good return with wheat. They need a technology for improve the production capacity of wheat. They wanted the perfect remedy to overcome this problem. There is an urgent need to the farmers to know about the best package of integrated nutrient management to prove its efficiency**.**

Micro-farming situation:-Medium irrigated land

Possible solution to be compared:

To improve yield performance of wheat by the use of foliar application of Fe, Mn & Zn.

Design: **-** Randomized block design**.**

Technical option (TO)

TO_1= Farmers Practice (120kg N/ha through urea and DAP,
60 kg P_2O_5 through DAP and
40 kg K_2O through Mureat of Potas)

TO_2= TO_1 + Magnesium Sulphate @ 0.5 %

TO_3= TO_1 + Ferrous Sulphate @ 1.0 %

TO_4= TO_1 + Zinck Sulphate @ 0.5 %

Source of technology: - **BAU Sabour**

Replication: - **10 Farmers.**

Plot size: - 0.10 ha

Duration of trial: - 6 months

Cost each of intervention:-Rs.1000/-

Total cost of intervention:-Rs.10000/-

Output: - Production enhancement through the use of Micronutrients

11. List of Projects to be implemented

Name of the project	Fund expected (Rs.)

12. Scientific Advisory Committee

Date of SAC meeting held during 2010-12	Proposed date
22-06-2012	----------

13. Soil and water testing

	No. of samples to be analyzed
Soil	1500
Plant	-
Manure	-

14. Staff position

Sanctioned	In position	If vacant, since when
Programme Coordinator		Vacant
SMS (Hort.)	Dr. Sunita Kuswah I/C	Filled
SMS (H.Sc)	Smt. Basanti Kumari	Filled
SMS (Agronomy)	Dr Sushil Kumar Singh	Filled
SMS (Ext. Education)	Sri Pankaj Kumar	Filled
SMS (Soil Science)	Dr Rama Kant Singh	Filled
SMS (Plant Protection)		Vacant
Programme Assistant	Swarna Prabha Reddy	Filled
Prog. Asstt. (Computer)		Vacant
Farm Manager	Sri Om Prakash Bharti	Filled
Assistant	Sri Mukesh Kumar	Filled

Jr. Stenographer		Vacant
Driver (Jeep driver)	Sri Dharmendra Kumar (Cont.)	Vacant
Driver		Vacant
Supporting Staff	Sri Arun Kumar Mandal (Cont.)	Vacant
Supporting Staff		Vacant

15. Status of infrastructure

Infrastructure	Complete	Under construction	Not started	Reasons, if not started
Administrative building			Not started	
Trainees' hostel	Completed			
Staff quarter		Under construction		
Demonstrations: i) ii)	IFS, Complete Mushroom Cultivation Unit			

16. Field Study – (Extension Education)

Title of the study: **To study the impact of FLDs on paddy conducted by the KVK**

Objective :

(i) To study the extent of knowledge level of the farmers on paddy technologies
(ii) To assess the adoption level of farmers
(iii) To elicit suggestions and study the constrains in adoption of technologies

Methodology: For the study suitable sample i.e. 20 farmers who participated in FLDprogramme conducted by the KVK in adopted villages during past 3 years will be selected randomly. Similarly equal number of non-FLD farmers will also selected for the study. Thus the total sample will be 20+ 20 respondents. Information will be collected from the farmers by using interview schedules developed for this purpose. Improved practices viz., varieties, INM, IPM etc. related to Paddy, crops which were advocated to farmers during FLD programme will be included for study. Knowledge tests will be developed and administered to the respondents as a part of study.