An unprecedented approach of Rajendra Agricultural University for rehabilitation of agricultural practices in the affected area of Kosi floods (2008)

After the devastating flood due to breach in the embankment of Kosi River, the Rajendra Agricultural University took an initiative to restore the agricultural activities in the flood affected zone. A two tier committee was constituted to collect soil samples and assessment of possibility for growing crops in different soil situations of six districts namely Suapul, Madhepura, Saharsa, Purnia, Araria and Katihar those were severely affected by Kosi flood. Assessment and collection of soil samples from three districts namely Supaul, Madhepura, and Saharsa were carried out by the team of scientists from Bihar Agriculture College, Sabour , whereas another team of scientists from the Faculty of Agriculre, collected the soil samples from Araria, Purnia and Katihar.

The Vice Chancellor was of the opinion that nightmares of Kosi Flood has paralyzed the farming community, hence there is need to revitalize the confidence of farmers and suitable platform should be made to rejuvenate the people who have lost their valuables assets. Accordingly, Sincere efforts were made for effective use of land which was deformed either due to excessive moisture, deposition of sand / silt and water logging in such a way to convert them in means for revenue generation.

Hon'ble Vice Chancellor, Rajendra Agricultural University, Pusa along with a team of scientists visited the flood affected area of three districts namely Supaul, Madhepura and Saharsa and their neighbouring villages during December 15 -16, 2008.

Dr. M. L. Choudhary, Vice-Chancellor, R.A.U., Pusa along with a team of scientists visiting the flood affected area in village Kataiya, block- Basantpur ,

Considering the severity of flood and its aftereffectsit was decided that KVKs of Supaul, Saharsa and Madhepura will make joint efforts for the flood affected area in these three districts. For all round development of the area private public participation can make a line of successes. For this help of local NGOs may be obtained in conducting Participatory Rural Appraisal (PRA). On the basis of PRA, the Programme Coordinator of KVKs Supaul and Saharsa will select farmers from different Panchayats for transferring Technology to improve their degraded land. Area specific model shall be developed that will be ultimately helpful in transferring the technologies in neighbouring villages.

On the basis of Participatory Rural Appraisal (PRA), conducted by Gram Bharti (NGO) and KVK, Raghopur (Supaul), RAU, Pusa, a list of interested farmers was prepared. Farmers of Basantpur, Pratapganj and Raghopur blocks had showed their interest to establish new orchards of Aonla 15 ha and Litchi in 15 ha. Front line demonstrations on maize and sun flower were conducted in 53.8 ha and 4 ha respectively. Cucurbits and Guards were suggested to be raised in 19 ha land, whereas medicinal aromatic plants on 17 ha of land of interested farmers.

Scientist of KVK, Raghopur, Supaul along with NGO workers interacting with the flood victims

Similarly village namely Dhabauli, under Patarghat block of Saharsa district, where flood disaster occurs with 5-5½′ water stagnation and there is partial siltation at some patches is selected for integrated farming approach. Farmers are eager to adopt RAU Technologies collectively and showed their willingness to establish new Orchards of Mango in 30 acres, Banana in 5 acres, cultivate vegetables in 17 acres, adopt Fisheries in 22 acres, grow Makhana in 7 acre and take Medicinal & Aromatic Plant in 25 acres land. Besides these 10 farmers desired to start bee keeping with 5 boxes, where as 5 farmers are willing to have dairy with 5 milch animals each.

Nature of Damage

I) Fields under excessive soil moisture condition

Instead of waiting for the field to dry up for normal sowing and planting operations, KVKs of Supaul, Saharsa and Madhepura have provided Zero tillage machine for sowing wheat in the area. University took initiative in conducting front line demonstrations (FLD) on maize in about 145 ha, Sunflower in about 11 ha and vegetables crops like Bhindi, Lobia and Chillies in about 25 ha of land in flood affected areas of districts Supaul, Saharsa and Madhepura, where water has been receded and fields are under cultivable condition.

Field after recession of flood water

II) Sand deposited land

In the area where sand deposition is lesser (1-1.5'), without wasting time to level the field, immediate action has been taken to raise the vegetables of cucurbitaceous family and other suitable crops like watermelon, muskmelon. RAU has arranged the inputs. Interested farmers are adopting the RAU technology and bumper crop were taken.

In the area having less sand deposit, University may also try to establish orchards of Mango, Aonla, Litchi etc. Interested farmers can adopt the RAU technology by investing their own cost. University may try to arrange the suitable

saplings/seedlings for interested farmers and can approach local administrations for facilitating the resource and arrangement of life saving irrigations for planted crops.

III) Water logged area

In area where water will stagnate upto month of April- May 09, efforts shall be made to develop it for fish culture. Beside these some perennial water stagnated area can also be converted in Fish cum makhana culture.

Water logged patch of panchyat Chandpur

IV) Others:

PRA of villages highlights the inclination of farmers towards other income generation activities like bee keeping and dairying.

Successful Approach

To follow up the activities initiated by RAU in Kosi Flood affected area and in order to revitalize the confidences of farmers & set models for development of land which are deformed either due to excessive moisture, sand and/or silt depositions and water logging, a high level committee was constituted by the University.

The committee, visited the flood affected area of two districts namely Supaul and Saharsa on 8th and 09th January, 2009. The committee has critically analyzed the different situations and explored possibilities of conducting FLDs on maize, vegetables and embellishment of new orchards besides general suggestions for improving ongoing activities of KVKs in the two districts Saharsa and Supaul. The district wise descriptions are summarized under following:

Supaul:

The committee visited the area (Banelipatti of Birpur, Supaul) from where Kosi flood water entered in India. The situations have been still abnormal. Till date many people were not able to identify their land. The surrounding villages washed out. Team also visited the damaged Jail of Birpur (in nearby area skeleton of dead animals were laying) and there was massive siltation in nearby area of Birpur airport.

Committee members at site (Baneli Patti, Birpur) from where flood water entered in India

Committee members at village Baisy, Supaul (F.L.D. on zero tillage wheat)

Village Sitapur was selected for FLDs on maize 30 ha area was covered under the crop. During course of discussion with farmers at Sitapur, the role of university in technology dissemination through demonstration was highlighted. It was also informed that the university has limited resources hence it will not be possible to conduct a large number of FLDs and include each and every farmers' field. University will feel pride to provide technology to up-lift the economic condition of the flood affected farming community.

Committee at village – Sitapur, Basantpur, Supaul

At Kataiya village lesser sand deposited land area was identified and FLD on cucurbits and n maize was conducted orchard of Aonla and orchard of litchi, Fish culture are in progress. Farmers of this village were interested in sunflower cultivation but due to non availability of seeds they could not cultivate the same. The Dean, Agriculture instructed PC, KVK, Raghopur to consult different seed companies to supply sunflower seed in this area. Horticulture Scientist has suggested farmers to make attempt to link themselves with NHM/ DHO for facilitating the resource and creating irrigations for planted crops.

Lack of capital, soil deformation, unavailability of technology, non availability of quality seeds and soil testing facilities were common problems raised by farmers.

Kishan Gosthi at village Kataiya, Supaul

A farmers interaction were organised. After farmers interaction the committee that Hon'ble Vice- Chancellor has already initiated sincere efforts to improve the productivity of flood hit area by demonstrating improved crop production technologies to valuable option for lively hoods of affected population. He pointed out the importance of growing horticultural crops like vegetable and medicinal plants, fisheries and bee keeping for the area and stressed on rearing improved breeds of animals for prosperity of rural community.

Saharsa:

In village Saptiyahi 15 acres patch in one cluster was identified for FLDs on maize. The team has visited village namely Dhabauli, under Patarghat block of Saharsa district, where flood disaster occurs with 5-5½ ft water stagnation and there is partial siltation in some pockets. There are 17 numbers of ponds in this village which are not properly maintained and utilized. These ponds can be converted in to sizeable fishery units after certain modification and providing training to the interested farmers. Farmers are eager to adopt RAU Technologies and also showed their willingness to establish new Orchards of Mango & Banana; cultivation of vegetables; adoption of Fisheries and to

grow Medicinal & Aromatic plants. Besides these farmers desired to start bee keeping and showed their willingness to have dairy units with exotic breeds of cows.
Orchards of the area were found severely affected by shoot borer. Replying quarries to farmers the scientists described in detail the methodology to get rid off this problem. He also highlighted the importance of high density plantation and suggested that new orchards of mango (variety Amarpalli) and guava should be raised in this locality by adopting this technology.

The QPM maize cultivation was briefed by Chairman, Agronomy, high lighted the role of university i.e. technology dissemination through demonstration. The Dean, Agriculture, pointed out the importance of single variety orchard, fisheries and bee keeping for the area and stressed on breed improvement through artificial insemination.

To evaluate the further developmental activities carried out by KVKs Supaul, Saharsa and Madhepura the committee visited again the flood affected area of Kosi region on 3rd and 4th February, 2009.Location specific progress is summarized under following:

I) Field under excessive soil moisture condition and area where water has receded and fields are under normal cultivation

All three KVKs of Supaul, Saharsa and Madhepura provided Zero tillage machines to farmers for sowing wheat free of cost. An area of about 58 ha was identified in Supaul district out which in 54 ha FLD on maize and in 4 ha FLD on sunflower was carried out by the University. Similarly in districts Saharsa and Madhepura FLD on Maize in 50 ha, 40 ha area, respectively and Sunflower in 2 ha and 4 ha area, respectively were carried out.

Field awaiting for optimum moisture for sowing of maize at Kataiya (Basantpur of Supaul)


Maize crop at initial stage


Standing maize crop

University arranged the seed required for FLD The entire operations were monitored by the Vice-Chancellor, personally. With few exceptions, successful cultivation of maize rejuvenated the farmer's confidences in all most all the flood affected districts.


Intercrops of cucurbits with maize


FLD on Sunflower

In few pockets vegetable crops like Bhindi (12.5 ha in Supaul, 6 ha in Saharsa and 1.5 ha in Madhepura), Lobia (4 ha in Supaul and 0.5 ha in Madhepura) and Chillies (1 ha in Saharasa) was also sown.Vegetables crop cultivation was monitored regularly and proper scientific information was provided that enable the concerned farmer to struggle from such menaces.

II) In area where water is still stagnated:

Farmers are motivated to take rice crop proper care and Scientist of concern KVK are constantly perusing the and trying raise the confidence of farmers

III) Sand deposited land

Area for orchard establishment and vegetable crop cultivation was finalized in consultation with interested farmers. Cucurbits and Guards were raised in 10 ha land in Supaul district where as in Saharsa and Madhepura districts the acrease was 8.3 ha and 6 ha, respectively. Necessary arrangements were made for providing life saving irrigations to the planted crops.

Water melon crop at initial stage at Kataiya (Basantpur of Supaul)

Standing water melon crop

Crops of bottle guard in sand deposited area

Crop of pumpkin in sand deposited area

Cultivation of cucurbits

Standing Lady's finger crop

Pit digging for plantation of Aonla was initiated and completed in about 0.5 ha area but this operation was discontinued due to filling of the pits by dugout sand due to impact of high velocity wind.On the request of farmers both - pit digging and plantation activities were be carried out simultaneously. Land for new orchards in cluster for Aonla (15 ha) and Litchi (15 acres) have been identified in Supaul district where as area for Mango (4 ha) and Banana 5(ha) have been finalized for Saharsa district.

Pits getting filled up by dugout sand due to impact of high velocity wind at Kataiya (Basantpur, Supaul)

After on set on monsoon the planting operation shall be accomplished and new orchards should be accomplished with modern techniques of irrigation i.e. drip system. The expenditure toward modern system has been calculated and university is trying to link these districts with NHM/ DHO to arrange the suitable irrigation facilities to farmers on payment basis and will approach local administrations for facilitating the resource and arrangement of life saving irrigations for planted crops. University is making attempt to arrange the suitable seedling/ saplings for new orchards.

Suggestions have been made to transplant the slips of aromatic plants (citronella, Palma Rosa, lemongrass etc) and cultivation of aelovera between the rows of cucurbits and newly established orchards. University may arrange the planting materials to interested farmers and may provide training to them. University will attempt to arrange the suitable slips/seedlings for interested farmers on payment basis.

Some of the farmers were also interested in cultivation of Khus in nearby water logged area and also on bunds of water bodies. For extraction of Khus oil they require stainless steel distillation units. Hon'ble Vice Chancellor has extended his kind opinion that after successful cultivation of Khus in reasonable area a stainless steel distillation unit for oil extraction may be installed at KVK, Raghopur which will facilitate the distillation facilities to entire area.

IV) Water logged condition

A group of interested farmers willing to adopt fish culture was identified in Saharsa owning 22 acres water logged area and 7 acres water logged area for makhana cultivation. The farmers were provided suitable fingerlings to farmers to raise their income. In order to disseminate scientific know-how of fish farming among interested farmers trainings on aquaculture at KVK Raghopur, Saharsa and Madhepura were conducted.

Water logged area in Sitapur of Basantpur of Supaul

Water logged area in Kataiya Basantpur of Supaul

V) Others

Efforts were made to strengthen the farmer's economy through popularization of bee keeping may be popularized in mustard growing area of affected districts. For this KVKs of Supaul, Saharsa and Madhepura will be facilitated with 5 bee boxes at each KVK. Interested farmers may obtain training at RAU, Pusa & KVK itself that will help in promotion of bee keeping in the area and ultimately economic conditions of farmers will be uplifted