

Crop Management Strategies in post flood situation of Kosi Region, Bihar

After aerial survey of the flood affected Kosi region on 27th September, following situations have been found for strategic planning:

- i. Pre-rabi cultivable area
- ii. Rabi cultivation
 - (a) Normal (up to November)
 - (b) Late (after December)
- iii. Excessive soil moisture condition
- iv. Waterlogged
- v. Sand-casted land

(i) Pre-rabi cultivable area

Where flood water recedes by first week of October:

- From last week of September onward in uplands, Toria (Panchali, Bhawani, R.A.U.-17, T-9 and B.R.-23) can be sown.
- Lands which have excessive moisture during October, without irrigation facility, rabi crops like, gram (Pant G-114, RAU-52, Pusa-256 and C-235), lentil (BR-25, Arun), lathyrus and bakla etc can be taken .
- Fodder maize, berseem and cowpea + fodder sorghum (MP chari), cowpea + mustard can also be taken as fodder crops.

(ii) Rabi cultivation

(a) Normal (Where water recedes up to November)

- The area with low lands water stagnation upto 15th October, fields will continue to wet during October-November. Instead of waiting for the field to dry up for normal ploughing and planting operations, rabi sowing of wheat may be taken up with Zero Tillage Machine. Lentil can also be sown with ZT machine.
- In uplands with irrigation water availability crops like. Winter Maize, Potato, Onion, Sweet Potato and Vegetables can be sown.
- Different crops (varieties and duration) to be grown during rabi season after receding of water are :

Mustard	-	Pusa bold, Varuna, Rajendra anukul, Rajendra suphalam, RAURDL02-01, RAURD1002, RAURD9403
Potato	-	Kufri Chandramukhi (80-90 days), Kufri Ashoka, (80-90 days), Rajendra Aloo-3 (75-85 days), Kufri Pukhraj (80-90 days)
Wheat	-	K0307 (Satabdi), HD2824, HD2733, PBW443, PBW343, HUW468, HP1761 (Jagdish), NW1012, HW2045, DBW14, NW2036, NW1014, HP1744 (Rajeshwari), HP2643 (Ganga), RAJ3765, HD2888, MACH6145, KRL19
Winter maize	-	Laxmi, Devki, Hi Starch, Ganga-11, Rajendra hybrid maize- 1,2, Saktiman-1,2,3,4
Barley	-	Rainfed – Ratna, K-125, Azad, BR-31 Irrigated – Jyoti, DL-36, Ranjeet, BR-32 and Ratna.
Pulses	-	Lentil : BR25, Arun, PL-406, PL77-12, Rajmah : PDR-14, DTL-62, HUL-57, KLS-218 Peas : Malviya-15, Adarsh, HUDP-15, Swati, Hariyal
Fodder	-	Berseem, Jai, Napier grass, Para-grass
Seed spices		Dhania : Rajendra Swati, Pant Haritima Methi ; Rajendra Kanti, HM444 Mangrail Rajendra Shyama, Azwain : Rajendra Muni,
Tuber crops		Sweet Potato Rajendra Sakarkand-5,35, 43, 47, Cross-4, Subhadra Misrikand Rajender misrikand-2
Vegetables		Onion – N-53, Agrifound Light Red Garlic – Yamuna Safed-2, G-1, G-50, G-323, G-282
Cauliflower		Early Variety : Patna early, Kuanri, Pusa Dipali, Pusa Katki Mid Variety : Aghani, Pusi, Patna Main, Pusa Subhra Late variety : Maghi, Snowking, Pusa Snowking-1, Pusa Snowball-16,
Cabbage	-	Late and Mid:Late drum head, pusa drum head, pusa mukta, questo
Radish	–	Pusa Himani, Pusa Chetki, Japanese white, Jaumpuri, Punjab ageti, Kashi ,sweta, Kashi hans
Palak	-	Pusa Hareet, Al-green
Methi	-	PEB
Coriander	-	Pant dhania-1
Carrot	-	Pusa Kesar, Pusa Meghali, Naintes
Tomato	-	DVRT-1, DVRT-2, H-86, Pusa Gaurav, Pusa Hybrid-1, Vaishali, Rupali, Pant-T3, Arka vikas, Utkal Pallavi, Pusa Hybrid-2, Pusa Hybrid-4, Uttkal Kumari, Swarn Baibhav, Swarn Naveen, Swarn Lalima
Chilli	-	Pusa sadabhar, Pusa Jwala, Pant C-11, Jawahar 218, /
Capsicum	-	California wonder, Bharat, Indira
French Bean	-	Swarn Priya, Swarn Lata, Arka Komal, Pant Anupama

Vegetable Peas-	Arkel, Kashi Nandini (VRP-5), Kashi Uday (VRP-6), Kashi Mukthi (VRP-22), Azad-P1, Azad-P3, Pant Matar-2, Swarn Mukti,
Cowpea	- VRCP-1, VRCP-2, VRCP-3, VRCP-4

(b) *Late* (Where water recedes after December)

Boro Rice	- Gautam, Dhanlakshmi, Richaria, Prabhat, Pusa-834, Pusa-44
Spring Maize	- (15th Feb.- 20th April) : Suwan, Ganga-11, Shaktiman-1 &2
Sunflower	- (15th Feb.-10th March) : Surya, Moden, CO-1, Paradebik
Til	- (Feb.- March) : Krishana, Kalika
Moong	- (15th March- 10th April) : Pusa Vishal, Samrat, PS-16
Urd	- (15th March- 10th April) : T-9

Fruit Crops

- Older trees of Mango, Litchi, Guava or Jack fruit that have become lop sided due to wilting of limbs/twigs should be pruned to make their top uniformed and balanced and spread with carbendazim (0.25%) + Mencozeb.
- To check rotting of roots copper oxychloride (0.3%) and streptomycin (0.025%) need to be applied in the root zone.
- All fruit trees which has suffered from flood for a period of 1-3 months must be painted with Bordeaux Paste (4:4:10) up to height of 5 feet.
- New planting in banana can be taken up from March onwards. The best time of planting of banana is June or start of the rainy season. High yielding varieties like Robusta, Grand Naine, Basrai need to be selected.

(iii) Excessive soil moisture condition

- Broad casting/surface seeding of mustard, lentil, barley and wheat can be undertaken in excess moist soil condition.
- Where timely sowing is not possible, dibbling of maize seed can be done in moist soil.
- Zero Tillage sowing is very ideal for wheat and barley in flood-affected area to save the tillage cost and timely sowing.
- In silt deposited area it is advised that half of the recommended dose of nutrient should be applied to all the rabi crops due to enriched fertility of the soil.
- In Kosi region, bamboo boring is suggested for irrigating rabi crops due to shallow water table in order to reduce the cost of tubewell.

(iv) **Waterlogged condition**

- Repair of dykes or embankments of aquaculture facilities would need priority for initiating culture operations.
- Sizeable quantities of the chemicals Mahua oil cake, lime and bleaching powder would be required for preparation of the various confined water bodies for fish culture operation.
- In water logged depressional areas, farmers are advised to adopt fish culture. Efforts need to be made for providing suitable species of finger lings like *katla*, *rohu*, *mirgal*, *singhi* and *mangure* for shallow flood water. In deep water situation composite fish culture should be adopted.
- Fishermen dependent for their livelihood on fisheries from rivers or confined waters need to be provided with fishing equipments like nets, boats etc. for continuing their livelihood practices.
- Huge quantity of fingerlings will be required for post flood stocking of water bodies. These fingerlings supply can be provided by the following agencies by mobilizing the various private hatcheries in their respective states or from their own farms : Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar, Directorate of Fisheries, Govt. of West Bengal, Govt. of Tripura, Govt. of Andhra Pradesh, Govt. of Uttar Pradesh and Govt. of Orissa
- The fingerlings of India Major carps should be given priority for stocking as their availability is ensured in the various fish seed production units.
- With the receding water and change in the land configuration, integrated farming system (crop+ fish+ vegetable/ fruits) a long term strategies.

(v) **Sand- casted land**

- In lands badly effected with sand & gravel casting, suitable land treatment need to be carried out with soil amelioration.
- In less affected sand casted soil, radish (alka), palak, methi can be sown with soil ameliorates.
- Different vegetables such as bottle gourd, sponge gourd, pumpkin, bitter gourd etc can be grown in sand casted soil.
- All the vegetables are required to be protected from cold waves and frost through locally available materials likes sarkanda etc.
- Life saving irrigation should be applied as per the need of the crops.