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This is to inform all the Associate Members of JIVAN SAMRIDHI GROUP OF COMPANY, Naharlagun Branch is organizing 01 (One) day Developmental Seminar on 21st May, 2011 at Tossum Hotel, Naharlagun from 1000 hrs onwards.

Therefore, all Associate Members are cordially invited to present in the Seminar positively.

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₹ 3

Prospect of paddy cum fish culture

Dr. Debasis Sasmal & Debasish Borah

Paddy cum fish culture generate gainful employment for both skilled and unskilled youths. In India rice is grown in 43.7 m ha of which about 40 per cent areas are rainfed lowlands, mostly (14.6 m ha) located in the eastern India. The productivity of rainfed lowland rice largely cultivated as mono-crop, is around 1.5 t/ha due to different abiotic, biotic and socio-economic constraints. It can ensure food, nutritional, economic and employment security for farmers. A substantial portion of about 4.5 m ha in the eastern India is suitable for the system. The details are as follows:

Field selection and design

Trench/ fishpond: For construction of fish pond/trench, the topsoil is deposited in the area selected for paddy cultivation to elevate the bed of the paddy plot. The rest-excavated soil is used for construction of perimeter dyke. During construction of the perimeter and lateral trenches a side slope of 1:1 (horizontal: vertical) is to be maintained. On the other hand for the construction of the central pond 1.5:1 (horizontal: vertical) side slope is to be maintained. Inner pond embankment is not constructed to give free access to the cultured fish to the paddy field from the pond/trench.

The perimeter dyke is to be constructed in such a way that it can resist the water current, withstand weather conditions and can give protection to the cultured fish stock. To maintain desired water level in the pond water inlet and out let may be constructed with provision for preventing the escaping of cultured fish and also preventing the entry of unwanted organisms to the fishpond from the out side. Site should be medium deepwater (upto 50 cm water depth) low land. However, 10-20 cm excess water situations are also suitable.

❖ It should be free from heavy flooding.

❖ Farm having clay soil with shaped field with and area for half to one hectare for more is desirable.

Production methodologies

Perimeter trench type: Fish pond/ trench of this type are dug out when the plot is centrally elevated. The trench size should be 1/5th of the total area. Normally depth of the trench is kept at 1.0 m but it may be more based on the topography of the land.

The area of the perimeter dyke is kept within a range of 1/9th - 1/8th of the plot area. The height of the dyke should be minimum 1 m, but it may be more based on the flood level of the area. Normally 0.5 m more height above the high flood level of the locality is suitable for the perimeter dyke.

General design:

Total area of the plot (70 m X 72 m)	: 0.51 ha
Trench/ fish pond	:
Total length of the perimeter trench	: 170 m
Top width	: 6 m
Bottom width	: 3.0 m
Depth of trench	: 1.0 m
Total trench area (6 m X 170 m)	: 0.11 ha.
Dyke:	
Total length of the dyke	: 180 m
Base width	: 3 m
Crest width	: 1 m
Average height	: 1 m
Total dyke area (3 m X 180 m)	: 0.06 ha.

Paddy plot:

Length of the paddy plot	: 60 m
Breadth of the paddy plot	: 56 m
Total paddy area (60 m X 56 m)	: 0.34 ha.

Rice: The package of practices as recommended by the Krishi Vigyan Kendra, Lohit district for both the crops may be followed. Grow high yielding, intermediate height or tall, long duration

photoperiod-sensitive rice varieties with inbuilt tolerance to pest and diseases. Rice varieties such as Ranjit, Rongadoria, Govind, Lachit and Jalashree for Arunachal would be better.

• Apply FYM @ 5t/ha at the time of land preparation.

• Sow in dry condition well before the monsoon using 75 to 100 kg seed/ha. Use a spacing of 20 cm in between rows. Line seeding, preferably dibble seeding using 4-5 seed is desirable. Transplant if required, early by using aged and healthy seedlings.

Apply fertilizer @ 40:20:20 kg NPK/ha during sowing. However, in comparatively shallow water condition, apply 50% N at seeding and the rest after weeding.

Do weeding with finger weeder in dry condition and/or with cono weeder in 5-10 cm standing water. Fill the gap with seedling in sparse area. Avoid insecticides and herbicides. Use sex pheromone traps and light traps to monitor and control yellow stem borer and other insects. Use neem based botanicals @ 1% for controlling stem borer pest.

Fish: Release fingerlings (3-4 inches size) of catla, rohu, mrigal, common carp, silver carp.

❖ Release fish (carps) at 10,000/ha of water area. Among fish species, maintain a ratio of 35% surface feeder (catla and silver carp), 35% column feeder (rohu) and 30% bottom feeder (mrigal and common carp).

❖ Apply cow dung @ 6-10 t/ha and 300-500 kg lime/ha of water in monthly split doses.

❖ Feed the stock daily @ 2% of body weight of fish with a mixture containing 80% of oil cake + rice bran (1:1) and 5% of fish meal.

Other crops: Grow crops such as watermelon, groundnut, sunflower, sesamum, mung bean, cowpea, okra, pumpkin, bitter gourd, poi (Basella)

with limited irrigation from stored rainwater in the micro-watershed.

On bunds vegetables such as okra, Gourd, radish, brinjal and leafy vegetables before and during the wet season can be cultivated. During winter vegetables such as tomato, French bean, radish, bitter gourd, cucumber, cauliflower, cabbage, brinjal, pumpkin and leafy vegetables are also recommended.

Besides all these Agro-forestry, Apiculture, Poultry, Duckery, Goatery are also can be done.

Productivity

❖ Rice-fish farming system can annually produce food crops, fish and meat, eggs besides, flowers, wood and animal feed as rice straw from 0.5 hectare of farm area.

❖ The net income will be '40,000 in the first year. This will increase to 80,000-1,00,000 or more in the following years. Thus, this system increases farm productivity by more than 10 times, and net income upto 20 folds over the traditional system of rice farming. Rice-fish system generates additional farm employment also.

❖ Conversion of very low-lying unproductive land into productive units through proper planning. The system is ecofriendly and its different components like rice, fish, prawn, birds, animal leading to recycling of wastes of one another. Such interactions results in enrichment of soil nutrient status, better crop nutrient and bio-control of weeds and other rice pests and ultimately increase rice yield besides, reduction in pesticides and chemical fertilizers use. The policy is to take every possible step to ensure the return of all resources to the productive system for increasing protein food production. (The writers are scientists of Krishi Vigyan Kendra, Lohit district, Arunachal Pradesh)