

Often, program of usar treatment is started in summers. Usar resistant variety of paddy can be sown after treating the area with soil improver and applying green manure. But often, a question arises if the usar treatment program can be taken in Rabi. In fact, 3 points should be taken care at the time of usar treatment program.

- The area in which soil improver has been used in kharif and paddy crop has been taken.
- The area which has been treated but the paddy crop could not be plant.
- The area which has been treated in Rabi by use of soil improver,

For effective improvement of usar land and maximum yield, best cropping pattern paddy-mustard-green manure and paddy-wheat-green manure should be adopted in usar affected area.

Treatment with best soil improver Gypsum 25 per cent+ farmyard manure at the rate of 10 ton per hectare is beneficial for paddy-wheat crop system.

(1) Area in which paddy crop has been grown after the use of soil improver

For kharif crop, normally soil improver used before kharif season but if harvesting of kharif crop, no crop has been taken in Rabi crop, harmful minerals will come out on the upper surface due to cellular activity and process of soil improvement will not be completed. Hence, it is necessary that Kharif, Rabi and Jayad crops should be grown in treated area regularly so that the effect of salt is restricted to lower level. In Rabi, wheat, mustard, barseem or barley can be taken. In case of higher salt concentration, barley crop is the best to be grown. In the areas where usar patches appears before sowing of rabi crop, gypsum can be used again in such areas. It would be better that soil has been tested from the soil testing laboratory. Since oxidation of pyrite requires sufficient time, it would be better to use gypsum in case of scarcity of time.

A- Cultivation of wheat

For wheat sowing, tillering of field is required after harvesting of paddy and plough the field when the moisture comes out for normal preparation of field.

Selection of variety

Select usar resistant variety of wheat. For this, Narendra 1067, KRL 1-4, KRL -19, KRL 210, 16 and RL 213 should be selected.

Sowing and use of fertilizer

Sowing should be completed by second week of November and keep the seed rate higher by 25 per cent than the normal. It would be better to use recommended fertilizer on the basis of soil testing report. In wheat crop, 25-30kg zinc sulphate and 150 kg nitrogen per hectare should be used. Use full quantity of zinc sulphate and half of the quantity of nitrogen at the time

of sowing. Use remaining quantity of nitrogen at the time of first irrigation in the form of top dressing. If there is deficiency of phosphate and potash in the soil, whole quantity of nitrogen should be used at the time of sowing.

Irrigation

For irrigation, prepare small plots of 15x20 ft for own convenience. For water improvement, best water management is essential. The irrigation applied should not be more than 2 inches. Light irrigation at frequent interval is essential. Take care that water is drained out of the field in 15-20 hours. This requires an efficient water drainage system. All other activities should be carried out normally in wheat crop. Apply first irrigation in water area after 28-30 days of wheat sowing.

B- Cultivation of Barseem

Barseem is the best crop for fodder. Its yield is good in water area. Select Mascovi variety for cultivation of Barseem.

Preparation of field

Cultivation of Barseem requires plain land which is free of weeds. After harvesting of paddy, plough the field when the moisture comes out, level the land by leveller and bury the weeds in soil to rot.

Sowing from last week of September to first week of October is assumed good. Treat the seeds of Barseem with culture before sowing. 2-3 packets of culture are sufficient for 20-50 kg seed sown in one hectare. Mix the solution of $\frac{1}{2}$ kg gur dissolved in water with culture and spray on the seeds. Seeds of kasni weeds are found with Barseem seeds. To separate it, soak the seeds in 1 percent salt solution and throw the seeds swimming on the surface.

Use 25 kg nitrogen and 75 kg phosphate per hectare before sowing for good yield.

C. Cultivation of Barley

Apply irrigation after harvesting of paddy and drain out the water before preparation of field. Prepare the field for sowing by plough when the moisture comes out.

Selection of Variety

Ambar, Jyoti Vijai, Narendra Jao-1, Narendra Jao-3, N.D.V-1173 and Azad variety of oat are recommended for water land.

Sowing and Use of Fertilizer

Oat should be sown in first fortnight of November. 100 kg seed should be used per hectare.

20-25 kg zinc sulphate must be used at the time of sowing in water land. In addition to this, 30 kg nitrogen and 20 kg phosphate should be poured in the

furrows at the time of sowing and 15 kg nitrogen should be used as top dressing at the time of irrigation.

Irrigation

For irrigation, small plots of 15x20 ft and drain for irrigation between two rows of plots should be prepared which can be used for irrigation up to 2 inch only. Because of this, it may have to be irrigated many times. The water should not remain in the field for more than 15-20 hours. There must be proper drainage arrangement for it. Other activities in oat will remain the same.

(2) Area in which soil improver has been used but paddy crop has not been planted.

In such area, continuing water percolation before sowing in Rabi is better. It would be better if dhaincha crop is taken. Use 40 kg phosphate in the form of super phosphate at the time of sowing. Soak seed in the water at the rate of 60 kg per hectare in the night and sow next day. Continue water percolation after sowing. Turn the crop down after 40-45 days and allow the leaves to rot. Complete this process by the end of October so that the preparation of field for wheat can be started in second week of November. Wheat can be grown by above method.

(3) Area in which soil improvement program is to be run in Rabi.

In the area where soil improvement program is to be started in Rabi, get the soil tested in time. Select only that area for soil improvement whose pH value is less than 9.5. The demand of soil improver should not be more 10 MT /hectare Gypsum. In such areas, use soil improver 75% equivalent value of GR instead of 50% GR. Use of soil improver approximately 45 days before sowing of Rabi crop is essential. Gypsum should be sprayed in the field and mix approximately 2 inch deep in the soil by cultivator. Then after fill the field with water and start percolation. If pyrite is used, spray it in the moist field. After completion of oxidation for 8-10 days, fill water in the field and allow percolation. Drain out the water from the field in last week of October and prepare the field in Rabi when the moisture comes out and take wheat crop accordingly.