



Ridge and Furrow Method in Potato Production



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Introduction:

Ridge and furrow is a term used to describe the earthen ridges and troughs that are created by the action of prolonged ploughing, which caused soil to build up in regularly spaced ridges along the length of a field. Ridge and furrow planting system is an effective and simple method for increasing the soil water content (SWC) and improving the water use efficiency in potato farming. In this system, the ridges provide a runoff surface that directs water to the furrows so it can penetrate deeper into the soil as well as reducing the loss of soil water by evaporation from the ridges and extending the period of moisture availability for crops. Therefore, ridge and furrow system has been applied as an innovative approach for increasing the crop water availability, improving soil productivity, and enhancing food security.

Ridge and furrow preparation:

Plough the field twice or thrice with an iron plough to ensure good tilth. Ridged sizes of 10 m² or 20 m² are formed

with 30 m furrow size apart depending on the availability of water and slope of the land.

Spacing:

45 cm X 45 cm between ridges with planting distance at 20 cm apart.

Planting time:

To secure high yields, it is essential to plant the potatoes at the optimum time. The best time of planting is when the maximum and minimum temperatures are from 30⁰C to 32⁰C and 18⁰C to 20⁰C respectively. The following time schedule should be followed for obtaining good yields.

a. Early crop: 25th September to 10th October

b. Main crop: 15th October to 25th October

c. Hills- February for hill terrace or plain and march- April at higher altitudes.

Seed rate:

The whole or cut tubers are planted 15-20 cm apart on the centre of the ridge at a depth of 5-7 cm and covered with soil. The seed rate of potato depends upon the season of planting, duration, seed size, spacing etc. The seed rate is 1.5- 1.8 t/ha for round varieties and 2.0-2.5 t/ha for oval varieties.

Water management:

Irrigate the crop 10 days after planting. Subsequent irrigation should be given once in a week. While applying irrigation, avoid the over flooding which subsequently causes hardening of the soil surface and hampers growth and development of tubers. Apply irrigation up to 2/3 height of the ridges.

Nutrient management:

FYM @ 10-15 t/ha should mixed while ploughing. Half doses of N@110 kg, full dose of P@110 kg and K@220 kg per hectare should mixed at the time of land preparation and remaining half dose of N@110 kg should mixed after 35-40 days

as top dressing during the time of earthing up just after weeding.

Earthing Up:

Proper development of tubers depends upon aeration, moisture availability and proper soil temperature. Therefore, proper earthing up is necessary. Earthing should be done when the plants are 15-22 cm height. The ridges should be broad, loose and high enough to cover up tubers. If necessary, a second earthing may be done after two weeks of the first one.

Advantages:

- ❖ Act as continuous barrier to the free movement of water.
- ❖ The removal of soil along with nutrients is checked to a greater extent.
- ❖ Furrow serves as field drains in areas of heavy rainfall.
- ❖ Crop stand improved by 70-75%
- ❖ Time saving (25-30%) in irrigation (1.5 hr/ha/irrigation)
- ❖ Required 20-25 % lower seed rate
- ❖ Uniform water apply to plant
- ❖ Water saving was up to 25-30%
- ❖ Better crop management

- ❖ Reduced crop lodging
- ❖ Obtained 10-15 % higher yield.

Disadvantages:

- ❖ Unless the land is leveled, distribution of water is uneven.
- ❖ Nearly, 30% of area is lost under furrow preparation.
- ❖ Bunds interfere in working of inter cultivation equipment.
- ❖ More labour is required for field preparation.
- ❖ Possibility of intra-furrow soil erosion.
- ❖ Not suitable in coarse textured soils with high infiltration rates.

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