Potatoes sprinkler irrigated from the Collie River

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POTATOES

Sprinkler Irrigated from the COLLIE RIVER

by
J. W. LEWIS, BSc. (Agric.), Irrigation Adviser

THE highly productive soils of the flats along the Collie River at Roelands are an important source of many of our summer grown potatoes in this State. Large areas are planted year after year, the record being held by Mr. Clarry Cox of Roelands, who has planted potatoes on the same seven acres every season since 1922.

Ground being watered before planting.

About one quarter of the total acreage is irrigated by gravity from the main supply channels which convey water to the irrigation areas, and the remainder is irrigated by pumping from the Collie River. To supply sufficient water for this purpose, water is periodically let down from the diversion dam, which is below Wellington Dam.

A close up of the planting operation.

Planting being carried out after watering.

Potatoes at the early growth stage.
Over the years, much work has been done on the flats, and they have been considerably improved by grading and drainage. Also most of the river banks have been built up to prevent the river overflowing during the winter and damaging the flats.

A panorama of the flats, looking towards the Collie River.

Before planting, the ground must be well prepared, and a green manure crop of oats is usually grown during the off-season. Many growers broadcast the seed on the potato tops before digging the crop the preceeding autumn, and it is covered during the digging operations. This is a precaution against seasonal conditions, for at the completion of digging, the soil could be too wet for machinery. This crop is ploughed in during November or December. Three ploughings are usually necessary, each one progressively deeper, until a total depth of about 8 in. is reached.

The first irrigation takes place 1-2 days before planting, to bring the soil to a suitably moist condition. Subsequent irrigations naturally depend on the season, but on an average, four waterings, each of 1-2 inches/acre, are applied during the growing period. Irrigation is essential to ensure good yields, which average 8 tons per acre.

There is a great deal of work to do on the potato crop during the four months it is in the ground. Apart from irrigating, the ground must be cultivated to mound the earth around the roots of the plant. This is done either with a horse or tractor. Insect pests can be a problem too, and potato moth, cutworm, black beetle and aphides must be sprayed, perhaps several times.

Planting is usually commenced in mid-January, the exact time depending on the season. It may be carried out by hand or machine, and one ton per acre of potato manure is applied at the same time.

A well grown crop.

Digging the potatoes by fork or machine is commenced some time in May, and is completed as rapidly as possible before the winter rains set in. All that remains after the bags are sewn and carted are the grading and marketing operations, and finally the potatoes end on the consumer's table. These potatoes keep well and are sometimes not sold until August or September.

**SPRINKLER IRRIGATION**

By George Gauntlett, B.Sc. (Agric.), Assistant Officer in Charge, Irrigation

In the design of a sprinkler system perhaps the most important feature is the sprinkler itself. The rest of the equipment is to ensure that the sprinkler will perform with maximum efficiency.

The sprinkler is hydraulically designed to control the volume of discharge, the distribution pattern, drop size and its purpose is to supply water to the soil at the required intensity.

It should be robust, dependable, conform to the manufacturer's specifications, ensure an even distribution of water and be reasonably priced.

In any sprinkler the amount of water discharged decreases as the distance from the sprinkler and so it follows that an absolute uniform application is impossible.

This is remedied by overlapping the spray. For calm days this overlap is between 60% and 65% of the wetted diameter. Under windy conditions the overlap must be considerably more. This necessitates a closer spacing of the sprinklers.

A sprinkler must not discharge water faster than the ground will absorb it. For an average loam soil about 0.5 inches per hour can be applied and for sandy soils about 0.7 inches per hour.

Sprinklers are many and varied and the operating pressures range from 5 lbs. per square inch to 100 lbs. per square inch.

To ensure maximum efficiency it should always operate at the pressure stipulated by the designer.

At pressures lower than the stipulation the water is not broken up properly, it remains in larger drops which tend to compact bare soils, the spread is decreased and the distribution pattern is not so uniform.

At higher pressures the water is thrown higher, broken up more finely and more subject to wind action and evaporation losses.

The selection of the right type of sprinkler depends on an analysis of the prevailing conditions.

It should be remembered that doubling the operating pressure will approximately double the fuel consumption or if electric power is used, the power requirements.

In orchards where low branches can interfere with the spray, consideration should be given to the use of the low trajectory sprinkler.

When water of doubtful quality is being used the low trajectory sprinkler will minimise damage to the foliage and only a minimum amount of any spray that has been used is washed off.

Finally, the sprinkler selected should always be used according to the specifications laid down by the manufacturer.

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