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Irrigating dry season crops in the Ord Valley—how to prepare land for sowing

By D. F. BEECH*

The heavy soils of the new Ord River irrigation area pose special problems for irrigation farming. Some of the main requirements in handling these soils are—

- to prepare the land without rises or depressions;
- not to over-work the heavy clays under moist conditions;
- to achieve a complete ground cover by the crop so that competition against weeds is ensured.

As a result of investigations at Kimberley Research Station a "corrugation" method was developed as the best way of irrigating dry season crops in this area. This article describes the method, and its advantages over conventional irrigation systems.

The best way to grow dry season crops of safflower, linseed and rapeseed under irrigation in the Ord Valley is by sowing on to broad flat ridges, separated by small furrows 3 ft. 6 in. apart. This system of sowing is called the "corrugation" method.

Wet season crops of cotton and sesame are normally sown in rows, grown on ridges and furrow irrigated.

This new method of planting has been used successfully at Kimberley Research Station on soils similar to those being developed for commercial farming in 1963. The soils are heavy cracking clays, alkaline in reaction (pH 7.5 to 9.5), which become impermeable upon wetting.

The cropping area at the research station has a general fall of one inch per chain. It is laid out in blocks with an irrigation run of 9 chains, with a supply channel at the top and a drainage channel at the bottom. Water is drawn off the supply channel in 1½ to 2-inch diameter polythene syphons.

Several irrigation procedures have been tested for dry season oil crops at the research station. These include furrow, border check and corrugation designs.

Ridge planting for furrow irrigation permits good drainage, but the land has to be irrigated more frequently and yields per acre are lower. Weeds in furrows are a nuisance. They can be reduced by inter-
Ridge planting for furrow irrigation
Suitable for cotton and sesame

Border-check irrigation for flooding of small bays
Unsuitable for crops liable to water flooding

Corrugation irrigation
Suitable for dry season oilseed crops
A slightly modified three-point linkage combine drill being used for "corrugation" planting of an irrigated dry season oil crop at Kimberley Research Station.

Row cultivation, but can become a major problem if the land is furrow irrigated for a number of years.

**Border check irrigation for flooding of small bays** has been tried, but much more time and money has to be spent in smoothing the land to prevent losses in yield from uneven watering. Low spots cause water-logging and plants on high spots suffer from water shortage. In addition, this method of land preparation can encourage the surface crusting of the soil, thereby reducing plant population during the seedling emergence stage.

**Irrigation using small corrugations** appears to have few of the disadvantages of other methods. Surface crusting is eliminated because the soil is wetted by percolation from the small furrows. Weeds are kept under control by the "solid" drilling of seed.

The corrugation method is used in the United States for growing cereal crops and lucerne under irrigation. The crops are usually drilled and the furrows are put in later, as a separate operation.

It was found at Kimberley Research Station that a slightly modified three-point linkage combine drill can be used to sow, fertilise and corrugate the land in a single operation.

This modification is easy to do. The tynes of a 14 tyne drill are rearranged so that tyne numbers four and 11 are placed in the back row. Then, four-inch extensions are welded to two 15-inch furrowers so that they can be bolted to the two rear tynes and still make furrows below the general planting level. The arrangement is shown in the picture.