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WATER CONSERVATION ON THE FARM

Donnybrook Farmer's Ambitious Undertaking

By R. C. ROWBOTHAM, Horticultural Instructor

There is no sounder guarantee of agricultural prosperity than an adequate supply of good water—a fact that should be fully appreciated at the present time when, following upon an unusually dry season, many farms are already experiencing water shortages. This description of the manner in which Wilfred Dilley and his son Beris, tackled their water conservation problems may serve as an incentive to other South-West farmers in similar situations.

The Dilleys have a mixed farm and orchard property at Upper Capel in the Donnybrook district. To guard against periodical water shortages they decided to dam a broad, rather shallow, creek bed which carried a small winter stream feeding into the Capel River. The average natural depth of the gully was from 6 to 7ft.

but as, according to Mr. Dilley’s calculations, the creek drains an area of about 20 square miles it appeared to be ample to fill a fairly large-sized reservoir.

Excavation was commenced in April, 1953, using a T6 tractor fitted with a 7ft. bulldozer blade. Approximately an acre of excavation was completed that autumn and a wall 12ft. high and 3½ chains long was built across the gully, with wings following the natural curve of the gully running upstream for about five chains. The main retaining wall was 50ft. thick at the base, tapering to about 10ft. in width at the top and was built of good clay well pugged. A spillway was cut at one end of the main wall and this was faced with cemented ironstone.

The work occupied Beris Dilley and his
T6 tractor for about 130 working hours, during which they pushed up about 6,500 cubic yards of earth. When the dam was filled to overflowing it impounded almost seven acres of water which ranged in depth from 12ft. at the dam to about 6ft. higher up the gully. The capacity was estimated at about 11,000,000 gallons.

Being inexperienced in dam construction, the Dilleys soon found that they had made a few mistakes. Firstly, they had not stripped the over-burden before building the walls, and secondly, they had not allowed for the fact that in the bottom of the gully were some old courses of the stream partly hidden in the clay and filled with a porous sandy silt. Through these there was a continuous seepage under the wall.

To remedy these faults it was decided to pump the dam completely dry during the summer of 1953-54, the water being used to irrigate 16 acres of their orchard through a sprinkler system.

The dam was empty by February 11, 1954, and the Dilleys then decided to deepen the whole excavation by about 4ft., strip the walls and reface them to a greater thickness. To effectively seal off the old sand-filled water courses a channel was cut right across the bottom of the dam close to the foot of the main wall. This channel had to be about 7ft. deep and 13ft. wide and was filled with good clay. The foot of the reconstructed retaining wall was extended to overlap and completely cover the outer edge of this filled channel.

The new main wall is now 90ft. thick at the base and 17ft. in height. The wings were also raised about 4ft. and widened.

To enable them to carry out this extra work the Dilleys decided to purchase a larger outfit and this part of the project, which entailed the moving of 14,000 cubic yards of earth was carried out with a TD18 tractor fitted with a 12ft. dozer blade. Beris and the TD18 put in 110 hours working time on this second phase.

The capacity of the dam is now estimated to be about 17,000,000 gallons, but the Dilleys are not yet satis-
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lied. This summer they intend to empty the dam again, deepen the excavation still further to give a 20ft. depth of water at the dam which it is hoped will lift the capacity to something over 20,000,000 gallons.

This they consider should give them sufficient water to irrigate 30 acres of orchard up to three times, depending on the season, and to give them enough water for 30 acres of lucerne yet to be planted, and 10 acres of summer crop potatoes.

To this end they have already installed along the orchard fence 1,300ft. of main line and about 700ft. of portable sprinkler lines which will be added to later.

**LEAD ARSENATE RESIDUES ON EXPORT APPLES AND Pears**

Growers, packers and exporters of fruit are reminded of the serious view taken by the various Health Authorities in the United Kingdom of lead arsenate spray residues on apples and pears. The Ministry of Food, Food Standards Committee, has recently reviewed the position and has recommended that all local Health Authorities uniformly enforce limits of 1.4 parts per million of arsenic trioxide and 2.0 parts per million of lead on apples and pears. It is therefore necessary that growers apply lead arsenate sprays at the minimum effective concentration and wherever possible use alternative sprays. In this respect later sprays are more likely to leave residues than early sprays and in particular lead arsenate should not be applied close to the picking date. It is not possible to set a final date which is necessarily safe as this depends on many factors including the number and the concentration of sprays applied, the amount of fruit growth and the climatic conditions following spraying. The use of an oil spreader is undesirable as it increases the risk of lead arsenate residues.

Growers and packers are advised that if an export inspector detects visible residues of any nature on lines presented for export the entire line will be rejected. Chemical analyses to check the level of residues will be carried out in all States throughout the season.

Every individual grower should realise that in this matter he has an obligation to the industry.

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