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Spray Irrigation in the U. S. S. R.

by
Z. METELSKY

Spraying as a method of irrigation of crops has been most developed in the U. S. S. R. in the so-called regions of unstable water-supply, where irrigation is supplementary to natural precipitations and is usually taken recourse to in the hot and droughty seasons.

Spraying is used there for the irrigation of horticultural, potato and fodder crops and certain other cultivations.

Spray irrigation has turned out to be especially effective on flood-lands, the fertile soils of which are most suitable for many valuable moisture-loving plants. The unevenness of these lands makes surface irrigation difficult but is no obstacle for spraying. The proximity of water makes it possible to supply it with the least expenditure.

In recent years spray irrigation has also come into use in the main regions of irrigated land where it is being used to water cotton crops, lucerne, horticultural crops, tea and other plantations.

Small plots of land are watered with short and medium range sprinkling devices made up of light sectional pipelines with special spray nozzles attached to them.

For areas between 75 to 125 acres more powerful long-range machines are used which are powered from a tractor power take off shaft. Water is supplied to these machines through temporary irrigation canals cut by a ditcher at 90 to 100 yards metre intervals. These machines supply up to 100 cubic yards metres of water per hour to the fields and can irrigate 100 to 125 acres during a season.

Well planned areas of 150–250 and more acres are irrigated by high-duty double-bar sprinkling machines designed by the All-Union Hydraulics and Melioration Scientific Research Institute. These machines are equipped with centrifugal pumps and take water from an irrigation ditch (either a permanent or temporary one) and spray it evenly over a 134 yards wide strip.

The capacity of the double-bar machines's pump is 80 cubic gallons per hour. The machine is mounted on a medium-power caterpillar tractor and is manned by one person. Another person

is needed to every one or two of these machines to regulate the water supply in the irrigation ditches. During a season each machine can irrigate 250 to 300 acres of crops.

In the Pakhta-Aral (Uzbek S. S. R.) state farm, double-bar sprinkling machines are used to irrigate cotton fields and lucerne. The yield of raw cotton on spray-irrigated fields was more than 55 maunds per hectare. As compared with the irrigation of cotton-fields through furrows, in spray irrigation great economy in water expenditure is achieved. To ensure complete utilisation of equipment and water supplies, the fields are watered day and night. Night watering cuts down loss of water through evaporation.

In the central regions of the U. S. S. R. spraying is done with comparatively small quantities of water. In more southern regions spraying in small quantities is used rarely, mainly to accelerate germination of shallow-sown seeds. The usual rate of watering in these regions is above the average (40–60 and more millimetres to each watering).

On fields where the land is uneven, water is supplied to the sprinkling machines through a system of pipelines made up, as a rule, of asbocement pipes. For branchings and water outlets cast iron and ferro-concrete fittings are used.

If the fields lie close to sources of water, mobile pump stations are used and the water is pumped through a system of light thin-walled piping which can be assembled very quickly. The diameter of the pipes are 100–250 and more millimetres. Water from shallow rivers, ponds or canals is pumped by mounted or trailer pumps, powered from a tractor cardan shaft. On large bodies of water floating pump works are used.

Collective farms readily buy sprinkling machines, the cost of which is soon returned by increased agricultural production. Besides, the State supplies sprinkling plants to the collective farms on advantageous terms.

Extensive scientific research work is being conducted in the Soviet Union to facilitate the development of spray irrigation which, undoubtedly, has a great future.

(From the information Officer, U. S. S. R. Embassy in India)