

Area-wide Drainage

herringbone pattern and interception type systems solve drainage problems

Jewell L. Meyer and Clyde E. Houston

Nearly 50 acres of apricot trees in the Patterson area of Stanislaus County were killed when the water table rose to within 3' of the surface in 1955. Several hundred additional acres were threatened by a rising water table.

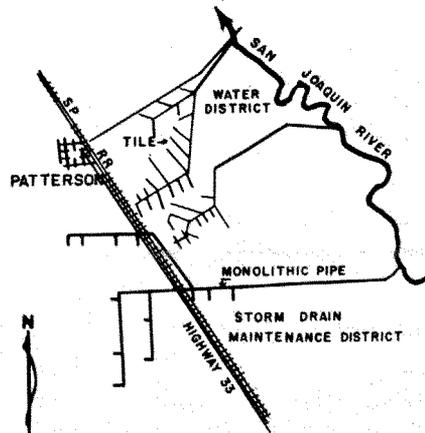
Interpretations of water table fluctuations and determinations of hydraulic conductivity of the soil indicated that an area-wide drainage system installed in a herringbone pattern of 40,000' of 4" laterals and 10,000' of 8" main line should lower the water table to sufficient depth to eliminate water damage to trees. The system was installed with concrete tile laid about 8' deep and with a gravity discharge into the San Joaquin River.

During the exceptionally wet winter of 1957-1958, the water table in the tiled area rose to within 5' of the surface. Rainfall was recorded at 24"; annual average rainfall in this area is 11". However, no trees were lost and farmers and irrigationists have estimated as many as 400 acres of trees were saved by the tile drain.

Investigation for a second project to help drain surface water from an adjacent rich vegetable land was begun in 1956. All water from irrigated crop land

drained to the low end of fields and was ponded on individual farms to eventually evaporate or to percolate into the sub-

Installation diagram of two types of drainage systems near Patterson.



soil and contribute to the water table in the adjacent and lower orchard areas.

Investigation indicated that an interception type drainage system would be necessary to handle the problem. Consequently, 20,000' of main line 30" and 36" diameter monolithic concrete pipe was laid in November, 1958, to discharge



Installing concrete tile drainage system.

into the San Joaquin River and serve as the master drain. Thirty thousand feet of farm laterals 8"-20" in diameter were tied into the master drain line. The entire system was designed to handle irrigation waste water for about 4,000 acres and storms of about 25 years frequency.

Observations the spring of 1959 indicate the interceptor line will handle all surface runoff. During pre-irrigation for tomatoes and beans in April and May over 3,000 acres of the 4,000 acres in the district were being irrigated at the same time. The system carried all excess water with no ponding on individual fields. Rainfall during the winter of 1958-1959 was below normal, therefore, a good test of storm drainage was not possible.

Jewell L. Meyer is Farm Advisor, Stanislaus County, University of California.

Clyde E. Houston is Extension Irrigation and Drainage Engineer, University of California, Davis.

The Patterson Water District was responsible for the tile installation. Stanislaus County Storm Drain Maintenance District No. 1 was responsible for the installation of the monolithic concrete pipe.

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both were operating on the same land; running out of fuel in the tractor, or harvester; trucks getting stuck in wet spots; foreign objects being dug up; adjustments of harvester parts; and rest periods for the crews. The lands were laid out by the harvesters. This required removing the outer rear dual wheel from the trucks.

Potato Injury

Samples of potatoes from several different fields and growers using machine and hand harvesting were examined for injuries. The injuries were classed into three groups as bruised, cut, skinned. Bruised, included any damage to the flesh regardless of the amount; cut, anything sliced or shaved; and skinned, any skinning regardless of amount.

Machine harvested potatoes were

hauled in side or rear dump type trucks and samples were taken as the trucks unloaded into pits at the shed.

Hand harvested potatoes were hauled in stub sacks and in bulk. Samples were taken from the stub sacks in the field before loading onto the trucks and again from the conveyor at the shed when the potatoes were unloaded from the trucks.

A comparison of the same variety of potatoes—White Rose—showed less injury with machine harvesting than with hand harvesting. There was a considerable increase of injury to the hand harvested potatoes between field and shed. Maturity of the potatoes could have been a factor in the difference.

J. R. Tavernetti is Agricultural Engineer, University of California, Davis.

Mike B. Zahara is Assistant Specialist in Vegetable Crops, University of California, Davis.

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fields; 2, complete burning of straw and chaff in the field after harvest; 3, tillage after harvest to cover seeds left in the field; 4, prevention of seed set on regrowth after harvest; and 5, covering of trucks loaded with seed to prevent the scattering of infested seeds or the occurrence of volunteer plants along highways. To be most effective, these measures should be generally practiced throughout seed producing areas.

Oscar G. Bacon is Associate Professor of Entomology, University of California, Davis.

Walter D. Riley is Principal Laboratory Technician in Entomology, University of California, Davis.

Vernon E. Burton is Farm Advisor, Kern County, University of California.

Armen V. Sarquis is Farm Advisor, Fresno County, University of California.

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