WHEN THE SOIL MULCH CONSERVES MOISTURE

CHAS. F. SHAW

The effectiveness of the soil mulch as a means of conserving soil moisture has been under discussion for many years. Early experiments, notably those made by King (3) between 1885 and 1900, showed that the soil mulch was quite effective in reducing the amount of water that was evaporated from the surface of the soil. In one of these experiments reported in 1889, the water table was maintained at a depth of 22 inches below the surface. The soil mulches were produced by removing the required depth of soil, mixing it by hand and replacing it on the undisturbed soil column. The results showed that the mulches reduced the evaporation losses to less than one-half that of the bare soil. On the basis of this and many other similar experiments has rested the conviction that the soil mulch, made by stirring the soil by cultivation, would reduce evaporation losses and aid materially in conserving the soil moisture.

In 1917, Call and Sewell (1) published the results of their studies, showing that at Manhattan, Kansas, mulching the soil not only did not increase the amount of moisture in the soil, but that the mulched plats actually lost more moisture than did the bare, undisturbed plats. Many similar experiments were reported during the ensuing years, the most complete and conclusive being those of Veihmeyer (6) in 1927. Carefully conducted experiments showed that mulching by thorough cultivation at weekly intervals failed to save any soil moisture, the differences in moisture content between the mulched and unmulched plats being insignificant. The water table at these locations was from 18 to 40 or more feet below the surface.

As a result of these later experiments, there appears to be a growing opinion that the mulch can not function as a means of reducing losses of soil moisture by evaporation. The evidence submitted is very conclusive, both for and against the efficiency of the mulches. It should be noted, however, that in each case where the soil mulch was effective the water table was relatively close to the surface, while in those cases where it was ineffective, the ground water level

---

1 Contribution from the Division of Soil Technology, University of California, Berkeley, Calif. Received for publication May 20, 1929.
2 Professor of Soil Technology.
3 Reference by number is to "Literature Cited," p. 1171.