WATER HARVESTING

U.S. CENTRAL GREAT PLAINS FIELD STATION
AKRON, COLORADO

Rome H. Mickelson

In semiarid areas of the Great Plains water for livestock on rangeland has frequently been limiting because of inadequate ground water supplies for pumping and extended drought periods. Natural rainfall is a source of water which could be harvested to provide extra water supplies for livestock. Various types of impervious materials and chemicals applied to the soil surface are being tested for water harvest purposes.

This study was initiated to determine the efficiency, durability, and economic feasibility of different materials on soil surface to harvest the precipitation. The materials under study are sheet metal, asphalt roofing, butyl rubber, bentonite incorporated in the soil covered with pea-gravel and a grass check. The materials were applied on plots 20 x 50 feet on 4 percent slopes. They were installed during the summer of 1968 and one year’s data have been obtained.

Results on water harvested for the rainfall period of 6 months beginning in April of 1969 are summarized in Table 1. A total of 11.4 inches rainfall was received during the period (64 gallons per square yard). Plots with asphalt roofing and butyl rubber gave the highest water yield with 40 gallons per square yard or 62 percent of the total precipitation. The sheet metal plot collected 36 gallons per square yard for a 56 percent efficiency. Bentonite plots increased water yield over the grass check by 10 gallons per square yard, but the treatment was only 25 percent efficient compared with 10 percent on the grass check.

Extra water can be harvested by intentionally trapping snow on the catchment over winter. A snow fence was installed around one butyl rubber plot in fall of 1968. Records on snowfall and snowmelt runoff was kept during the 5-month period beginning November 1, 1968. The results are given in Table 2.

Only 1.08 inches of snowfall was recorded for the period (6.2 gallons per square yard). But the

---

1 Agricultural Engineer, U.S. Department of Agriculture, Agricultural Research Service, Soil and Water Conservation Research Division, Akron, Colorado.