CROP PRODUCTION ON LAND BADLY DAMAGED BY WIND EROSION IN THE GREAT PLAINS

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DURING the past five years the effects of wind action on soils in the Great Plains have been brought to the attention of the people of this country by the yearly occurrence of numerous dust storms. At Dalhart, Dallam County, Texas, which is near the heart of the “Dust Bowl”, there were 61 dust storms reported in 1935, 45 in 1936, and 60 in 1937. Another striking manifestation of the work of wind action in this region is the sand dune area which has developed in recent years as a result of cultivation, grazing, and drought on lands where previously no dunes were present. At least 12 such sites are to be found in Dallam County alone, and numerous others occur in Texas, Colorado, Kansas, Nebraska, Wyoming, North Dakota, and South Dakota.

A sand dune area consists of two distinct parts, namely, the hard eroded land from which soil materials have been removed and the dunes proper. The former lies to the west and southwest, as well as between the dunes, and has been found eroded to depths of as much as 4 feet. The dunes themselves are large piles of sand ranging from 50 to 770 yards long, 30 to 50 yards wide, and from 2 to 30 feet in height.

Early in 1936 the Soil Conservation Service established a project to see whether such dune areas could be stabilized and whether they could be returned to utilization if this were done. Within a short time it was found that a great deal of sand movement was occurring on these areas, and that the size and height of the dunes, rate of wind movement, and condition of the soil material greatly influenced the amount of blowing. One small dune was found to have moved 155 feet during a 10-week period, while a much larger one advanced only 37 feet in 52 weeks.

DUNE STABILIZATION

As is well known, a vegetative cover is the best means of preventing soil material from moving. To stabilize effectively the sand by the establishment of a cover, it first became necessary to decrease the height of the dunes to a point where they could be successfully planted. By utilizing the wind to blow away the very sand that it had built into dunes, it proved possible to lower them to the proper level. Three principal means were employed for this purpose, viz., wind intensifiers, dragpole, and tractor and road grader.

Wind intensifiers of several types proved very efficient in moving sand, large gaps being dug out of the dune by the action of the wind and the sand carried out beyond the crest (Fig. 1). The use of such means to lower dunes did not prove to be practical, however, because

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