NATURAL SUCCESSION OF VEGETATION ON ABANDONED FARM LANDS IN THE ROSEBUD SOIL AREA OF WESTERN NEBRASKA

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ONE of the most interesting and valuable features of natural grassland vegetation is its ability to re-establish itself after it has been disturbed by close grazing or cultivation. The ecologist has made this process the object of careful botanical investigation (17, 18, 23), and the agronomist has paid particular attention to its relation to grazing management. Abandonment of cultivated land on a large scale in recent years in many Great Plains areas has made the natural revegetation process important in erosion control and restoration of the land to hay production and grazing use.

The purpose of this paper is to present further information on the process of natural succession of vegetation on previously cultivated, abandoned farm lands in a semi-arid region. Comparisons are made to conditions in grazed and undisturbed virgin grasslands. A limited consideration is given to seed viability of some native plants. The data show, in general, the time required to secure a grass vegetative cover of agronomic value, and in addition have an ecologic application to the questions of what is the true climax vegetation of the region and how to judge the age of a succession by the species present. The study has a general application to the Brown and Dark Brown Soil Zones (11, 12) from Texas through the Dakotas where abandonment has followed over extension of cultivated crop acreage, although the species in the succession vary somewhat over this large area.

LOCATION OF THE AREA AND ORIENTATION OF THE STUDY

All observations were made in Kimball County, Nebraska, the geographic location of which is shown in Fig. 1. The elevation is about 5,000 feet; the mean annual rainfall is 16 inches; and the mean annual temperature is 47°F. The U. S. Soil Survey Bulletin (14) describes the physiography, climate, and soils of the county. Jackson, Hayes, and Weldon (7) have given detailed descriptions chemical and morphological characteristics of the Rosebud and associated soil series of the study area. Judd and Weldon (9) have discussed the changes occurring

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3 Figures in parenthesis refer to "Literature Cited", p. 556.