SALTING ON DRYLAND FARMS IN NORTH-WESTERN VICTORIA

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SUMMARY

In semi-aria north-western Victoria saltpans developing on farms are associated with seepage of rainwater and of water from earthen channels, and with a consequent rise of groundwaters from beneath the mantle of soils.

Seepage is most active on land with E-W dunes, and it has increased through the replacement of deep-rooted native vegetation with crops, pastures and fallows.

As yet saltpans have developed on only a small proportion of low sites where groundwaters or clays of low permeability lie unusually close to the surface. The extent to which production on interdune flats is being reduced by rising salinity of subsoils is unknown.

Of most significance is a rise of groundwaters causing large saltpans to develop in several districts. Here there is a need to dry out the soils on a district rather than a farm basis, using deep-rooted pastures.

Information is urgently needed on the placement and movement of groundwaters.

I. INTRODUCTION

Salting can be defined as the accumulation of salts in soils to concentrations which restrict the growth of conventional crops and pastures. Although plants differ greatly in their tolerance of salinity, this definition is a workable one in Victoria where the crops and pastures used widely have a low, or at best moderate tolerance. Production is reduced when salts become excessive in any part of the root-zone. Affected surfaces are easy to detect but this is not so for subsoils.

In north-western Victoria, leaching is restricted by the low rainfall. Salts have accumulated in the soils over the centuries with the highest concentrations in the heavier soils of the lower positions, but not usually to levels which support markedly salt-tolerant native vegetation.

Under these conditions salting can be expected when there is a change in the hydrological regime upon removal of the native vegetation. Thus salting developed rapidly when irrigation was begun in several settlements along the River Murray. Here control is based on costly drainage schemes laid out according to mapped soil types and new plantings are not made on the more saline soils.

In recent years farmers and extension workers in the larger dryland farming areas have expressed concern about deterioration of cropping-land by salting of surfaces, but this problem has had no systematic investigation. Following a reconnaissance survey of the region's lands, Rowan and Downes (1963) pointed out that little was known about the incidence of saltpans on farms and that there was no analytical data from affected soils.

The availability of recent small-scale aerial photographs covering most of the region afforded an opportunity to study the distribution, extent and spread of saline surfaces in various topographic situations. This was done in 1966. In addition, field work was done on several farms at sites affected to varying degrees by salting. The distribution of salts and moisture in landscapes was examined in relation to the nature of the soils and vegetation as a basis for consideration of the present and potential extent of deterioration of surfaces and subsoils, and to consider the effects of various practices of management on ecological stability.