

SASKATCHEWAN SOIL SALINITY PROGRAM PROGRESS REPORT ¹

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Several new soil salinity research-demonstration sites were added to the provincial program during 1979 and 1980 making a total of twenty sites now operating. (Refer Figure 1, Table 1). The main thrust during 1979 - 80 was in developing sub-surface drainage research-demonstration.

At most of the sites, basic rotation plans, including continuous grain cropping, extended grain cropping with sweet clover and a two year grain fallow sequence are incorporated into the program. Deep rooted alfalfa and grasses are included as part of the field rotation and are discussed in part 2 of this report.

Comparative cropping sequences have been established on most sites. Basically this involves a comparison of intensive cropping vs a summerfallow crop rotation. Deep rooted forage crop inter-ceptor fields, alfalfa and sweet clover in the farm rotation and continuous cropping to annuals are included in intensive cropping. A five year progress report was presented for three research-demonstration sites by Peters and Ballantyne at the 1980 Soils and Crops Workshop, University of Saskatchewan, Saskatoon and published in the proceedings. Five year progress reports for other sites are in preparation.

The application of nitrogen fertilizers to grass fields on research-demonstration sites was continued in 1979 and 1980. The extremely dry conditions which existed during 1980 in the area south of Moose Jaw made it impossible to get meaningful yields and no harvest was taken. The yield data for 1977, 1978 and 1979 and the three year average, along with residual yields taken in 1979 for nitrogen applications of earlier years are reported in tables 2 and 3. 1979 hay yields of no-till drill seeded alfalfa into tame grass stands are shown in table 4.

Crop tolerance testing of cereal and oilseed crops across a saline gradient has been conducted for five years. Published reports on this aspect of the program are available for the years 1976 through 1979 (see references). The data from the Lowe site for the 1978 and 1979 crop years, include for the first time, regression information of forage crops, and are outlined in the crop tolerance section of this report. The stresses of the 1980 drought conditions masked the salinity stress to such an extent that yield determinations were not taken in 1980.

The extremely dry conditions experienced during fall 1979 and throughout 1980, also put severe limitations on information received from sub-surface drainage work. While several thousand feet of perforated plastic tubing was installed at a number of locations in fall 1979, very few of the sites actually discharged water in 1980. Several aspects of sub-surface drainage for salinity control will be discussed at the Soil Salinity Workshop.

(1) Presented to Soils and Crops Workshop, Saskatoon, Saskatchewan, February 17, 1981.