

waste of organic matter and nitrogen and the lack of opportunity spring stubble burning offers for the control of weeds.

(7) Surface cultivation is sometimes preferable to ploughing.

In the year 1912 on heavy land that was free from weeds and grass as large returns were secured in a second crop after a good fallow from sowing wheat on untilled ground as were secured from the most intensively cultivated field. The practice of ploughing for a second crop is not so necessary in a dry climate on soils in good physical condition as those of us who come from a more humid area are likely to suppose. In the absence of grass and in the presence of a short stubble, soils of good physical condition often produce as large net returns with cereal crops from thorough double discing as from ploughing. This is particularly true in the drier parts of the province on land that is well fallowed every third year.

Summarising all our tests at Saskatoon for three years the average yield for surface cultivated stubble is 15 bushels and 56 pounds of wheat, and from ploughed stubble 18 bushels 23½ pounds. Burning before surface cultivation increased the yield over unburned surface cultivated land 37 pounds per acre; but in a year when the stubble was long the increase from burning was considerably greater than this.

(8) Harrow the growing crop when there is cause for so doing.

Weeds growing in a crop decrease the yield. Moisture that evaporates produces no wheat. Occasionally after a crop is up many weeds may be killed, or evaporation from a too firm soil may be lessened by harrowing. If weeds are present and the surface soil is quite firm it is generally advisable to harrow. If weeds are not present and the soil contains sufficient moisture to produce a good crop harrowing may not be advisable.

Harrowing the growing crop is a practice in which judgment must be used. A thin stand means later maturity. Harrowing invariably pulls out some of the plants, thus leaving a thinner stand. This is particularly true on light, loose soils, or on fields carrying considerable rubbish in the form of stubble. On fields in this condition harrowing, if done at all, must be practiced with care. A light lever harrow with the teeth tilted backward is preferred for this work.

GENERAL OBSERVATIONS ON PLOUGHING STUBBLE LAND.

The best time to plough, whether in fall or spring, and the best depth to plough, whether deep or shallow, varies considerably under different conditions. It has been pointed out that each of these four practices has in different seasons produced the largest yields. The ploughing that proved best generally was the one done at the time the soil was in the best condition for ploughing and at the depth that enabled the best work to be done. It would seem, however, that when land that is to be ploughed is too dry, or when press of other work prevents doing it at the right time, that early discing before ploughing might with profit be practiced.

Early shallow fall ploughing, well worked down, has given us, at Saskatoon, slightly larger average yields than spring ploughing of any depth; but spring ploughing has given us larger average yields than