

Zonation & Variety Testing

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CEREAL VARIETY ZONE CO-ORDINATION IN THE PRAIRIE PROVINCES

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For the past 15 years the Cereal Variety Zone Co-ordination Committee of the Western Canadian Society of Agronomy has functioned to give coherence to the recommendations of the cereal committees of the three prairie provinces. The main purpose of the committee is to co-ordinate at the provincial boundaries the cereal zone boundaries and variety recommendations. The committee consists of six members, two being from each province as follows: Alberta, Dr. A. G. McCalla, University of Alberta, Edmonton, and Mr. W. D. Hay, Dominion Experimental Station, Lethbridge; Manitoba, Dr. C. H. Goulden, Dominion Laboratory of Cereal Breeding, Winnipeg, and Mr. W. J. Breakey, Dominion Experimental Farm, Morden; Saskatchewan, Mr. J. G. Davidson, Dominion Experimental Farm, Indian Head, and Dr. J. B. Harrington, University of Saskatchewan, Saskatoon (Chairman). Two of the previous reports of this committee have been published in *Scientific Agriculture*, namely, in 1933 in vol. 13, pp. 473-475, and in 1936 in vol. 17, pp. 259-263.

The co-ordinating committee, at its last annual meeting, which was in June, 1944, at Saskatoon, adopted the plan of preparing for publication a brief annual report accompanied by an up-to-date cereal zone map of the prairie provinces. It was considered that there was, among the technical agriculturists of Canada, sufficient general interest in cereal zonation to warrant the publication in January or February each year of a co-ordinated picture of the current cereal variety recommendations for the prairie provinces.

In order to have more effective co-ordination of the zones and recommendations which are drawn up and approved by the cerealists of the prairie provinces, the three cereal committees, at the suggestion of the co-ordination committee, have staggered the dates of their meetings and arranged for a representative to attend the meeting of the cerealists of the adjacent province where possible. For example, the Alberta Varietal Zonation Committee, and the Manitoba Agronomists, which includes the Manitoba Cerealists, held their 1944 annual meetings the middle of December, one week before the Saskatchewan Cereal Variety Committee had its meeting. The interchange of representatives at the meetings of the cerealists, although not yet consummated as completely as is desirable, has already been most valuable in the promotion of co-ordination.

Staggering the dates of the meetings and exchanging delegates would not of itself effect co-ordination. The Alberta and Manitoba committees are well aware of the desirability of making no zone boundary change or recommendation that would upset the status quo without first taking up the point with the Saskatchewan Cereal Variety Committee and trying to come to a decision that would be satisfactory to the provinces concerned. Similarly the Saskatchewan cerealists, because their province is adjacent to each of the other provinces, realize the need for synchronizing Saskatchewan zone boundary changes and recommendations with those of Manitoba and Alberta.

ZONES

The cereal variety zones of the prairie provinces follow the soil zones very closely and in Alberta and Manitoba are almost synonymous with the soil zones. These zones are designated by arabic numerals with, in most cases, sub-divisions indicated by letters. The sub-divisions are to accommodate cereal variety recommendations where climatic differences, important to cereal variety growth and ripening, occur. The principal characteristics of the basic soil zones furnish a rough background for varietal recommendations. In Alberta and Saskatchewan the shallow brown soils subject to frequent drought constitute Soil Zone 1. Zone 2 comprises the dark brown soils and in Alberta the shallow black soils, and is less subject to drought. Zone 3 includes the black, deep black and degraded black soils and has much better moisture conditions than Zone 2. Grey and strongly degraded black soils and a relatively short frost-free season characterize Zone 4. In Manitoba Zone 1 is transitional like Zone 2 of the other provinces, Zones 2, 3 and 4 are different types of black soil, Zones 5 and 6 are somewhat comparable to Saskatchewan Zone 4, and Zone 7 comprises wooded areas with soil of high lime content.

VARIETY RECOMMENDATIONS

FACTORS CONSIDERED

There are a number of basic considerations which determine the recommendations of varieties. Some of the more significant factors are the following:

Yield is the most important and itself depends on various inherited and environmental factors. A variety may yield better in Manitoba or Alberta than in Saskatchewan, or vice versa, and it is recommended accordingly. Regardless of its potential yield a variety may not be recommended for a given area if its susceptibility to disease, or weather conditions, etc., makes its use there hazardous.

Length of growing season of a variety is very important where it is likely to exceed the normal frost-free period. For example, only early varieties of wheat and flax would be recommended in the northern parts of Alberta and Saskatchewan. On the other hand, oats with a short growing period do better than late oats in the southern areas of Saskatchewan and Manitoba.

Strength of straw is of chief significance in the moister areas where yields are high, but it is of general importance throughout the West; even in the dry areas occasional crops grow tall and rank.

Reactions to specific diseases are important according to the likelihood of epidemics. For example, stem rust of wheat may cause serious loss in Manitoba and Saskatchewan but the danger is slight in western Saskatchewan and Alberta. To a certain extent the same is true of rust in barley, oats and flax.

Length of straw, bushel weight and resistance to shattering and after harvest sprouting all may be deciding factors under certain conditions.

WHEAT

Thatcher is recommended throughout the prairie provinces which shows that this variety suits widely varying conditions. Regent is not recommended in Alberta nor is it recommended in any adjacent zone of Saskatchewan excepting 3E and in that case it is only considered well suited to the eastern part of the zone. Regent is recommended in all adjoining zones of Manitoba and Saskatchewan. Renown is recommended in Manitoba Zones 3, 4B and 6 but not in Saskatchewan. This is not inconsistent as Renown has yielded comparatively better in Manitoba than in Saskatchewan.

Reliance is recommended for Zone 1B of Saskatchewan and Canus for Zones 1 and 2 of Alberta. These are high yielding sister varieties of similar performance and both are susceptible to rust, which is much more important in Saskatchewan than in Alberta and accounts for the restricted recommendation of Reliance, compared with that of Canus. Somewhat similarly, Marquis and Red Bobs, both susceptible to rust, are recommended in Alberta but not in Saskatchewan excepting for the small northwestern zone 3H. Rust-susceptible varieties are discarded earliest where the rust threat is greatest. Thus no rust-susceptible variety of wheat is recommended in Manitoba, only two are recommended in Saskatchewan and they are restricted to the extreme west, and in Alberta no variety has been discarded because of susceptibility to rust.

As for *durum* wheat, Mindum is recommended for Zones 1 and 2 in Manitoba and for eastern Saskatchewan; Pelissier, which is more drought resistant than Mindum, is recommended for central and western Saskatchewan while in Alberta no durum is recommended. These recommendations are to be expected since the principal reason for using durum varieties in Western Canada has been their resistance to rust.

OATS

Oat recommendations also make a coherent picture, stress being laid on rust resistance in Manitoba, drought resistance plus rust resistance in Saskatchewan, and yield and straw strength in Alberta. In Manitoba, Ajax and Vanguard are recommended in all zones and Exeter in Zones 3 and 7. In Saskatchewan, Vanguard is no longer recommended, it being replaced by Ajax and Exeter which outyield Vanguard under the drier conditions of that province. Banner and Victory, although susceptible to rust, are still recommended in many zones but none of these adjoins the agricultural areas of Manitoba. These varieties are much alike and the recommendation of Banner in Zones 1A, 1B and 2D of Saskatchewan and Victory in the adjacent zones of Alberta, Zones 1 and 2, is probably largely a matter of local preference and does not signify an important divergence in viewpoint. Neither Ajax nor Exeter are recommended in Alberta because rust has not been a factor in oat production and because the older varieties Legacy and Eagle have done well in Alberta as early and late varieties, respectively.

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BARLEY

In discussing barley recommendations two things should be kept in mind. These are (1) the need for drought resistant varieties on the open plains of Saskatchewan and Alberta, and (2) that Newal does best toward the West and North whereas Wisconsin 38 and Plush do best in the East. In Manitoba, Plush, Wisconsin 38, Sanalta and Rex are recommended as feed barleys in all zones. For the adjacent zones of Saskatchewan, Plush and Rex are recommended but not Wisconsin 38 or Sanalta. In Alberta, Newal, Trebi and Sanalta are recommended for Zones 1 and 2; these varieties plus Olli are named for the irrigated areas. In Zone 2, Newal and Olli (North only) are recommended and the same varieties are recommended in Zones 3 and 4. In Saskatchewan, Prospect and Rex are recommended for Zone 1, and Newal, Plush and Regal along with Rex in the Zones 2D, 3E and 4B which are adjacent to Alberta. In Alberta the performance of Newal has been so satisfactory that it is the only smooth-awned variety recommended. It would seem that greater co-ordination of feed barley recommendations at the Alberta-Saskatchewan boundary should be sought. However, the present apparent lack of co-ordination is not serious considering that conditions in eastern Alberta are not identical with those of western Saskatchewan.

For malting barley O.A.C. 21 is recommended in all zones of Alberta, the northeastern and eastern zones of Saskatchewan, and all of the Manitoba zones excepting the southwestern region. In addition Olli is recommended for Zones 3 and 4 of Alberta, and Mensury is an alternative to O.A.C. 21 in Manitoba. The principal lack of co-ordination here is the recommendation of O.A.C. 21 for the open plains zones of Alberta but not of Saskatchewan. However, it is recognized by the cereal committees of these provinces that the growing of malting barley should not, as a rule, be attempted on the dry open plains. Mensury is very similar to O.A.C. 21 and was omitted from recognition by the Saskatchewan cerealists on that account. Thus there is excellent agreement between Manitoba and Saskatchewan as to malting barley recommendations. The recommendation of Olli in Alberta is in accord with its favourable mention for north-eastern Saskatchewan.

FLAX

The flax recommendations show satisfactory co-ordination in that Royal is recommended for all central and southern areas, and Redwing for the northern and other shorter season areas. In Manitoba, Buda does well in some areas and is an alternative to Royal whereas, in Alberta, Bison is recommended along with Royal in Zones 1 and 2. The rust and frost susceptibility of Bison have not been as important factors in Alberta as in Saskatchewan.

CONCLUSION

On the whole there is reasonably satisfactory co-ordination of cereal zones and variety recommendations in the prairie provinces. Undoubtedly the use of a uniform soil classification throughout the Prairie Provinces

would be helpful in bringing about a full co-ordination of cereal variety zones. It is hoped that this materializes within the next few years. A certain amount of discrepancy may continue in the variety recommendations, but this may be more apparent than real. Each committee of cerealists endeavours to keep the number of recommended varieties at a minimum. Thus when one province recommends a given variety A it is less likely to advocate another variety B which is somewhat similar to A but does not excel it. If, then, the adjacent province happened to recommend B first it would similarly not recommend A. Here would be a case where the actual difference in recommendation is slight yet appears to be large. The existing variety recommendations of the Prairie Provinces show more fundamental consistency than is apparent and in general it can be concluded that a fair degree of co-ordination has been achieved.

J. B. HARRINGTON, *Chairman*

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