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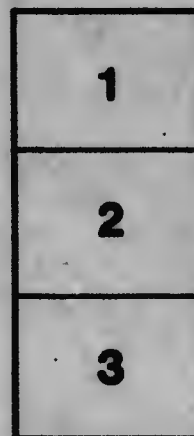
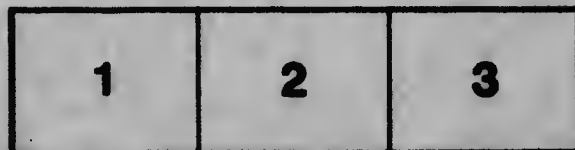
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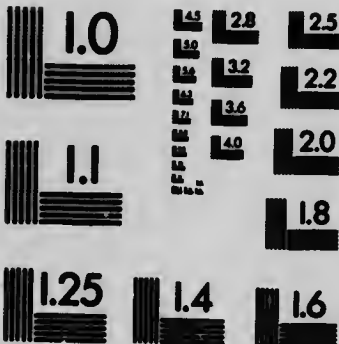
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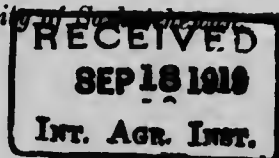
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GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN
DEPARTMENT OF AGRICULTURE

The Best Varieties of Farm Crops for Saskatchewan

By JOHN BRACKEN,
Professor of Field Husbandry, University of Saskatchewan

WHEAT.



The characteristics essential in Saskatchewan wheats are high quality and high yield. In addition to these, early maturity, non-shattering propensity, strong straw, and disease resistance, are characteristics to be desired.

Red Fife is high in yield, high in quality, long in the straw and rather late in maturing. It is suited to the lighter and earlier types of soil, to the drier parts of the province, to all regions where fall frosts are not feared, and where long straw is desired.

Marquis is high in yield, high in quality, rather short in the straw, and early in maturing. This variety is likely to give more satisfactory returns than *Red Fife* on heavy soils, on fallowed land, in moist regions where fall frosts are feared and in those areas where a short straw is preferred.

Excepting in earliness and length of straw, *Marquis* and *Red Fife* do not differ materially. Both are beardless wheats, having a white chaff. The seed of *Marquis* is generally shorter, plumper, darker in colour and heavier per measured bushel than that of *Red Fife*.

On clay loam soil at Saskatoon, *Red Fife* has averaged about one-half bushel more per acre than *Marquis*, but its poorer quality in areas of early fall frosts has more than off-set this advantage. At Indian Head on a heavier type of soil the average yield and the quality as well has been very much higher for *Marquis* than for *Red Fife*.

The Blue Stem Wheats commonly grown in the Dakotas and Minnesota are of good quality and produce fair yields. They are, however, later in maturing than *Red Fife* and shatter more freely and hence are unsuited to Saskatchewan conditions.

The Hybrid Wheats—Preston, Stanley, Huron, and Percy—are inferior in milling value to both *Marquis* and *Red Fife*. They are all early, not differing materially from *Marquis* and *Red Fife*, and most of them are productive. They have been discarded by all the experimental farms on account of their inferior quality.

White Fife is not essentially different from Red Fife in intrinsic value, not in appearance of the growing crop, but there is a popular prejudice against the colour of the bran. This variety has, however, no desirable feature that Red Fife does not possess.

Prelude is a wheat of high quality and low yield. It is ten days or more earlier than Marquis, and considerably shorter in the straw. It is much more subject to loss from shattering than either Red Fife or Marquis. At Saskatoon the average yield is about two-thirds as much as Red Fife. This variety may be found satisfactory in regions north of the present wheat growing area, but on account of its low yield it is not worthy of a place in districts where Marquis matures.

Pioneer is a wheat that is earlier than Marquis and longer in the straw than Prelude. It yields less than the former but more than the latter, is high in milling value, of good appearance, has high weight per measured bushel. It has a bearded head and a red glutinous seed. It is a good wheat for all regions where earliness and fair length of straw is desired.

Ruby is less productive than either Marquis or Pioneer but several days earlier than either. The heads are bald and the chaff and straw deep bronze to reddish in colour, is less liable to shatter than Prelude, is nearly as early as the latter but rather taller and more productive.

Red Bobs—A new wheat, earlier than Marquis, quite high in quality and yield. It seems to be a promising wheat for northern areas, although reported to be somewhat less resistant to rust than Marquis. The heads are bald, the chaff whitish yellow and the seeds medium in size and weight and pointed oblong in shape.

Kitchener is similar to Marquis in yield and other important characteristics. The seed is larger than Marquis but the quality of the flour is inferior and the crop is usually a day or so later in ripening. On stubble land in dry areas the yield of Kitchener may sometimes exceed that of Marquis.

Early Red Fife is similar to Red Fife except in being considerably earlier and more subject to rust. The seeds are rather large and the heads more blunt.

The "*Durum*" or "*Macaroni*" wheats are very little grown in Saskatchewan. In portions of the Western States they are largely used for the production of macaroni, spaghetti, etc. They have been grown very little in the past for bread-making, although in the United States they are now being used for that purpose, to an increasing extent. The "*Durum*" wheats are rich in a low quality gluten. As compared with "*Red Fife*" the Durum sorts now grown here are later in maturing, longer and stiffer in the straw, more resistant to drought, and very much less liable to loss grain by shattering. They offer considerable promise for south-western Saskatchewan once a market for them is provided. Kubanka is the most productive sort. At Saskatoon the average yield for eight years is higher than that of Marquis or Red Fife. It ripens on the average one day later than Red Fife. This variety

carries a long, stiff beard, the chaff is bronze in colour, and the heads are very compact. The seeds are long, very hard, and yellow amber in colour.

The "Club" Wheats, grown so extensively on the Pacific Coast and which are more or less non-shattering there, are too poor in quality to warrant their use here. They have no advantage in yielding power over the higher quality wheats recommended.

The "Polish" Wheats, used in some southern European countries, are inferior in quality and yield to both the flour and the Durum types.

The Poulard Wheats are superior in no important quality to either our commonly grown flour or macaroni sorts. The Compound Headed variety of this type variously called "*Egyptian King*," "*Miracle*," "*Seven Headed*," and "*Alaska*," has been brought forcibly to our attention twice during the last ten years by the exaggerated statements of men offering it for sale. This wheat, which has a compound or branching head, is very striking in appearance, and has been reported to produce double or treble as much as any of our leading sorts. The fallacy of such statements concerning its productive power has been demonstrated many times. It has been grown for two years at the University and in neither year did it approach either the yield or the quality of Red Fife. No grain grower should allow himself to be imposed upon by salesmen offering this or any other sort that has not been tested out at some experiment station.

Emmer and Spelts, two feed wheats, in which the hull is retained after threshing, are grown to a very small extent in this province. They are used only as stock foods. Emmer, often called Spelt, or Speltz, is an early short strawed, bearded wheat, which is more or less resistant to drought. In the northern and eastern part of the province it does not yield as much as oats or barley, but it may have a place in the south-west, where its ability to withstand dry conditions may result in the production of greater yields than from oats or barley.

The true *Spelt* is later in maturing and much coarser than Emmer. It is a type of wheat having no feature, whatever, that should induce Saskatchewan farmers to use it even for feed.

Winter Wheat is being grown to a small extent in north-eastern Saskatchewan, but it has not proven sufficiently hardy for general use in the open prairie parts in the province. Each year successful stands have been brought to our attention, but many failures for each success have been noted. In the year 1914 all our varieties at Saskatoon came through the winter in perfect condition, but this was the only satisfactory stand obtained in four years.

It is an interesting fact that winter wheat is being grown in northern Manitoba, and in southern Alberta, but has not been found profitable in the open prairie belt between the two districts mentioned.

To those who desire to experiment with winter wheat, it might be mentioned that Turkey Red is the leading sort now being grown in Alberta. Karkov and Buffum's No. 17 are excellent sorts out of this variety. The last mentioned is beardless; both of the others are

bearded varieties. Seeding at the rate of one bushel per acre in the latter part of August on fallowed land is likely to give best results with winter wheat.

OATS.

The most useful classification of oats for this province is that based on the time required to mature them. There are early, medium early, and late oats.

The *Late Maturing Oats* are nearly all white, but a few are black. Most have branching panicles, but some are "side" or "mane" oats. The white late oats having branching panicles is the most useful type for general use in this province. It is more productive than any of the others, and higher in quality than most of them. Among the many varieties of this type, *Banner* and *Victory* have proven the most satisfactory at Saskatoon.

Banner is a fine but strong strawed variety, and very productive. The grain, as compared with that of other late maturing sorts, is long and thin and carries a low percentage of hull. It is a very productive sort.

Victory yields about the same as *Banner*, but more than *Abundance*. The grain of *Victory* is shorter and plumper than *Banner* and weighs more per measured bushel.

The *White "Side" or "Mane" Oat*, contrary to common opinion, is neither so productive nor so strong in the straw as the branching oat and invariably it contains a larger percentage of hull. "*Dodd's White*" and "*Tartar King*" are representatives of this class.

The *Late Black Oats* that have been grown here, whether of the "side" or the "branching" type, are very coarse in the straw and have a high percentage of hull. In addition to the popular prejudice against them, their coarseness and lack of quality furnishes good reason for discouraging their use.

Most of the *medium early oats* are white or yellow in colour and nearly all have branching panicles. Only a few varieties have come under our observation.

Gold Rain is a medium early yellow oat, having a rather small grain, which carries very little hull. This variety should become popular in those parts of the province where early fall frosts are feared. The yellow colour of the grain does not lower the grade nor the milling value but is objectionable to some because it is occasionally mistaken for weathered grain. *Gold Rain* matures on an average about three days before *Banner* and the average yield is but very little loss.

Ligowo is a white oat that is medium early, but less productive than *Gold Rain*.

Among the *early types* are found red, white, yellow and black sorts. The red and yellow sorts are common in the Corn Belt where on account of their earliness they mature before the hot days of summer, and are therefore preferred. All of these early oats including

"60 Day," "Orloff," "Kherson," and "Alaska," mature from ten days to two weeks earlier than Banner, but seldom yield more than two-thirds as much. Most of them are of very good quality but all are short in the straw. Early oats may be used for late seeding or for far north regions, but there is no other reason for growing them where the later sorts will mature.

"Daubeny" is one of the most productive of the early varieties. It is white in colour, slightly taller than the average early oat and very low in percentage of hull.

BARLEY.

The Six Rowed Bearded Hulled Barley.—This type of barley is heavy in yield, medium early in maturing and fairly strong in the straw for barley. It is richer in protein than the two rowed sorts. In Europe and the United States it is not liked for malting purposes, but in Western Canada the maltsters favour it. The six rowed varieties are better suited to northern and eastern Saskatchewan than any of the others. The leading ones of this type are *Manchurian*, *O. A. C. No. 21*, *Mensury* and *Odesa*. The Dominion Cerealist recommends "Albert" as the best very early barley of this type. The Department of Field Husbandry has found "Early Six" to be an excellent variety where extreme earliness is desired.

The Two Rowed Bearded Hulled Barleys.—This type of barley is rather longer and generally weaker in the straw and from two to seven days later than the six rowed types. Most two rowed varieties are less productive in northern and eastern Saskatchewan than the six rowed. From experiments conducted in southern Alberta, Montana and western North Dakota, it would seem that in southern and western Saskatchewan two rowed barleys are likely to at least equal the six rowed type in yield. "Hannchen," a pedigreed variety introduced from Sweden, has outyielded all others, including the six rowed varieties. *Canadian Thorpe* and *Duck Bill* are good varieties of the erect two rowed type.

Miscellaneous Barley Types.—The *Beardless Barleys* are less productive but earlier than those mentioned above. They are seldom grown for grain, although in the older parts of the province where they are frequently used as a cleaning crop for wild oats they are occasionally threshed. They are popular in many parts of the province as early maturing annual hay crops. *Success*, a six rowed barley of the beardless hulled type, is much used for the above purpose. *White Hulless*, a variety of the beardless, hullless type is not dissimilar in growth characteristics to *Success*, and is also used largely for forage. *White Hulless*, as the name implies, loses its hull in threshing. Both *Success* and *White Hulless* are popular annual hay crops.

The Bearded Hulless or Bearded Naked Barleys are short in the straw and low in yield in the northern parts of the province, but they are very early. They have produced very favourable returns in Montana and western North Dakota, which leads us to expect them to do fairly well in western Saskatchewan. *Black Hulless* and *Purple Hulless*

six rowed bearded naked barleys, and *Hogg*, a two rowed bearded naked white sort, are among the most commonly used hullless bearded varieties.

SPRING RYE.

Spring Rye as a cereal crop is very little grown in the province. It is an early maturing crop and one well suited to the lighter and poorer types of soil. It does well on heavier, more fertile soil, but such land is generally better suited to wheat, oats or barley. Spring Rye yields relatively better on light soils and in dry areas. It is sometimes grown as a hay crop. It furnishes good pasture, but the quality of hay for general use is inferior to that of either oats or barley. "*Pro-life*" is a good variety.

WINTER RYE.

Winter Rye promises much more in this province than spring rye. Northern grown winter varieties have proven perfectly hardy at Saskatoon, and in many other portions of the province. Eastern and southern grown sorts were almost completely killed out in the winter of 1910-11, but a more or less acclimatised variety, "*Saskatchewan Rye*," withstood the same winter perfectly. This rye has produced from twenty to forty bushels per acre on fallowed land in Saskatoon each year since 1911.

Winter Rye, as a forage crop, furnishes earlier pasture than any other crop. On June 17, 1914, winter rye at the College of Agriculture was headed out and measured 40 inches in height. It was ripe that year on the 18th of July. In areas subject to soil drifting or where wild oats are prevalent, this crop should be found useful either for early pasturage (for cattle, sheep or hogs), for hay, or even for the threshed grain. *North Dakota No. 959*, and *Saskatchewan Rye* are the leading varieties.

FLAX.

The *Brown Seeded, Purple Blossomed* type of flax has been found better suited than any other to the soil and climatic conditions of the province. The *Golden Seeded* type is later, shorter in the straw, and poorer in yield, but said to be richer in oil than the brown seeded type. No *White Flowering* sorts have yet produced as satisfactory yields as the *Purple Blossomed* ones.

The variety of the *Purple Blossomed, Brown Seeded* type that is best known and most productive is *Minnesota No. 25* or *Premost*, a pedigreed sort produced by the Minnesota Experiment Station. Another good variety but less productive is *North Dakota No. 155*. Other strains produced by the North Dakota Experiment Station and said to be resistant to flax wilt are *North Dakota No. 52*, *North Dakota No. 73*, and *North Dakota No. 144*. It is not claimed that the last three mentioned are heavy producers on undiseased soil. They have, however, demonstrated their usefulness on the flax sick soil of North Dakota. "*Novelty*" is recommended by the Dominion Cerealists.

The two chief difficulties in growing flax for seed in Saskatchewan are the spread of weeds and the danger of infection from flax wilt. On account of the difficulty of removing small weed seeds from threshed flax the seed is often very impure. Flax sickness can only be cured or controlled by (1) using sound plump seed from uninfected fields if possible; (2) treating the seed with formalin; and (3) planting flax on the same field not oftener than once in five or six years.

FIELD PEAS.

The *Field Pea* is but little grown in Saskatchewan because of (1) danger of frost in the fall; (2) low yields in the drier areas; and (3) the difficulty in harvesting; and (4) relatively high cost of seed. The field pea is, however, our most suitable annual legume, and yields of from eighteen to forty bushels per acre have been reported from various parts of the province. The varieties that are considered best for general use are "*Arthur*," "*Golden Vine*," "*Solo*," "*Early White*" and "*Carleton*."

"*Arthur*" is a heavy yielding and medium early variety. "*Golden Vine*" is a popular small seeded medium early variety. "*Solo*" is a heavy yielding rather late sort. "*Early White*" is a small seeded, early, fairly productive variety that is recommended for Saskatchewan conditions. "*Carleton*" is a high yielding, medium early pea, with medium sized seeds covered with brownish spots. It is a promising variety.

CLASSES AND VARIETIES OF FORAGE CROPS.

Under semi-arid conditions long-lived or perennial crops do not yield as well as the shorter-lived annuals and biennials. This is explained by the fact that much more frequent opportunity to store moisture and develop plant food is given in the case of annuals and biennials than with a crop which lives several years. At the same time perennial crops cost less to produce, since there is no charge for soil preparation, seed or seeding after the first year.

It is our opinion that in the drier areas greater reliance must be placed on the short-lived crops than on the long-lived ones. Yet the latter are essential for such permanent or semi-permanent pastures as it may be found advisable to use. We have insufficient data to determine which is the more profitable under all conditions. It would seem, however, that we should plan, in the drier parts at least, to get the bulk of our hay from annual crops and depend upon the perennials for some early spring pasturage, some hay, and a reserve pasture for horses or other stock when the annual crops may not be ready for pasturing. Where weeds are prevalent or where soil drifting is common a larger proportion of perennials is desirable. The more humid the district the more successful perennials will be, the drier the area the more annuals must be depended upon. The proportion of each should be determined by the climatic conditions, the system of farming followed, and the needs of the soil.

The best perennial hay crops for general use in Western Canada are western rye grass, brome grass, timothy, and alfalfa, either singly or in combination.

The best biennial hay and pasture crops are winter rye and sweet clover.

The best annual hay crops are oats, peas and oats, beardless barley and spring rye.

Crops that are of secondary importance for hay and pasture are Kentucky blue grass, red top, meadow fescue, and the millets. Some that may later become useful are the clovers, red and alsike and sweet clover, the last mentioned promising most for the open plains.

The best crops for permanent pasture are brome grass, or brome grass and alfalfa mixed. Less productive though useful pasture mixtures are Kentucky blue grass or red top mixed with either timothy and alfalfa or western rye and alfalfa.

The best crops for annual pasture are oats, or peas and oats, or barley and oats, and rape.

Sweet clover, a biennial, may become a useful pasture plant, particularly on light soils in what are now regarded as purely grain growing areas. Winter rye also furnishes good pasturage in late fall and early spring.

SILAGE CROPS, SOILING CROPS AND FODDER CROPS.

Where much live stock is kept, particularly milking cows, a succulent winter feed is very desirable. By some it is considered essential to successful winter dairying. Corn is the great silage crop of eastern and southern dairy districts. It can be grown here quite satisfactorily in many parts, but owing to its immaturity the quality of the silage made from it is frequently low and the cost of production is relatively high. The best ensilage crops are corn for the south and oats, or oats and peas, for the north.

Oats and peas, particularly in the north, seem now to promise cheaper and better silage than corn. Very excellent results have been secured at the Lacombe Experimental Farm from both oats and mixed peas and oats as silage. The utilisation of sunflowers by ensiling is now being tested at different places with considerable success. Mixtures of alfalfa or sweet clover with winter rye in seasons when the legume crop cannot be satisfactorily cured also has some possibilities.

The best soiling crops in the order of their possible readiness for use are winter rye, alfalfa, peas and oats, corn and rape. The chief fodder crops are oat straw and corn stalks. Some good, but less common fodders, are the straw of threshed alfalfa, clover, brome grass and peas. Minor fodders are the straw of barley, wheat, rye, flax and western rye grass.

GREEN MANURE CROPS.

Green manuring is seldom intentionally practised. The plowing under of weeds in the fallow year, and of cultivated crops after being hauled out, increases the organic matter content of the soil even though

not done for that purpose. If the practice of plowing under cultivated crops develops it is probable that sweet clover will be found the best for this purpose, particularly in the prairie area. If a strain can be found sufficiently hardy to live through the winter after being sown with the last grain crop in the rotation, it may be plowed under early in the fallow year without the loss of the field for a longer time than is now lost by fallowing. This practice is likely to develop rapidly on soils that blow and on those that are low in organic matter, although in dry areas very early plowing will be necessary if sufficient moisture is to be conserved.

VARIETIES OF ROOT CROPS.

The so-called "root crops"—swedes, turnips, mangels, sugar mangels, sugar beets and carrots—furnish "succulence" to the winter ration of live stock. They have a regulative and medicinal value, and they also increase the digestibility as well as the amount of the coarse, dry fodders consumed. Root crops in the drier parts cost more to produce per pound of dry matter than any of our other crops. Whether it will pay to grow them depends upon the yield and the need for succulent food. Where much stock is kept, particularly dairy animals, the need for silage or roots is great. The "globe" type of swedes, the "intermediate" mangels, and the "intermediate" carrots are generally preferred. Some of the varieties commonly recommended are:

Swedes—Magnum Bonum, Bangholm, Good Luck, Perfection, Champion and Canadian Gem.

Turnips—Imperial Green Globe, Aberdeen Purple Top, and Greystone.

Mangels—Danish Sludstrup, Yellow Intermediate, Yellow Globe and Yellow Ovoid for average soils; White Sugar Mangel and Mammoth Long Red for deep soils; and Golden Tankard for shallow soils.

Sugar Mangels—Royal Giant and Rosy Sugar Mangel.

Sugar Beets—Klein Wansleben and Vilmorin's Improved.

Carrots—White Intermediate, White Belgian and Mastadon.

VARIETIES OF POTATOES.

Several qualities combine to determine the suitability of different sorts for our conditions. Among these, yield, cooking quality, disease resistance, early maturity, shape and depth of eyes, are among the most important. Many scores of potato varieties have been tested in Western Canada and the same ones have not proven best under all conditions. This is one crop the leading varieties of which can be easily, cheaply and satisfactorily tested out on any farm. And it is very desirable that this be done where the soil and climatic conditions are different from those existing at one's nearest experiment station.

At Saskatoon the leading early variety is Early Ohio; the best medium early ones are Irish Cobbler, Rochester Rose and Everett. Among the best late varieties are: Carman No. 1, Gold Coin, Table Talk and Wee MacGregor.

At Indian Head the white varieties recommended are: Carman No. 1, Empire State and Gold Coin. The pink sorts recommended are Everett and Vick's Extra Early.

At Rosthern, Dreer Standard, Morgan's Seedling and Everett have proven most productive, but the white varieties recommended are Irish Cobbler, Dalmeny Beauty and Carman No. 1, and the pink varieties, Everett, Reeves Rose and Rochester Rose.

At Scott, Morgan's Seedling, Rawlings Kidney, Wee MacGregor, Table Talk and Gold Coin have yielded the most over a period of three years.

VARIETIES OF CORN.

The "*Squaw*" group contains the earliest and shortest growing varieties, and those that yield the least forage. The "*Improved Squaw*" and the "*Quebec*" groups are somewhat later but yield more forage and, where they mature, more grain also. The standard *Dents* and *Flints* of the corn belt seldom ripen a profitable crop of grain here but often outyield all others in forage. To the *Squaw* group belong such varieties as *Squaw*, *Old Squaw*, *Early Squaw*, *Stony Squaw*, *North Western Squaw*, *Assiniboia*, *Fort Totten*, *Burleigh County Mixed* and *Mandan*. The best known of the *Improved Squaw* group are *Gehu* and *North Dakota White*, while the most noted of the *Quebec* group are the *Free Press* or *Patterson* and *Quebec No. 28*. The leading varieties of the later sorts are *North Western Dent* and *Longfellow Flint*. These with *North Dakota White* are at present generally preferred for forage. The *Squaw*, *Improved Squaw* and *Quebec* groups promise most for grain or for hogging off.

