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South Dakota Crop Varieties Recommendations and Descriptions

Agricultural Extension Service, South Dakota State College

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Crop Varieties

Recommendations and Descriptions

MARCH  APRIL  MAY  JUNE  JULY  AUG.  SEPT.

- 75°
- 40°
- 65°
- 30°
- 55°
- 2°
- 45°
- 1°
- 0°

ADAPTED VARIETIES CLEANED & TREATED

PRECIPITATION

TEMPERATURE

EARLY SMALL GRAIN VARIETIES READY TO HARVEST BEFORE "HAZARD TIME"

"Hazard Time"

JULY-10 TO AUG-15

"Know the Seed You Plant"

SOUTH DAKOTA CAN PRODUCE BOUNTIFULLY IF WE CHOOSE VARIETIES AND FARM PRACTICES THAT SUIT OUR SEASON

*BASED ON LONG-TIME WEATHER BUREAU RECORDS AT HURON, S.DAK.

Agricultural Extension Service
South Dakota State College, Brookings
U.S. Department of Agriculture
South Dakota Crop Varieties

Growing adapted varieties insures more stable production and creates new wealth. Using unadapted varieties often invites disaster and causes wide fluctuation in feed and grain supplies.

It is recognized that there are two important and profitable markets for grain in the state, namely, (1) market through livestock feeding and (2) industrial uses.

Therefore, it will be of great advantage to the producer if he will carefully choose superior varieties that fit his area and his market.

For instance, if a farmer wishes to produce a premium quality wheat for the bread flour market, he should not make the mistake of selecting a soft spring or soft winter wheat variety. Only adapted hard red wheats should be grown in South Dakota because we have the advantage of being located in an area favorable to the production of hard red spring and hard red winter wheat.

If a producer chooses to engage in the business of growing durum wheat for the semolina (macaroni flour) market he should choose the best adapted variety, as explained in this circular, that will produce the quality for which the market offers a premium.

If a producer lives in the area which is favorable to the production of malting barley and chooses to engage in this enterprise, he will select an adapted recommended variety which will command the premiums. On the other hand, if the farmer, especially if he lives in the central or western area, intends to utilize his barley for livestock feeding he will profit by selecting the early maturing, stiff strawed, high protein and higher yielding feed barleys now available.

The yield and quality obtained from any variety depends upon its adaptation to local conditions, soil type and the environment under which it is grown. All varieties recommended in this publication have some merit, but they also have some weaknesses which show up more in some years than in others.

Some varieties are resistant to the common diseases, while others are susceptible and crop failures may result if these are used. Because of these varying conditions, no one variety is best for all locations or situations.

Although we can't outguess the weather, we can use varieties that have performed well over a period of years and that fit South Dakota's climate. Many introduced varieties which fail when rainfall is limited, especially in July, yield well for one or two years when July is cool and rainfall is plentiful. However, the adapted recommended varieties also do well during these same seasons. Therefore we must not let cold, wet seasons dominate choice of varieties, because that will invite disaster when heat and lower rainfall conditions return.

It is of extreme importance to consider stability of production and avoid the use of small grain varieties that require a longer grain growing season than is normal for

our state. The temptation to use such varieties is great because of their ability to produce high yields in cool moist seasons. However, experience has taught us that in order to be self sufficient and successful operators in South Dakota we must “farm around July” by use of the recommended varieties and the cultural practices that conserve moisture and help control disease and insect infestations. Hence the importance of selecting small grain varieties that mature early enough to escape the midsummer hazards.

This list of recommended varieties for South Dakota is based on reliable and impartial information obtained from comparable test and demonstration plots located on experimental and private farms throughout this state. These recommendations are based not only on yield but also on factors such as earliness, disease and insect resistance, strength of straw, quality and market outlets.

The choice of summer crops (like corn, sorghum, grasses and legumes) and varieties of these crops also should be made with reference to their ability to withstand the midsummer hazards. Adapted crops are the backbone of our great livestock industry.

In summary, it will be noted that there are several good varieties recommended for each agricultural area. Therefore, the farmer should choose, first of all, one that escapes the crop hazards which experience has taught him are common in his area. The livestock operator who feeds much of the crop he produces should select high yielding, high protein feed varieties. Farmers who sell their grain for industrial uses should choose high quality varieties which by tests have proved superior.

Finally, let us remember that variety alone is not a substitute for good cultural practices. Early maturing crops require fertile soils. The road chart to successful crop production looks like this:

1. Choose crops adapted for area.
2. Select adapted varieties.
3. Test all seed for purity and germination.
4. Treat all seed with approved disinfectant.
5. Conserve soil moisture by contouring, subsurface tillage, etc.
6. Prepare firm, well tilled seed bed.
7. Control weed and insect pests by cultural practices and chemicals.
8. Grow grass-legumes in the rotation.
9. Plow under green manure to help maintain organic matter and plant food.
10. Use commercial fertilizers as needed.
11. Use furrow opener for planting row crops on contour, placing seed in moist soil for rapid emergence.
Wheat

Hard Red Spring Wheat

Rushmore—developed at the South Dakota Agricultural Experiment Station from the cross Rival x Thatcher. Rushmore is beardless, early and drouth resistant. Its stiff straw and resistance to shattering make it a desirable wheat for direct combine harvesting. The grain has a tendency to bleach under adverse weather conditions. Rushmore is resistant to bunt, loose smut, and most races of leaf rust and stem rust. It appears to be somewhat less susceptible to race 15B of stem rust than Rival or Mida. Rushmore has a fine yield record, produces a strong type flour and is recommended for all spring wheat areas in South Dakota.

Lee, derived from the cross Hope x Timstein, was developed by the USDA in cooperation with the Minnesota Agricultural Experiment Station. It is a vigorous, very early, bearded wheat that is resistant to the races of leaf rust now prevalent in the Northwest. Lee has considerable drouth resistance, but its value in the more humid corn growing areas of the state may be limited, due to its high susceptibility to scab. It is quite susceptible to loose smut and not too strong strawed. Lee generally produces a very deep colored grain of high test weight, and is satisfactory in milling and baking characteristics. It is susceptible to Race 15B of stem rust. Lee will probably be best adapted to the central part of South Dakota.

Mida—developed at the North Dakota Station from a multiple cross involving Ceres, Hope, Florence and a sister selection of Thatcher. Mida is bearded, about 2-3 days later than Rushmore, and has excellent yielding capacity. It is susceptible to scab, loose smut, and spring frost injury. Mida produces grain of high test weight and good color, although in favorable years the kernels may be starchy. Mida does not bleach easily, but its tendency to shatter limits its use for straight combining. Mida carries the Hope resistance to leaf rust, stem rust and bunt. It appears to be very susceptible to Race 15B of stem rust.

Rival—a bearded wheat in the same maturity class as Mida. It was derived from a cross of Ceres x (Hope x Florence). Similar in disease reaction to Mida, except that it is not as susceptible to loose smut and scab. Rival shatters rather easily and the grain bleaches under adverse conditions. Rival shows considerable sterility of the basal florets in certain seasons.

Pilot—a tall bearded variety derived from the cross of Hope x Ceres. Its maturity is about four days later than Rushmore, which it resembles in disease reaction. Pilot tends to lodge in favorable years. Pilot does not shatter, hence is considered good for straight combining.

Thatcher—a short beardless variety developed from the cross (Marquis x Lumillo) x (Kanred x Marquis). This was the first stem rust resistant variety of bread wheat released in the Northwest. Thatcher has excellent milling and baking quality, drouth resistance and earliness. Its extreme susceptibility to leaf rust limits its distribution to areas where this disease is not serious.

Redman—a beardless variety of Canadian origin. Easily distinguished in the field by its light green color. Redman is acceptable for milling, similar in disease resistance to Rushmore, but apparently lacking in ability to yield under South Dakota conditions.

Cadet—a tall late beardless variety essentially similar to Rushmore in disease reaction. Its lateness has been a factor in severe injury from drouth and leaf rust.

Durum Wheat

Nugget—a new variety selected by USDA workers from the cross (Heiti x Stewart) x (Mindum x Vernal Emmer). Nugget is an extremely early amber durum used for the production of high quality semolina. It is very short, has a nodding head, and moderately stiff straw. This variety is quite susceptible to scab. It is resistant to all ordinary forms of stem rust except 15B. Its earliness affords much escape value from rust and drouth. It is likely to be
adapted to the areas of durum production that are hazardous to the late maturing durum varieties.

**Vernum**—a Vernal Emmer x Mindum backcross, about 3 days later than Nugget. It is resistant to common forms of stem rust but susceptible to injury by Race 15B. Its macaroni quality does not compare with Nugget and it is moderately weak strawed.

**Stewart**—about 5 days later than Vernum. Pedigree and disease resistance is similar to that of Vernum. Stewart has high yield capacity, good straw, and is being grown successfully in Northeast South Dakota. Stewart is extremely susceptible to Race 15B of stem rust.

**Mindum**—the standard of quality in durum wheats. It is moderately susceptible to bunt and stem rust. It is about 3 days later than Vernum, rather vigorous and probably one of the more scab resistant of the durum wheats.

**Kubanka**—similar to Mindum in description and performance.

**Carleton**—a very late stiff strawed semolina durum. It is extremely susceptible to Race 15B of stem rust.

**Pelissier**—black bearded, easily recognized by its large boat shaped kernels. While not acceptable for macaroni flour, a limited acreage finds special use in the preparation of breakfast foods. Has drouth and grasshopper resistance.

**Winter Wheat**
With the possible exception of Minter, there are no rust-resistant winter wheat varieties for South Dakota. Even Minter is now susceptible to new races of leaf rust and to race 15B of stem rust. However, resistance is relative and certain varieties, such as Nebred, Minturki, Iowin and Iohardi, are more tolerant to rust than is Minhardi, for example.

**Minter**—the result of joint release by the USDA, Minnesota Agricultural Experiment and the South Dakota Agricultural Experiment Station. It was derived from the cross Hope x Minturki backcrossed to Minturki. This variety is winter hardy and is resistant to the common races of stem rust, with the exception of 15B.

**Nebred**—this variety is a selection from Turkey South Dakota 144 made at Nebraska Experiment Station, Lincoln, Nebraska. It is early, winter hardy and has proved to be well adapted to South Dakota conditions.

**Minturki**—this variety is the result of a cross between Odessa and Turkey made at the Minnesota Agricultural Experiment Station in 1902. It is winter hardy and has long been an accepted variety in South Dakota.

**Iowin**—this variety is the result of selection out of Theiss made at the Agricultural Experiment Station at Ames, Iowa. It is winter hardy and appears to be well adapted to southeastern South Dakota.

**Iohardi**—developed from a cross of Iobred x Minhardi made at the Iowa Agricultural Experiment Station. Under South Dakota conditions it does not appear to be as winter hardy as Minter. Recommended for southern part of area 8.

**Rye**

**Pierre**—a result of a composite of 16 inbred lines isolated from a population of Dakold and Swedish origin. It is very winter hardy and has a rapid early spring growth. This variety was released by the South Dakota Agricultural Experiment Station in 1950. It is recommended for all areas of South Dakota.

**Dakold**—originated at North Dakota Agricultural Experiment Station. It was developed by a process of natural selection whereby seed from surviving plants of commercial rye was saved year after year until this variety was developed. It is very hardy since it can survive winters of North Dakota and Canada.

**Emerald**—released in 1945 by the Minnesota Experiment Station. It has a uniform rather large seed of green color. Under South Dakota conditions, it appears to be less winter hardy than Dakold but more winter hardy than Rosen. It has performed well where winter-killing is not a factor.

**Imperial**—a new rye selection released
by the Wisconsin Experiment Station. It is a selection from Wisconsin Pedigree No. 2. Wisconsin Pedigree No. 2 was derived by selection from the Schlandstedt variety which was brought to the United States in 1900. Schlandstedt and the selection which was named Wisconsin Pedigree No. 2, have not yielded as well as other varieties in the western half of the United States. It is adapted to the area represented by Southern Wisconsin. It is pure for white or so-called colorless seed. It is less winter hardy than Emerald and probably should not be grown in South Dakota.

Balbo—this variety is of value for pasture purposes and is usually not winter hardy enough to survive South Dakota winters. There is a small acreage in the southeastern corner of South Dakota.

Oats

James—a hulless oat developed at the South Dakota State Agricultural Experiment Station from the cross (Bond x Double Cross B) x Nakota. James has the same stem and leaf rust resistance and maturity range as Clinton, but has superior smut resistance. James is mid tall and satisfactory in straw strength. In the areas where James is adapted, it has produced yields fully equivalent to the recommended varieties of common oats. James should never be harvested prematurely else it may not thresh out too well.

Clinton—a midseason yellow oat derived from the cross Iowa D69 x Bond. This variety has the Bond type leaf rust resistance and resistance to the Race 8 of stem rust. It has excellent straw strength, and produces high yields of grain of high test weight. Clinton is resistant to the Helminthosporium blight of oats.

Mindo—a selection out of the cross Bond x (Minota x White Russia) x Black Mesdag. Mindo resembles Clinton in general plant type and disease resistance. It is somewhat more resistant to smut, four inches shorter and 3 days earlier in maturity.

Cherokee—a reddish ivory colored oat of the same parentage as Clinton. It is very similar to it in disease resistance and general plant type. Cherokee seems to have a little tolerance to race 45 of crown rust. It is 3 to 4 inches shorter than Clinton and about 3 days earlier. In cool, moist seasons, Cherokee may show much blackening of the kernels.

Nemaha—a (Victoria x Richland) x (Morota x Bond) derivative, this variety is essentially similar to Cherokee in appearance, plant type, disease resistance and performance.

Andrew—a very early, vigorous oat developed at the Minnesota Station from the cross Bond x Rainbow. It carries the Bond leaf rust resistance with resistance to the Race 7 of stem rust. It is susceptible to Race 8 of stem rust.

Marion—a Markton x Rainbow selection of medium earliness. It is somewhat weak strawed which makes it unsuitable for high fertility soils in wet years. On upland soils Marion has proven itself a very dependable yielder, despite its susceptibility to leaf rust. Its stem rust resistance is like that of Andrew.

Brunker—a very early red oat selection out of Burt. It is susceptible to leaf rust, stem rust and smut. This variety is adapted to the western and central areas of the state where early maturity is essential and where the rusts are not too severe. It is not adapted to eastern South Dakota.

Trojan—a very early white oat, selected out of Brunker. It is adapted to the same area as Brunker, to which it is superior in straw strength and resistance to stem rust and smut.

Benton—a sister selection of Clinton very similar to it in plant type, disease resistance and performance. It is somewhat taller and later in maturity.

Bonda—a Bond x Anthony selection, very similar to Benton in type, performance and disease resistance. Bonda is a white oats, and in favorable seasons produces grain of high quality and test weight.

Vikota, Tama, Boone, Vicland and Cedar—medium early yellow oat varieties derived from the cross Victoria x Richland. They are rather similar in appearance and performance, having good straw strength, the same rust resistance as Andrew and
complete leaf rust resistance. They are susceptible to the Victoria blight of oats. Their plant type is well adapted to central South Dakota where this blight has not been severe up to the present time. Seed treatment with the organic mercury dusts is advised as a precautionary measure.

**Osage**—a very early maturity short yellow oat selected from the cross of (Victoria x Richland) x Fulton. It has an excellent yield record in the western part of the state. In disease resistance, it is very similar to Vikota. It is susceptible to Victoria blight.

**Burt**—a very early red oat similar to Brunker in disease resistance.

**Odessa**—introduced from Russia in 1902. In 1914 Odessa was released by the South Dakota Agricultural Experiment Station and is still being grown on a large acreage in South Dakota. This variety is six-rowed, rough-awned, and has a rather weak straw. It is acceptable on the market as malting or distiller’s barley. It has produced excellent yields in Eastern and North Central South Dakota.

**L or Kindred**—originated as a farmer selection from a field of Wisconsin 37. It is a six-rowed, rough-awned variety. It is resistant to stem rust but weak-strawed. Acceptable as a malting barley, but it has been consistently outyielded by Odessa at the Agricultural Experiment Station, Brookings.

**Wisconsin 38**—a smooth-awned, six-row barley derived from the cross of Wisconsin 5 x Lion. It has a tendency to be weak-strawed. It is accepted on the market as malting barley. This variety is too late for central and Western South Dakota.

**Plains**—this variety was released by the South Dakota Experiment Station in the spring of 1948. It is an early, six-rowed, smooth-awned, stiff-strawed variety and is well suited to the plains conditions of Central and Western South Dakota. Plains was derived from a cross of Peatland x Dryland made at the South Dakota Agricultural Experiment Station. It is resistant to stem rust, but susceptible to loose smut. This variety has been classed as a feed barley.

**Shelby**—a very late selection from Bond x Anthony cross. Resembles Clinton in plant type and disease resistance, but does not have the strength of straw. Where it can mature normally, Shelby can produce high yields of heavy test weight grain.

**Zephyr**—similar parentage, maturity, type and disease resistance as Shelby.

**Ajax**—a late white oat of Canadian origin. Very vigorous, susceptible to leaf rust but resistant to some races of stem rust. In cool moist seasons it can yield well, but in average or dry seasons it is not equal to varieties as Clinton or Cherokee.

### Barley

**Feebar**—a high protein, six-rowed, semi-smooth awned, feed barley developed at the South Dakota Agricultural Experiment Station from the cross of Peatland x Vaughn. This variety has produced good yields in all of the areas of South Dakota where it has been tested. It is stiff-strawed and resistant to grasshoppers and stem rust but susceptible to loose smut.

**Velvon 11**—a six-rowed, smooth-awned, medium maturity, feed barley. This variety is a selection out of Velvon and is more resistant to loose smut but has a weaker straw than the parent. The original Velvon was derived from the cross of Colorado 3063 x Trebi. Three years’ data are available on Velvon 11 in South Dakota. These data indicate that Velvon 11 is adapted to central and south central South Dakota.

**Tregal**—a feed barley that originated at the North Dakota Agricultural College as the result of a cross of Trebi x Regal. Tregal is a six-rowed, smooth-awned, medium late variety. It appears less tolerant of hot weather than Trebi and is probably best adapted to the north central area of South Dakota.

**Montcalm**—a six-rowed, smooth-awned variety derived from the cross (Michigan 31604 x Common six-rowed 4307 M.C.) x Mandscheuri 1807 M.C. at Macdonald College, Quebec. It is late in maturity, very susceptible to stem rust and has a tendency to shatter at harvest time. Three years’ data indicate that this variety is probably too late for central and western South Dakota.
Varieties Recommended for South Dakota

### Wheat
- **Spring Wheat**
  - Rushmore
  - Pilot
  - Rival
  - Mida
  - Lee
- **Winter Wheat**
  - Minter
  - Nebred
  - Iowin; Iohardi
- **Amber Durum**
  - Mindum
  - Vernum; NuggeL
  - Stewart
  - Kubanka
- **Oats**
  - James
  - Clinton; Marion; Bonda
  - Mindo; Andrew
  - Cherokee; Nemaha
  - Shelby
  - Brunker; Osage
  - Trojan; Vikta
- **Rye**
  - Pierre
  - Dakold; Emerald

### Barley
- **Odessa; Kindred**
  - Areas 4, 5, 7, 8, Northern part of 3
- **Feebal; Velvon 11; Tregal**
  - All areas of the state
- **Plains**
  - Areas 1, 2, 6, 7, and south 1/2 of 3
- **Spartan**
  - Areas 1, 2, 6
- **Wisconsin 38**
  - Areas 5, 8 and eastern part of 7
- **Compana**
  - Western 1/2 of area 2

### Fox
- **Redwood**
  - Areas 5 and north 1/2 of 4
- **B-5128**
  - Marine; Sheyenne
- **Alfalfa**
  - Ranger
  - All areas of the state. Because of its wilt resistance this variety is recommended especially for seed production for eastern trade.
- **Lead**
  - All areas of the state, but especially for the drier areas where no more than two cuttings are obtained.
- **Cossack; South Dakota Hardy**
  - Common Alfalfa; Grimm
  - All areas of the state

### Minor Crops
- **Rape—Dwarf Essex**
- **Emmer—Vernal (white spring)**
- **Dry Beans—Great N; Pinto; Tepary**
- **Edible Soy Beans—Agate**
- **Buckwheat—Japanese; Silver Hall**

### Field Corn*
- **South Dakota Hybrids**
  - 204, 212
  - In general between Highways 12 and 212 in areas 3, 4, and 5.
  - Southern portions of areas 3, 4, and 5 except where earlier hybrids are needed.
  - Between Highways U. S. 14 and State 34.
  - Also north of U. S. 14 in areas which will grow later corn.
  - Between State Highways 34 and 38.
  - Area 6 and Northern portion of areas 7 and 8.
- **Open-pollinated**
  - Silver King; Dakota White; Alta;
  - Brown County Dent; Fulton;
  - Northwestern Dent; Squaw Corn;
  - Gehr Plint; Rainbow Plint;
  - Falconer

*For commercial hybrids see South Dakota Corn Performance Test Circular published annually by the South Dakota Agricultural Experiment Station and available in the County Extension Offices.
and that the yields may be highly erratic. Widespread use of this variety in South Dakota can not be recommended on the basis of present information.

**Dryland**—a six-row, smooth-awned barley. This variety is very early but extremely susceptible to loose smut. Suitable for the central and western areas. Dryland was selected in South Dakota from a cross of (Odessa x Club Mariout) x (Lion x Manchuria).

**Spartan**—a two-rowed, smooth-awned, stiff-strawed feed barley. It was derived from the cross of Michigan two-row x Black Barbless. It is very early and has high test weight and high protein content which make it especially valuable in central and western South Dakota.

**Compana**—a two-rowed, smooth-awned barley. Developed by the Montana station and USDA. Inclined to be very short-strawed in dry seasons. It is best adapted to western South Dakota where it has produced good yields.

**Velvet**—a smooth-awned six-rowed barley derived from a cross of (Manchuria x Lion) x Luth. It is slightly earlier than Wisconsin 38 and has a stiffer straw. It is accepted as a malting type barley.

**Moore**—A recent release by the Wisconsin Agricultural Experiment Station. This variety was released specifically as a malting type. In 1951 the malting industry withdrew its recommendation. In view of the fact that there are higher producing feed barleys for South Dakota, Moore is not recommended for this state.

**Titan**—a six-rowed, smooth-awned, medium-early, feed barley produced at the University of Alberta from a cross of Trebi x Glabron. This variety has a moderately stiff straw and is resistant to common races of loose smut. The average yields have been slightly inferior to the recommended varieties in central and western South Dakota.

**White Smyrna** is a two-rowed, semismooth-awned, feed barley. It is a drought resistant, early maturing variety with a rather short and weak straw. The heads usually remain about half enclosed in the boot. White Smyrna, because of its drought resistance and good yield record at the Newell Station, is recommended for the extreme western portion of area 2.

**Flax**

**Marine**—a new brown seeded, blue flowered variety developed by the USDA in cooperation with the North Dakota Experiment Station. Marine is a selection from the cross of C. I. 975 x Sheyenne. It combines the earliness of Sheyenne with considerable pasmo resistance. Marine makes vigorous early growth, is fairly short and stands well even after maturity. It is resistant to all forms of flax rust now present in the Northwest, as well as to wilt.

**Redwood**—a new brown seeded, blue flowered variety produced by the USDA at the Minnesota Station from the cross B-5128 x Redson. Redwood is a tall midseason type of flax of high yielding capacity, about two days earlier than B-5128. It is resistant to rust, moderately resistant to wilt, but susceptible to pasmo. Oil quality is high. Redwood is rather susceptible to weather injury at harvest and must be planted early for good performance.

**Sheyenne**—selected from the cross of Ottowa 770B x Buda. This variety is very early, resistant to rust and wilt, but susceptible to pasmo. The seed is a light chocolate brown. It makes vigorous early growth and is well suited to the drier flax areas of the state.

**B-5128**—a very late variety of Golden x Rio parentage, this variety is resistant to all forms of flax rust now prevalent in this area. B-5128 has a typically blue flower and brown seeds but is not completely uniform. It contains a small percentage of white flowered, yellow seeded plants as well as some rust susceptible types. B-5128 has an excellent yield record in areas where it can mature normally. It is susceptible to pasmo. This variety cannot stand late seeding.

**Rocket**—a variety of Canadian origin that is resistant to rust. It is a midseason type, vigorous but quite susceptible to pasmo.
Victory—a brown large seeded variety, resistant to rust. It has white flowers with a blue center. Victory is not very uniform and is quite susceptible to pasmo.

Dakota—produced from the cross of Bison x Renew, this variety until recently was the leading flax variety in South Dakota. The widespread occurrence of new rust races has resulted in very heavy injury to this variety in 1950 and 1951 and, therefore, it no longer can be placed on the recommended list of flax varieties for South Dakota. As a plant type, Dakota is very excellent. It is brown seeded, blue flowered and vigorous.

Arrow—a sister selection of Dakota, very similar to it in performance. New forms of rust have likewise reduced its value.

Redwing—an early variety, brown seeded, blue flowered, rather short. It is susceptible to rust and pasmo, but its earliness seems to give it considerable disease escape value.

Koto—a very vigorous brown seeded variety resistant to wilt but susceptible to rust and pasmo. It has good plant type and is fairly competitive with weeds.

Bison—a midseason brown seeded variety very susceptible to rust and tolerant to pasmo. It has high wilt resistance.

Field Corn

Description of South Dakota Hybrids

Breeding work at the Experiment Station is directed toward the development of hybrids for four different maturity zones. They are: 200, 400, 600, and 800, with 200 being the earliest and 800 the latest. At present five hybrids in the 200 group and one in the 400 are now being produced. The 200 series hybrids are adapted to areas 3, 4, and 5 while the 400 series hybrid is best suited to area 6 and the northern portions of areas 7 and 8.

Within the 200 series the hybrids are arranged numerically in regard to relative maturity, beginning with 204 and ending with 270. Brief descriptions of these hybrids follow:

South Dakota 204—(SD1 x SD4) x (SD2 x SD5). 90 day relative maturity under South Dakota conditions. This is the earliest hybrid and is suited to most of the central and northern sections of the state, except where a very early hybrid is required. Yields are fair to good under adverse corn growing conditions. It has fair standability, medium height stalks, and a small amount of foliage. It is a yellow dent with medium length, thick ears caused by deep rough crowned kernels. The kernels carry a slightly reddish cast.

South Dakota 212—(SD1 x SD6) (SD2 x SD5). 92 day relative maturity under South Dakota conditions. This hybrid is recommended for the same general areas of the state as 204 but is slightly later in maturity. Yields are relatively good, especially under heat and drought adversity. The plants are medium height with a small amount of foliage, and light green color. Standability is fair. The ears are smooth and have wide yellow and mellow-appearing kernels.

South Dakota 224—(SD1 x SD2) (SD5 x SD7). 95 day relative maturity under South Dakota conditions. It has produced relatively good yields, especially under weather conditions not favorable for good corn growth. Plants are medium height and have fair standability. Frequently it is not too attractive in plant appearance. Ears produced are rather rough kerneled with the kernels being fairly light yellow in color. Deep kernels and a small cob give this hybrid a high shelling percentage.

South Dakota 262—(SD6 x Oh56A) (SD5 x M14). 97 day relative maturity under South Dakota conditions. This hybrid produces medium height plants with the ears born on short shanks which are attached to the stalk at a height of approximately three feet. It is resistant to stalk lodging and fairly resistant to root lodging. Emergency and seedling vigor are excellent. The ears are of medium length and fairly thick with wide, flat, well dented kernels which have a mellow, orange-yellow cast.

South Dakota 270—(SD7 x Oh56A) (SD5 x M14). 100 day relative maturity under South Dakota conditions. Plants have dark green, wide leaves, uniform size, excellent appearance and good lodging resistance. The kernels are yellow dent, with
smooth crowned, deep yellow kernels. This hybrid matures rapidly after pollination. It has excellent yield potential in the area adapted, as indicated in this circular.

**South Dakota 400**—(SD5 x SD7) (WF9 x M14). 105 day relative maturity under South Dakota conditions. This is a high yielding yellow dent with good, uniform plant appearance, dark green leaves, and excellent standability. It does well in its maturity area under adverse conditions, since it is a combination of lines bred to stand drought with those bred for high yields. The ears are long and smooth with deep, excellent shaped kernels.

**Sorghums**

**Forage Sorghums**

**Rancher**—the lowest hydrocyanic acid Dakota Amber forage sorghum in production. Developed by the South Dakota Experiment Station from a cross of a low and a high hydrocyanic acid Dakota Amber strain and back-crossed with the low hydrocyanic acid strain. It is 10 days to two weeks later, and is taller, heavier stemmed and more leafy than the low acid Dakota Amber strain 39-30-S. It is juicy, sweet and a high yelder of both forage and grain. It is adapted throughout the state where forage sorghums are grown.

**39-30-S**—(Low prussic acid) Dakota Amber—Very early, leafy, uniform, 60 inches tall, juicy, sweet and a good yelder of both forage and grain. It is adapted throughout the state where forage sorghums are grown.

**Rox orange**—A very sweet stalk sorghum. Makes excellent forage or silage. Brown-seeded. Mid-season in maturity.

**Leoti Red**—Origin unknown. Very sweet and juicy stalks which are leafy. Makes an excellent forage or silage. Light brown seeded. Mid-season in maturity.


**Axtell**—Tall sturdy leafy stalk, juicy and sweet. Seeds white, palatable, grain yield is not dependable because of late maturity.

**Sudan grass**—A high yielding, quick growing, nutritious and palatable forage. It is highly recommended as a mid-summer and early fall pasture and also can be used as a hay crop. Sudan grass requires a warm climate for its best development and has the ability to endure periods of drought.

**Piper Sudan grass**—developed by the Wisconsin Agricultural Experiment Station and released in 1951. It has good forage yielding ability and is very low in prussic acid content. It has good disease resistance and has the palatability characteristic of sweet sudan grass. It produces good regrowth after pasturing, has stiff stalks when mature and produces high yields of good quality seed. Foundation seed of this variety was released in South Dakota for 1952 production.

**Grain Sorghums**

**Norghum**—An extra early, high yielding, new variety of grain sorghum released from the South Dakota Experiment Station in 1949. It is a combine type which grows from 36 to 46 inches tall. Seed panicles are long, open, erect and carried well above the foliage. Open panicle favors drying.

**Improved Coes**—35 to 50 inches tall, leafy, slender stalk, semi-juicy, early. Seed heads long erect, and semi-compact, seeds white. A fair dual-purpose sorghum.

**Soy Beans**

**Hawkeye**—A new high yielding variety derived from the cross Mukden x Richland made at the Iowa Agricultural Experiment Station. Similar to Richland but exceeding it in yield, height, and oil percentage. Maturity too late for use except in the southeastern four or five counties of the state.

**Blackhawk**—A sister selection to Hawkeye and similar to Hawkeye in percentage of oil and protein, height, lodging resistance. Blackhawk yields from two to three bushels per acre less than Hawkeye, but will mature from five to seven days earlier than Hawkeye. This characteristic enables
Blackhawk to be grown with assurance throughout the southern half of South Dakota's soybean area. This variety can also be used in the lower elevations in the northeast area of the state.

Capital—Is a recent release from the Central Experimental Farm at Ottowa, Canada, which has shown superiority in earliness, yield and oil content.

Ottowa Mandarin—An improved early-maturing strain of Mandarin superior in lodging resistance and in oil content. Susceptible to shattering if allowed to stand late in the fall.

Manchukota—Developed by the South Dakota Agricultural Experiment Station—a moderately high yielding variety resistant to lodging and shattering, well suited to combine harvesting. Intermediate in maturity.

Richland—A highly productive variety too late in maturity for any but the southeastern portion of the state where the season is from five to ten days longer than the average.

Wisconsin Mandarin 507—An early improved strain of Mandarin adapted for the northern part of the state.

Habaro—Has yielded very consistently at the South Dakota Experiment Station. It is more vegetative in growth habits and more inclined to lodge than is the Manchukota, hence giving more difficulty in combine operations.

Adams—About 3 to 5 days later than Hawkeye. It is an extra tall variety and grows very upright. The seeds ripen uniformly throughout the plant. The yield, under South Dakota tests, has not been superior to the yield of Hawkeye. Because of its late maturity Adams has limited recommendation only in the very southeastern counties.

Lincoln—A late maturing variety for South Dakota and has limited recommendations only in the very southeastern counties. It resists both lodging and shattering. The plants are medium tall, seeds yellow with a black hilum. The oil content is high.

Alfalfa

Ladak—The parent material of this variety was introduced in 1910 from Northern India where it had developed for many generations under conditions of low winter temperatures and low annual rainfall. Small top growth after the second cutting and during the fall months with a consequent high rate of storage of food reserves in the underground parts contributes greatly to the cold and drought resistance of this variety. It ranks first in hay yield throughout the subhumid areas of this state; first in cold and drought resistance; and is moderately resistant to bacterial wilt. Ladak is, on these accounts, particularly well fitted to conditions of the northern great plains.

Ranger—Is a recent variety developed by the Nebraska Agricultural Experiment Station and the U. S. Department of Agriculture by combining several superior strains. It is wilt resistant, winter hardy and adapted for South Dakota conditions. Seed of this variety is in strong demand in eastern states, depending on western states for seed supply. Not particularly recommended in South Dakota for forage.

Cossack—The original seed of Siberian origin was introduced into the United States in 1907 by N. E. Hansen of the South Dakota Agricultural Experiment Station and the U. S. Department of Agriculture. Cossack is a very vigorous growing variety, only slightly less hardy than Grimm but more resistant to bacterial wilt. For the greater portion of the more favorable alfalfa-producing areas of the Dakotas it may be expected to be second to Ladak in forage production. It is particularly well adapted to those areas in South Dakota where two to three cuttings of hay are obtained.

Grimm—The original seed was brought from Germany in 1857 by Wendelin Grimm who settled in Minnesota. It yields well and is winter hardy. Not wilt resistant.

South Dakota Hardy—This is alfalfa from long established stands which has proven superior by test, and which has survived the extremes in climate during the past 20 or more years. Tests of South Dakota Hardy alfalfa show that the performance is comparable to that of the recommended
varieties for hay production in South Dakota.

Common Alfalfa — Is seed of alfalfa which may be harvested from unknown va-

tories. It is usually designated by the state in which it was produced, as Dakota Common.

Sweet Clover

Madrid—A new biennial white sweet clover, has shown superiority in yield and other characteristics in the northern plains region in comparison with the common unimproved white forms.

Hubam — An annual white-flowered sweet clover. It is of value for plowing under for green manure and for seed when biennial clovers fail. However, the biennial types are considered better adapted to the growing season of South Dakota. Hubam has to make its growth during the hot dry summer months which makes the annual type a higher risk than the biennial which makes it root and top growth during the cooler, more favorable part of the growing season. Hubam may be useful in limited areas where, because of poor drainage, “plowing under” of green manure must be done in late fall rather than in the month of May.

Birdsfoot Trefoil—a perennial legume having a medium type tap root with numerous side branching roots. The flowers are bright yellow and seeds are borne in slender straight pods. It is slow growing in the seedling stage and good stands are difficult to obtain. Seed production is very uncertain because pods shatter their seeds easily at maturity. This legume is useful primarily for pasture in its area of adaptation.

Birdsfoot Trefoil is not generally recommended for South Dakota. Several varieties are being tested and evaluated by the Experiment Station.

Grasses

Homesteader Bromegrass—is the best adapted varieties of smooth bromegrass for South Dakota. It was selected at the South Dakota Experiment Station from outstanding old fields of bromegrass which had proven adaptability to South Dakota conditions. In tests this variety has been superior in yield of forage and seed to southern strains and much better in forage production than northern strains of bromegrass.

This grass starts early in the spring but tends to become dormant during the summer. If moisture is present in the latter part of the season it will produce an abundant fall pasture. Because of its high forage yield and palatability it is a good pasture and hay grass. Seed harvested from old fields in this state has demonstrated superiority to imported seed. This grass is adapted to the eastern one-third of the state and the Black Hills area. As a species, Smooth Bromegrass is a perennial grass spreading underground by means of fast growing rhizomes or underground stems.

Lincoln Bromegrass—is a southern strain of bromegrass which is adapted to the extreme south eastern area of the state but has not proven superior in other places in South Dakota.

Standard Crested Wheatgrass—is a hardy, drought resistant perennial bunch grass native to the cold, dry plains of Russia and Siberia. This grass grows very early in the spring but during hot dry spells it becomes dormant resuming growth only with cooler weather and more favorable moisture conditions. These qualities make it well adapted for very early spring and late fall pasture especially in the western area where it produces pasture while the native ranges are unproductive. It produces a good seed and hay crop.

Fairway Crested Wheatgrass—is a strain selected at the University of Saskatchewan, Canada. The plants are finer-stemmed, more leafy and tiller more than those of the Standard. Since it thrives best under cool and moist conditions this strain appears to
be best adapted to areas of high elevation in the eastern part of the state.

Reed Wheatgrass—is a perennial grass with abundant, strong, creeping rhizomes which produce a dense sod. It was released by the South Dakota Experiment Station in 1945. It starts growth very early in the spring and grows throughout the summer if conditions are favorable, continuing growth very late into the fall. This grass is very palatable both as pasture and hay and is well adapted to the central and eastern part of the state. Often called Intermediate Wheatgrass.

Kentucky Bluegrass—is a perennial with creeping rhizomes producing a dense sod. It starts growth early in the spring and continues growth late in the fall, but has a long summer dormant period. It produces much less forage than Brome or Reed Wheatgrass. It is adapted to the eastern part of the state and also bottom lands.

Timothy—has a somewhat low forage production, but seed cost is less than that of most other grasses. Grown in a mixture with red clover, it is found suitable in short rotations in the extreme eastern part of the state.

Orchard grass is a perennial bunch grass. It does not form a compact sod as do Kentucky Bluegrass or Bromegrass. If not managed properly, its bunchiness becomes objectionable. Orchard grass prefers moist and well-drained soils. It makes a vigorous early spring growth. It appears to be adapted to the higher and better-drained land of the Black Hills area.

Reed Canary grass—a long-lived perennial, tends to grow in clumps, and plants spread by means of short underground rhizomes. The forage is abundant but not as nutritious or palatable as brome grass or Reed Wheatgrass. Reed Canary grass is exceptionally well suited for low areas which are flooded for two or three weeks in the spring. It is particularly adapted for pot holes which do not contain alkali.

Tall Wheatgrass—a new tall, branch-type grass which shows tolerance to very wet alkaline conditions. It appears to be useful on such low-lying land as is unsuitable to production of other tame grasses or crops.

**Proso Millet**

Crown Millet is a relatively fine stemmed, panicle type proso millet of Canadian origin. The seed is gray in color. It matures in about 85 to 90 days. Canadian tests indicate it to be superior in hay and grain yields to other proso millets in the same maturity class.

Red Thurghai—A medium late grain millet maturing in 70 to 75 days. It has in general produced highest average yields in area represented by North Dakota, South Dakota and Wyoming. The hay is of poor quality.

Early Fortune—An extremely early grain millet. Reddish-brown seed. Because of its small growth and extremely early maturity this variety produces relatively small yields. However, it may be ready to harvest 60 to 70 days after sowing. The hay is of poor quality.

Black Voronezh—A medium late grain millet. Brownish-black seed. Average days from seeding until ripe is about 70-75 days.

**Foxtail Millet**

Kursk—A selection from Siberian. Earliest of all foxtail millets. Can sometimes be cut for hay 45 days after seeding. Average date for hay production is 65 days. Popular in western South Dakota.

Siberian—A hardy drought resistant variety. Seeds are orange in color. Under good growing conditions it is ready to cut in 65 to 70 days. Fine stemmed and leafy and makes good quality hay.

Hungarian—This millet has a small compact head, resembling common millet very closely. Bristles are of purplish color. Seed color varies from pale yellow to brown,
sometimes dark purple. Will mature for hay in about 75 to 80 days but it is not as drought resistant as Kursk or Siberian. The hay quality is good.

**German**—A late foxtail millet requiring 85 to 90 days for hay production. It has heavy stems, broad leaves. Seeds are small and dull in appearance. Requires more moisture for development than Kursk or Siberian.

**Rape**

**Dwarf Essex**—A biennial variety. It is generally ready to be grazed 10 to 12 weeks after seeding.

**Emmer**

*(Often incorrectly called “Speltz”)*

**Vernal**—*(white spring)*—This is the common variety grown in South Dakota. It has slender, nodding heads about two inches long. Very resistant to rust and smut. Emmer is better adapted to eastern South Dakota than to central and western areas.

**Dry Beans**

**Great Northern**—A large white early maturing, drought resistant variety of high productivity. Resistant to common bean mosaic disease.

**Pinto** — A speckled buff-colored bean, adapted to the dryland conditions.

**Tepary**—A white edible bean, resistant to heat and drought.

**Buckwheat**

**Japanese**—Large seeded brown variety.

**Silverhull**—Silver gray seed. Plants are smaller than Japanese.

It is a common practice to mix seed of Japanese and Silverhull. The shorter Silverhull supports the taller Japanese plants and the taller plants help shade the shorter Silverhull preventing heat injury.

### Weights Per Bushel and Rates of Seeding

<table>
<thead>
<tr>
<th>Crop</th>
<th>Weight</th>
<th>Rate of Seeding*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>60</td>
<td>4 to 12 lbs.</td>
</tr>
<tr>
<td>Barley</td>
<td>48</td>
<td>5 to 7 lbs.</td>
</tr>
<tr>
<td>Beans, Field</td>
<td>60</td>
<td>30 to 60 lbs.</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>16-32</td>
<td>10 to 15 lbs.</td>
</tr>
<tr>
<td>Bromegrass</td>
<td>12-14</td>
<td>8 to 10 lbs.</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>50</td>
<td>3 to 5 lbs.</td>
</tr>
<tr>
<td>Corn</td>
<td>56</td>
<td>2 to 4 per hill</td>
</tr>
<tr>
<td>Crested wheatgrass</td>
<td>30</td>
<td>5 to 12 lbs.</td>
</tr>
<tr>
<td>Emmer</td>
<td>40</td>
<td>6 to 8 lbs.</td>
</tr>
<tr>
<td>Flax</td>
<td>56</td>
<td>2 to 3 lbs.</td>
</tr>
<tr>
<td>Millet, Foxtail</td>
<td>50</td>
<td>40 to 50 lbs.</td>
</tr>
<tr>
<td>Millet, Proso</td>
<td>50</td>
<td>20 to 25 lbs.</td>
</tr>
<tr>
<td>Oats</td>
<td>32</td>
<td>5 to 12 lbs.</td>
</tr>
<tr>
<td>Hulless oats</td>
<td>42</td>
<td>35 to 50 lbs.</td>
</tr>
<tr>
<td>Rape</td>
<td>60</td>
<td>5 to 8 lbs.</td>
</tr>
<tr>
<td>Reed Canary grass</td>
<td>30-40</td>
<td>4 to 6 lbs.</td>
</tr>
<tr>
<td>Ree wheatgrass</td>
<td>18-24</td>
<td>5 to 12 lbs.</td>
</tr>
<tr>
<td>Red Clover</td>
<td>60</td>
<td>4 to 12 lbs.</td>
</tr>
<tr>
<td>Rye</td>
<td>56</td>
<td>3 to 6 lbs.</td>
</tr>
<tr>
<td>Sorgohum, Forage</td>
<td>60</td>
<td>8 to 15 lbs.</td>
</tr>
<tr>
<td>Sorgohum, Grain</td>
<td>60</td>
<td>3 to 5 lbs.</td>
</tr>
<tr>
<td>Soybeans</td>
<td>60</td>
<td>3 to 4 lbs.</td>
</tr>
<tr>
<td>Sudan grass</td>
<td>35-40</td>
<td>12 to 25 lbs.</td>
</tr>
<tr>
<td>Sunflowers</td>
<td>24</td>
<td>5 to 8 lbs.</td>
</tr>
<tr>
<td>Sweet Clover</td>
<td>60</td>
<td>4 to 12 lbs.</td>
</tr>
<tr>
<td>Timothy</td>
<td>45</td>
<td>4 to 10 lbs.</td>
</tr>
<tr>
<td>Wheat</td>
<td>60</td>
<td>4 to 6 lbs.</td>
</tr>
</tbody>
</table>

*In general, use lower rates of seeding in lower rainfall areas. Variations in size of seed of different varieties must also be considered.*

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