

2-1949

South Dakota Crop Varieties Recommendations and Descriptions: In Most of South Dakota There is a Crop-hazard Time in Mid-summer That Must be Considered in Choosing Varieties

Agricultural Extension Service, South Dakota State College

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Recommended Citation

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South Dakota Crop Varieties

Recommendations and Descriptions

MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER

ADAPTED VARIETY SEED

SOUTH DAKOTA GROWING SEASON

EARLY VARIETIES READY TO HARVEST BEFORE "JULY"

S. DAK GROWING SEASON BEGINS ABOUT MAR. 15 AND ENDS JULY 10

CLEAN & TREAT SEED

"I'LL JUMP JULY!"

SORGHUM

HAZARD TIME

July 10 — Aug 15
HEAT
GRASSHOPPERS
DROUGHT
PLANT DISEASES
HAIL

NATURE LIES DORMANT JULY 10 - AUG 15

SORGHUM LAID LOW NOW RAIN - OH BOY!

ANOTHER GROWING SEASON AUG. 15 TO FROST

NATURE CALL AUG. 15

In most of South Dakota there is a crop-hazard time in mid-summer that must be considered in choosing varieties

AGRICULTURAL EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE, BROOKINGS
U. S. DEPARTMENT OF AGRICULTURE, COOPERATING

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 bulletin, 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 some years than others.

By U. J. Norgaard, Extension Agronomist, and Elmer E. Sanderson, Associate Extension Agronomist, in collaboration with J. E. Grafius, Agronomist; C. J. Franzke and D. B. Shank, Associates in Agronomy; M. W. Adams, V. A. Dirks, and J. G. Ross, Assistant Agronomists; and W. W. Worzella, Head of the Agronomy Department, at South Dakota State College, Brookings.

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.*

Although we can't outguess the weather, we can use varieties that have done well over a period of years and that fit South Dakota's climate. Many introduced varieties yield well for one or two years when rainfall is plentiful, but fail in normal years when rainfall is limited especially during July and August. (See cover page.)

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.

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 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.

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

In summary, it will be noted that there are several good varieties recommended for each agricultural area. Therefore, the farmer should first of all choose 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.

Wheat

Description of Recommended Varieties

Hard Red Spring Wheat

Rushmore—A beardless variety developed at the South Dakota Experiment Station from the cross Rival x Thatcher, Selection No. 2280. It is stem rust resistant, as early as Thatcher, and has yielded as well as Rival, Pilot and Mida in the seven years tested. While Rushmore has no greater leaf rust resistance than these three varieties, it is stiffer strawed than Pilot, less likely to shatter than Rival and its loose smut resistance makes it an improvement over Mida. Rushmore has satisfactory milling and baking qualities, and appears well suited to Central and Western South Dakota.

Pilot, Pilot 13—Bearded, resistant to many races of leaf rust, stem rust, bunt and loose smut. Matures two to five days later than Thatcher. Straw slightly weaker than Rival. This variety was derived from the cross of Hope x Ceres. Suitable for all spring wheat areas of the state. Pilot 13 is a selection out of Pilot.

Rival—Bearded, purplish straw. Resistant to many races of leaf rust, stem rust, bunt and loose smut. About one day earlier in maturity than Pilot. Yield equal to Pilot but more resistant to lodging than Pilot. Head type more open and has a greater tendency to shatter than Pilot. Developed from a cross of Ceres x (Hope x Florence). Suitable for all spring wheat areas of the state.

Mida—Bearded, high test weight spring wheat. Resistant to bunt, stem rust, most races of leaf rust, but susceptible to loose smut. Maturity and strength of straw similar to Rival, but has less tendency towards shattering and bleaching. Its yielding ability in the years tested has been slightly greater than either Rival or Pilot. Derived from a multiple cross including Ceres, Hope, Florence and Double Cross, a sister selection of Thatcher.

Durum Wheat

Vernum—New semolina amber durum variety produced by crossing Vernal Emmer and Mindum and backcrossing to Mindum. It is several days earlier than Mindum, resistant to stem rust and leaf rust. Its main advantage over Mindum is its greater resistance to stem rust. However, it has a somewhat weaker straw.

Mindum—Amber seeded semolina (macaroni flour) durum. Moderately susceptible to stem rust and bunt, but resistant to leaf rust. Maturity about a week later than Pilot, a hard red spring wheat.

Stewart—A new macaroni flour durum developed from the cross of Vernal x Mindum backcrossed to Mindum. Resistant to stem rust. It is several days later than Mindum in maturity. It was developed through the cooperation of the USDA and North Dakota Agricultural Experiment Station.

Kubanka—Similar to Mindum in description and performance.

Winter Wheat

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 stem rust.

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.

Description of Varieties of Secondary Importance

Thatcher—Beardless; heads are shorter than Marquis and more compact. About two days earlier than Ceres. Resistant to stem rust, very susceptible to leaf rust and moderately resistant to bunt. Milling and baking qualities very good. Developed from a cross of (Marquis x Iumillo durum) x (Kanred x Marquis).

Ceres—Bearded; intermediate between Marquis and Thatcher in maturity. Susceptible to some races of stem rust, susceptible to leaf rust and very susceptible to bunt and loose smut. About equal to Thatcher in yield when stem rust not a factor. Good milling and baking qualities. Developed from a cross of Marquis x Kota.

Newthatch—A hard red spring wheat developed by the Minnesota Experiment Station in cooperation with the U. S. Department of Agriculture. It has high resistance to stem rust and greater leaf rust resistance than Thatcher.

Reward—Beardless. Very early. Hairy chaff. Susceptible to stem rust, leaf rust and covered smut. Very susceptible to grasshopper damage.

Marquis—Beardless; Medium late. Susceptible to leaf rust and stem rust. Excellent milling qualities.

Regent—Beardless; about the same maturity as Thatcher. Yield not as high as Pilot or Rival at locations tested. Resistant to stem rust and leaf rust. Developed from a cross H44 x Reward. Milling qualities good.

Redman—Beardless; maturity similar to Thatcher. Developed in Canada from a Regent x Canus cross. Milling and baking qualities good. Yield tests at Brookings indicate that it will probably yield less than the varieties recommended in this circular.

Pentad—A red durum not acceptable as a semolina durum. Has, in general, outyielded the semolina types. Resistant to stem rust and leaf rust.

Pelissier — Also called black bearded durum. Has long amber-colored kernels. Yield comparable to Mindum. Grown in area 2. It does not produce satisfactory macaroni flour but is used in the manufacture of puffed wheat. This variety appears to have good drought and grasshopper resistance.

Pawnee and Wichita—Two early, high yielding winter wheat varieties recently released jointly by Nebraska, Kansas, Oklahoma and Texas. These varieties have excellent yielding capacity where adapted. Since they are not winter hardy enough for the usual South Dakota conditions, they cannot be recommended in this state.

Rye

Description of Recommended Varieties

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.

South Dakota Common—The name given to hardy, adapted strains of rye which, by cross pollination, have lost their original identity. Chances are that such strains contain a mixture of Dakold, Advance, Swedish and others.

Description of Varieties of Secondary Importance

Emerald—A new variety 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. On the basis of three years' data, it has performed fairly well.

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 Wis-

consin. Imperial is now under test at the South Dakota Experiment Station. 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

Description of Recommended Varieties

Clinton—A mid-season yellow oat derived from the cross Iowa D69 x Bond. This variety is resistant to most races of stem rust and leaf rust, as well as smut and the new Helminthosporium disease. It is stiff strawed, medium tall and has produced large yields of plump, high test weight grain.

Mindo—Produced from the cross Bond x (Minota x White Russian) x Black Mesdag. Mindo is very similar to Clinton in yield, general plant type and disease resistance but is about four inches shorter and is several days earlier.

Brunker—A very early red oat selected from Burt. It is susceptible to leaf rust, stem rust and smut. This variety is adapted to the central and western areas of the state where early maturity is essential because of drouth and grasshoppers and where the cereal rusts are less common. It is not adapted to eastern South Dakota.

Trojan—A very early white oat. Has a greater strength of straw than Brunker. It is

susceptible to leaf rust, moderately resistant to stem rust and resistant to smut. Adapted to same area as Brunker.

Nemaha—A (Victoria x Richland) x (Morota x Bond) selection increased by Kansas and Nebraska. It is resistant to Helminthosporium victoriae and its kernels have a reddish cast. In South Dakota, Nemaha has yielded well, is several days earlier than Clinton and may be suitable for certain areas where earliness is important. Seed is scarce at this time and may not be available until 1950.

Cherokee—A Bond x D69 selection released by Iowa and Kansas. In South Dakota it is similar to Nemaha in appearance, yield and earliness and has the same type of disease resistance as Clinton. This variety appears adapted to eastern South Dakota and may find favor where an earlier oat than Clinton is desired. Certified seed is now being increased and supplies may be available in 1950.

Description of Varieties of Secondary Importance

Marion—Developed from the cross Markton x Rainbow. It is resistant to Helminthosporium and to some races of stem rust and smut. It is medium early, has a white grain and moderate straw strength. Its tall straw may make it valuable on low fertility soils in northeastern South Dakota. It has performed extremely well in years when leaf rust and lodging have not been severe.

Benton—A sister selection of Clinton and very similar to it in plant type and disease resistance, except that it is about four inches taller than Clinton and later in maturity. In many years Benton may suffer because of its lateness.

Bonda—A Bond x Anthony selection, very similar to Benton in yield, height, maturity and disease resistance. Like Benton, it is late for South Dakota.

Osage—A short, yellow very early oat produced by crossing Fulton and (Victoria x Richland). It has yielded well in the western section of the state. Unfortunately it is susceptible to the new *Helminthosporium* disease and should not be planted where this is likely to occur. It has a tendency to a shorter straw than Bruncker. In disease resistance it is very similar to Vikota.

Vikota, Tama, Boone, Vicland and Cedar—Medium early-yellow oats derived from the cross Victoria x Richland. These varieties have good straw strength, are resistant to most races of stem rust, leaf rust and smut, but are very susceptible to the *Helminthosporium* disease of oats. These varieties represent a plant type well adapted to central South Dakota conditions, where the *Helminthosporium* disease has not yet been severe. Seed treatment with the organic mercury dusts is recommended for these varieties as a precautionary measure.

Richland—A medium early yellow oat selected from Kherson. It is resistant to stem rust and to loose and covered smut, but susceptible to leaf rust.

Gopher—A medium early white oat selected from 60 day oats. It is susceptible to smut and leaf rust and is moderately toler-

ant to the common races of stem rust.

Nakota—A hullless oat developed from a cross of (Markton x Richland) x (Swedish Select x Kilby Hullless). It is resistant to smut, but highly susceptible to leaf rust and Race 8 of stem rust. The yields are comparable to Richland when the weights are adjusted for hulls.

Burt—A very early red oat. This oat is moderately susceptible to stem rust and susceptible to leaf rust and resistant to smut.

Three new varieties of oats listed below, are being increased for distribution by neighboring states. Further testing is needed to determine their value for South Dakota. Seed of these varieties will not be available until 1950.

Andrew—Developed at Minnesota from the cross Bond x Rainbow. It is quite early and yields well, but is very susceptible to Race 8 of stem rust, which has been prevalent recently.

Shelby—Produced at Iowa from the cross (Anthony x Bond). In yield, test weight and disease resistance, it resembles Clinton, but it is 3—5 days later and is weak-strawed.

Zephyr—A Minnesota release. Selected out of (Bond x Anthony); it has capacity for high yields in favorable years, but like Shelby, it is too late and weak-strawed.

Barley

Description of Recommended Varieties

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.

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.

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. Malting data indicate that this variety may be classed as a feed barley.

Mars—This six-rowed, smooth-awned, early maturing, feed barley was selected from the cross Minnesota 462 x Peatland at the Minnesota Agricultural Experiment Station. Mars is stiff-strawed and resistant to stem rust. It appears to be fairly well suited to eastern South Dakota.

Varieties Recommended for South Dakota

Crop and Variety Areas in which adapted

Wheat
Spring Wheat
 Rushmore
 Pilot
 Rival
 Mida
 } All areas where spring wheat is grown

Winter Wheat
 Minter
 Nebred
 Minturki
 } Southern part of areas 2, 6, 7, 8

Amber Durum
 Mindum
 Kubanka
 Vernum
 Stewart
 } Areas 2, 3, 4, 5, 6, and 7
 Northern 1/2 of areas 3, 4, 5

Oats
 Clinton
 Mindo
 Cherokee—Nemaha
 } Areas 4, 5, 8, eastern part of 7
 Areas 4, 5, 7, 8, northern 1/3 of 3
 Areas 4, 5, 7, 8

Brunker
 Trojan
 } Areas 1, 2, 6, southern 2/3 of area 3 and western part of area 7

Rye
 Dakold
 South Dakota Common
 } All areas of state

Flax
 Dakota
 Koto
 Sheyenne
 } Areas 4, 5, 8
 Areas 3, 4, 5, 7, 8

Field Corn*
Sokota Hybrids
 204, 212
 224
 400
 } In general between Highways 12 and 212 in areas 3, 4, 5
 Southern portions of areas 3, 4 and 5, except where earlier hybrids are needed
 Area 6 and Northern portion of areas 7 and 8

Open-Pollinated
 Silver King; Dakota White; Payne's White; Alta; Brown County dent; Fulton; Northwestern Dent; Squaw Corn; Gehu Flint; Rainbow Flint; Falconer
 } Areas 2 and 3

*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.

Crop and Variety Areas in which adapted

Barley
 Odessa
 Feebar
 Plains
 Spartan
 Mars
 Trebi
 Wisconsin 38
 Velvon 11
 Tregal
 Moore
 } Areas 4, 5, 7, 8, Northern part of 3
 All areas of the state
 Areas 1, 2, 3, 4, 6, 7
 Areas 1, 2, 3, 6
 Areas 5, 8
 Areas 1, 2, 6, southern part of 3
 Areas 5, 8 and eastern part of 7
 Areas 6, southern part of 2 and 7
 Northern part of areas 3, 4, 5
 Areas 5, 8

Alfalfa
 Ranger
 Ladak
 Cossack; South Dakota Hardy; Common Alfalfa; Baltic; Grimm
 } All areas of the state. Because of its wilt resistance this variety is recommended especially for seed production for eastern trade.
 } All areas of the state, but especially for the drier areas where no more than two cuttings are obtained.
 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 Hull
 } Where these crops are desired, these varieties are recommended

Crop and Variety Areas in which adapted

Sorghums
Forage Sorghums
 Low Prussic Acid (39-30-S)
 Rancher
 Atlas
 Rox Orange
 Leoti Red
 Norkan
 Sudan Grass
 } All areas where sorghum is grown
 } Areas 6, 7, 8 and southern part of 4 and 5
 Areas 6, 7, 8, southern parts of 3 and 4
 All areas of the state

Grain Sorghums
 Norghum
 Sooner Milo
 Improved Coes
 Colby Milo; Midland Milo
 Martin Milo
 } All areas of the state
 Areas 2, 3, 6, 7, southern part of 4
 Areas 2, 3, 6, and 7
 Southern part of areas 2, 3, and area 6

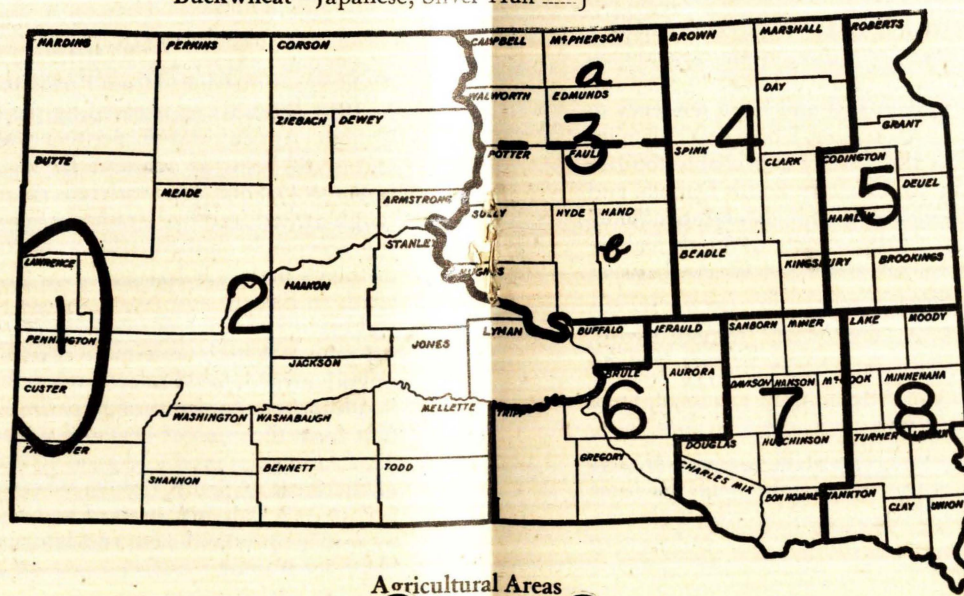
Grasses
 Smooth bromegrass
 Standard Crested Wheatgrass
 Fairway Crested Wheatgrass
 Ree Wheatgrass
 Kentucky Bluegrass
 Timothy
 } Areas 1, 4, 5, 7 and 8, and low-land soil areas 3 and 6
 } Areas 2, 3 and 6—gravelly uplands in areas 4 and 7
 Area 5
 } Areas 1, 3, 4, 6 and 7 and up-land areas 5 and 8
 } Areas 1, 5 and 8—Bottom land of areas 3, 4, 6 and 7
 Areas 5 and 8

Soybeans
 Manchukota
 Ottawa Mandarin
 Richland; Hawkeye
 } Area 8 and southern part of 5
 Area 5 and northern part of 8
 Southern half of area 8

Foxtail Millet
 Kursk; Siberian
 Hungarian
 German
 } All areas
 Areas 5, 6, 7 and 8
 Areas 7 and 8

Clover
Sweet Clover
 Common and Madrid (biennial)
 Hubam (annual)
 Red Clover—Midland
 } All areas of the state
 Areas 4, 5, 6, and 7
 Areas 1, 7 and 8

Proso Millet
 Red Thurgai (Medium early)
 Early Fortune (Early)
 Black Voronezh (Medium early)
 } All areas of the state



Agricultural Areas

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).

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.

Moore—A recent release by the Wisconsin Agricultural Experiment Station. This variety is a six-rowed, tall, smooth-awned, malting type. It is resistant to stem rust and is stiff-strawed. Moore was derived from the cross involving Oderbrucker, Lion, Chevron and Olli. While yield data indicate that Moore is inferior in yield to Odessa, the stiff straw and resistance to stem rust may be of sufficient importance to recommend this to the farmers in eastern South Dakota. Moore is about two days later in maturity

Description of Varieties of Secondary Importance

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, for a four year average.

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.

Compana—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 fair yields in some seasons.

Montcalm—A six-rowed, smooth-awned variety derived from the cross (Michigan

than Odessa.

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.

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.

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

Trebi—A six-row, rough-awned, feed barley introduced from the vicinity of the Black Sea in 1905. It is later than Spartan, extremely vigorous and has in general produced higher yields than Spartan; however, because of Trebi's weak straw, later maturity and rough awns, Spartan barley is generally grown in its place.

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, 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.

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 for three years have been slightly inferior to the recommended varieties in central and western South Dakota.

Flax

Description of Recommended Varieties

Dakota—A cross between Bison and Renew. It is medium tall, brown seeded, resistant to wilt and rust, and like all other commercial varieties of flax, susceptible to pasmo. It produces high quality oil and has yielded well.

Sheyenne—Selected from a cross of Ottawa 770B x Buda, it is early maturing, wilt and rust resistant, but susceptible to pasmo.

It produces high quality oil and is adapted for areas where early maturity is essential.

Koto—A mid-season, brown-seeded medium tall variety. It is resistant to wilt, resistant to some races of rust and moderately susceptible to pasmo. This variety has an excellent plant type and competes more successfully with weeds than Redwing, Buda or Crystal.

Description of Varieties of Secondary Importance

Redwing—A medium early, brown-seeded, medium tall flax. It is resistant to wilt, somewhat susceptible to rust and susceptible to pasmo. This variety was selected from an unnamed variety.

Crystal—A yellow seeded variety, 3 to 4 inches taller than Koto and 2 to 5 days later. In general it has not produced as well as Koto, but it may answer the desire for a yellow-seeded variety for northeastern South Dakota. It is resistant to wilt, rust and pasmo, but the plant type is more slender and less branching than Koto and it does not compete as successfully with weeds.

Bison—A mid-season, brown-seeded medium tall variety. It is resistant to wilt,

susceptible to rust and pasmo.

Buda—A mid-season, brown-seeded, medium-tall variety. It is moderately resistant to rust, resistant to wilt and susceptible to pasmo.

Biwing and Redson—Characteristics and yields similar to Redwing. These varieties tend to combine the good oil quality of Redwing with the higher oil yields of Bison.

Minerva—A very recent release by the Minnesota Experiment Station. It has deep blue flowers, yellow seeds and is of medium late maturity. It is resistant to wilt and moderately resistant to rust. Seed of this variety will not be available until 1949 or 1950.

Field Corn

(Sokota Hybrids)

Sokota hybrids are classified into four series: 200, 400, 600, and 800, with 200 being the earliest and 800 the latest. Three hybrids in the 200 series and one in the 400 are now available. The 200 series is best adapted to parts of areas 3, 4 and 5, while the 400 series is adapted 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 224. Brief descriptions of the three hybrids follow.

Sokota 204, pedigree (SD101 x SD104) x

(SD102 x SD105). This is the earliest Sokota hybrid and is well suited to most of the central and northern sections of the state, except where a very early hybrid is required. It is a low eared, rather short stalked hybrid which stands well. However, the ears are still high enough for easy harvesting. The ears are only medium length and rather thick, the latter caused by deep kernels. The kernels carry a slightly reddish cast.

Sokota 212, pedigree (SD101 x SD106) x (SD102 x SD105). This hybrid is three-quarters related to Sokota 204 and is recommended for the same general areas of the

state. It is slightly later in maturity. Stalks are medium in height with a short ear shank. The plants have a slightly narrower leaf than either Sokota 204 or Sokota 224. Ears are smooth and have deep yellow kernels.

Sokota 224, pedigree (SD101 x SD102) x (SD105 x SD107). This is a high yielding corn. The latest of the 200 series now in production, it is still an early corn. The stalks are strong with ears on short strong shanks. Stalks are slightly taller than the above two hybrids but it still stands well. Leaves are just a little lighter green than those of the

other Sokotas described. Ears are rather roughkerneled with the kernels being fairly light yellow in color. Deep kernels and a small cob give this hybrid a high shelling percentage.

Sokota 400 is the one hybrid in the 400 series. Its pedigree is (SD105 x SD107) x (WF9 x M14). It is a combination of lines bred to stand heat and drouth with those bred for later maturities and high yields. It has fairly short strong stalks with large ears. Standability and yield are excellent. Ears are long and smooth with deep, excellent kernels.

Sorghums

Description of Recommended Varieties

Forage Sorghums

Rancher—Is 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 yielder 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 yielder of both grain and forage.

Rox orange—A very sweet stalk sorgho. 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.

Norkan—A cross between Atlas and Early Sumac. Semi-sweet stalk. Seeds white, palatable. Earlier than Atlas. 60 to 70 inches tall.

Atlas—Tall sturdy leafy stalk, juicy and sweet. Seeds white, palatable, grain yield in South Dakota not dependable because of late maturity.

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, very early. Seed heads long erect, and semi-compact, seeds white. A fair dual-purpose sorghum.

Description of Varieties of Secondary Importance

Grain Sorghums

Sooner Milo—Dwarf Milo—early, medium leafy, 36 inches tall, small compact oval head and large brownish seed.

Midland Milo—Is a selection from Kalo. In maturity it is very similar to Early Kalo. It is a combine type which grows from 30 to

38 inches tall. It has an elongated, somewhat open head and reddish-brown, Kalo-type seed. The seeds are a little larger than that of Early Kalo.

Colby Milo—Combine type. Grows about two feet tall. Produces compact heads of brownish seeds. Not as early as Sooner Milo,

but has stronger stalk permitting it to stand longer for combining. It is too late in maturity for most seasons in South Dakota.

Martin Milo—Is a selection from wheatland. Its maturity is about the same as for Early Kalo. It is more lodge resistant than

Early Kalo. A combine type which grows 30 to 40 inches tall. It has long, semi-compact heads with fairly large, orange-brown colored seeds. Too late in maturity in some seasons.

Soybeans

Description of Recommended Varieties

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.

Ottawa 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.

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.

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.

Description of Varieties of Secondary Importance

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.

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

Alfalfa

Description of Recommended Varieties

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 sub-humid areas of that 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 new 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 new variety is being multiplied and is becoming increasingly available.

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.

Baltic—Originated in 1906 at Baltic, South Dakota. It is the result of natural selection, probably from Grimm. Baltic is resistant to cold and produces high yields of quality forage. Not resistant to bacterial wilt.

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

Clover

Sweet Clover

Madrid—A new biennial white sweet clover, has shown superiority in yield and other characters 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 seeding 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 its 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.

Red Clover

Midland—A new variety showing some superiority over common red clover in winter hardiness, yield, and resistance to northern anthracnose.

Cumberland—An improved variety adapted to the southern part of the red clover belt. It has moderate resistance to southern anthracnose. It is not recommended for forage purposes in South Dakota. There is a possibility that it may be grown in limited areas like the Black Hills for seed production for the southern clover belt that cannot grow its own seed.

Grasses

Smooth Bromegrass—Is perennial with strong creeping rootstalks producing a dense sod. It begins growth early in the spring and grows throughout the summer, continuing growth until late in the fall. It is a good pasture and hay grass. Seed harvested from some old fields in this state give superior yields of forage to those stands from imported seed. This grass is adapted to the eastern one-third of the state, and the Black Hills area.

Standard Crested Wheatgrass—Is a hardy, drought resistant perennial bunch grass native to the cold, dry plains of Russia and Siberia. It is very early in spring growth but during hot, dry spells it becomes dormant and resumes growth with cooler weather and more favorable moisture conditions. It is well adapted as an early summer and late fall pasture. It produces a good seed and hay crop. It is adapted especially to the western area.

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. It thrives best under cool and moist conditions. It appears to be adapted in areas of high elevation in the eastern part of the state.

Ree Wheatgrass—Is perennial with abundant strong creeping rootstalks producing 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, continuing growth very late into the fall. It is a good pasture and hay grass. It is adapted to the central and eastern part of the state.

Kentucky Bluegrass—Is a perennial with widely creeping rootstalks producing a dense sod. It starts growth early in the spring and continues growth late in the fall, and has a long summer dormant period. A good pasture grass relished by all classes of livestock. It is adapted to 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.

Proso Millet

Red Thurgai—A medium late grain millet maturing 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.

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.

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.

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.

THE ROAD TO SUCCESSFUL CROP PRODUCTION

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.

Weights Per Bushel and Rates of Seeding

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

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

Agricultural Extension Service

George I. Gilbertson, director

**South Dakota State College and United States Department of Agriculture, Cooperating
In Furtherance, Acts of Congress, May 8, June 30, 1914**