FS384
(revised)

Oat Production in South Dakota

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South Dakota is a large oats producing state; the crop has made an important contribution to the state's economy. In recent years acreage has stabilized at about 21/2 million acres with average annual production of about 100 million bushels.

Oats is produced both as a cash crop and as a feed crop. Usually oats has an economic advantage if used for livestock feed, and perhaps even more if it is used for hay or silage. Research has shown that the total digestible nutrients produced per acre can be doubled if the entire oats crop is harvested as forage.

Oats in the Rotation
Oats usually follows an intertilled or row crop that leaves the soil in condition to be prepared quickly for spring planting. Yields are often greater following a row crop than following another small grain crop in the rotation.

Oats are often used as a companion crop for the establishment of alfalfa or other legumes.

Response To Soil Fertility
Oats, like all small grains, develops rapidly in the early spring when soils are cool. Under these conditions, nitrogen release is low. If available plant food, especially nitrogen, is lacking, the oat plant will be yellow, short, and have fewer tillers. Under such conditions, grain quality may be good but the yield is likely to be disappointing. This is especially true for early varieties which must make their growth earlier in the season than late varieties.

Oats will respond to commercial fertilizers. However, the use of commercial fertilizers will not always pay in the lower rainfall areas of western South Dakota. A soil test should be made to accurately determine soil fertility levels and plant food needs.

Seedbed Preparation
Double disking and harrowing row crop land is a common method of preparing a seedbed for oats. This method is relatively cheap, fast, arid leaves 3 to 4 inches of loose, friable soil on the surface with firm soil beneath.

Spring plowing may give increased yields but is slow and more costly. All plowed land should be packed either before or after planting to prevent excessive moisture evaporation. Firm seedbeds are invaluable when drought conditions prevail.

Time of Seeding
Oats should be seeded as soon as the soil can be properly worked with normal farm equipment. "Mudding in" before the surface soil has a chance to dry has not proven to be profitable.

Method and Rate of Seeding
Seeding with a grain drill is the best method. Drilling distributes the seed evenly at a uniform depth in moist soil where conditions are favorable for germination. Drilling is even more beneficial in the drier areas. Broadcasting and disking in is cheaper but can only be justified on small acreages.

Seed at the rate of 2 to 21/2 bushels per acre. Western areas may seed even less than 2 bushels. Increase the rate slightly for broadcasting.

Type of Seed
The first priority in getting a successful crop is to use seed of an improved variety, free of weed seed and of high germinating ability. A good farmer will seed nothing else. Certified seed is your assurance of getting quality seed of the desired variety. Fully mature, plump, high-test-weight seed produces stronger seedlings than light-weight seed, and the seedlings emerge more rapidly. Therefore, it is desirable to plant only good clean seed where plenty of wind has been used to remove the light-weight and diseased seeds.

Weed Control
A planned cultural weed control pro gram should be practiced throughout the cropping rotation and should be supplemented with herbicides as needed.

Use 2,4-D amine or MCPA ester or amine on broadleaved weeds. Apply when the crop is in the 3-to 4-leaf or very early boot stage. Use the minimum amount needed to control the weed. Rates of 1/2 pound of 2,4-D or MCPA amine or 1/3 pound acid equivalent of MCPA ester per acre seldom cause appreciable damage to the oats.

Use dicamba (tradename Banvel) or bromoxynil (tradename Brominal or Buctril) to control wild buckwheat. Apply dicamba at 1/8 pound acid equivalent (1/4 pt product) per acre when oats are in the 2- to 5-leaf stage. Apply bromoxynil at 1/4 pound acid equivalent (1 pt product) per acre when oats are in the 2-leaf to early boot stage.

To improve the control of broadleaved annual weeds other than wild buckwheat, mix 1/4 pound acid equivalent of MCPA amine per acre with dicamba or mix 1/4 pound acid equivalent of MCPA ester per acre with bromoxynil (tradename Brominal). Do not graze or harvest oats treated with dicamba for dairy feed prior to crop maturity.

Use MCPA to control broadleaved weeds in oats underseeded with a legume. Apply 1/4 pound acid equivalent of MCPA amine per acre after oats are tillered until boot stage and legume seedlings are 2 to 3 inches tall.

Oats are less tolerant to 2,4-D and MCPA than other spring grains but are more tolerant to MCPA than 2,4-D. It is advisable to use MCPA when wild mustard, lambsquarters or Canada thistle is the major weed problem. MCPA is less effective than 2,4-D on several kinds of broadleaved weeds and on most larger weeds when used at low rates.

Oats are more tolerant to amine than ester formulations. Oat varieties vary in tolerance to 2,4-D. The risk of injury is usually greater when growing conditions are near ideal and the crop is lush.

For complete information on weed control in oats, secure FS 552, "Weed Control in Small Grains." Annual herbicide recommendations are outlined in FS 525A, "Weed Control in Small Grains and Forages." Be sure to read the label on the herbicide before using.

Harvesting and Storing

Most of the oat acreage is harvested with a combine, either direct or from a windrow. Because of weeds, uneven ripening, shattering, and sometimes high moisture of the grain, the windrowing method is most common in eastern oat producing counties. Highest quality grain is obtained by allowing the oats to mature and threshing as soon as the grain is dry enough for safe storage. The moisture content of the grain should be 14% or less for safe storage.

Marketing the Oat Crop

Much of the oat crop is fed on the farm and then marketed in the form of livestock and livestock products. This is usually the most profitable way to utilize oats.

A considerable portion of the annual oat production is marketed as a cash crop. Studying the cash oat market and selling when the price is highest can increase net profit. Usually, the price is down at harvest time and for several months thereafter. To take advantage of peak oat prices later in the season, some form of grain storage is necessary, either on the arm or at custom storage facilities.

Oat producers should not forget about the milling oat market, for in some years there is a worthwhile premium paid for oats which meet the milling oat standard. Good milling oats must possess several quality factors: (1) low amount of foreign material, (2) freedom from mixture with other crops, and (3) plump kernels with 36 pounds test weight or better.

Diseases

Breeding new varieties is an ever-continuing process, mainly because of a changing disease picture. Sometimes a disease may flare up which has been minor or previously unknown. Occasionally, new races or varieties of well-known disease organisms or little-known races will increase and cause severe losses. Under such changing conditions, older varieties which were once popular may reappear and produce well until the older diseases also return. New oat varieties are generally more disease resistant than those of a generation ago.

Rusts, both stem and leaf (crown rust), continue to be diseases which threaten attempts at high yields. Sources of resistance to stem rust continue to be rather stable and effective against most prevalent races. Resistance to leaf rust is not as stable, and new races continue to be a problem. It cannot be predicted how rapidly newer races will increase in importance, but oat plant pathologists and breeders expend a major portion of their time trying to produce disease resistant varieties. This effort-to stay one step ahead of the constantly changing leaf and stem rust races causes the rather rapid change in oat varieties.

Most oat varieties have been considered to have good resistance to smut (both loose and covered). However, Lodi in 1970 and Froker in 1976 had unusually high amounts of loose smut. Smut was not a problem in Lodi after 1970; however, it remains to be seen how smut may increase in Froker and other varieties the next few years. This could indicate that a new race of the smut fungus has developed.

This emphasizes that seed treatment for smut control could be good insurance. Fungicides are available which will control both loose and covered smuts and which help to control certain other seed and soil-borne diseases. Two of the more readily available fungicide seed treatments are Vitavax 200 (wettable powder formulation only) and several trade names of dusts containing maneb, for example, Dithane M-45, Manzate, Agsco DB-Green and Cover-up. The latter materials are drill box treatments, while Vitavax is custom treated at present.

"Red leaf" of oats, a virus disease, was present in most areas of the state in 1959 and reduced yields where infection was high early in the growing season. This disease has been minor since 1959, although insect carriers of the virus have been observed early in the growing season each year. All commercial oat varieties are susceptible; but a few have shown some field tolerance.

Halo blight, a bacterial leaf-spot disease, frequently is found early in the season. Spots are first yellow and later turn brown. The appearance of this disease on leaves often causes much concern. The plants tend to outgrow the disease, and the effect on yields is usually minor.

Selecting the Best Variety

Selecting the best oat variety for a farm or for a certain field is an important decision. Growing an adapted variety or varieties ensures more stable production. Ignoring this principle often invites disappointments and causes fluctuations in farm income. Information on varieties given in this Fact Sheet and the recommended varieties in Fact Sheet 524, which is revised annually, should help South Dakota farmers to choose profitable varieties. There is no one variety of oats that is best for all areas or for all situations. Factors determining the selection of a variety are (1) local climatic environments such as elevation, normal expected rainfall, and temperature, (2) soil type, (3) soil fertility, (4) market demand, (5) crop use, and finally how well the variety has done under these conditions.

Variety Description Table

This table includes all of the varieties which are currently being recommended plus most of the varieties which have been popular in South Dakota in recent years.

OAT VARIETY CHARACTERISTICS

Variety	Origin	Year Rel.	Color Grain	Test Weight	Maturity	Plant Height	Straw Strength	Red Leaf	Rust Reaction* Smut	Stem	Crown	Protein	PVP**
Astro	N.Y.	'72	White	Low	Late	Medium	Strong		R	S	MR	Medium	No
Brave	Ill.	'65	Yellow	Medium	Med. Early	Medium	Weak	MR		S	S	Medium	No
Burnett	Ia.	'56	Ivory	Very Good	Medium	Medium	Fair		R	S	S	Medium	No
Cayuse	N.Y.	'66	Lt. Yellow	Low	Late	Med. Short	Strong	MR	R	S	MS	Low	No
Chief	S.D.	'71	Yellow	Very Good	Medium	Medium	Good	S	MR	MS	MR	High	No
Clintford	Ind.	'66	Yellow	Good	Early	Medium	Strong	MR	R	S	MS	Medium	No
Clintland 64	Ind.	'64	Yellow	Good	Medium	Medium	Good	S	R	S	MR	Medium	No
Dal	Wisc.	'72	Yellow	Good	Late	Medium	Good	MR	R	S	MR	V.High	Yes
Dawn	N.D.	'66	Yellow	Good	Med. Early	Tall	Weak	S	R	S	MR	Medium	No
Diana	Ind.	'66	Ivory	Good	Medium	Medium	Good	MS	MS	MR	MR	High	No
Froker	Wisc.	'72	Yellow	Very Good	Late	Medium	Good	S	S	S	MR	Medium	No
Garland	Wisc.	'62	Yellow	Good	Medium	Medium	Good	S	MR	S	S	Medium	No
Garry	Can.	'52	White	Good	Late	Tall	Good		MR	S	MS	Low	No
Goodland	Wisc.	'74	Yellow	Good	Medium	Med. Short	Strong		R	S	MR	High	No
Grundy	Ia.	'72	Yellow	Good	Early	Short	Good			S	MS	High	Yes
Harmon	Can.	'65	White	Low	Late	Tall	Good		R	S	MS	Low	No
Holden	Wisc.	'66	Yellow	Very Good	Medium	Medium	Good	MS	R	S	S	High	No
Hudson	Can.	'74	Ivory	Low	Late	Tall	Strong	MR	MR	MR	MR	Low	No
Jaycee	Ill.	'67	Ivory	Good	Early	Med. Short	Good	MR	R	MR	MS	Medium	No
Kelsey	Can.	'67	White	Good	Late	Med. Tall	Good	MR	R	S	MR	Low	No
Kota	S.D.	'69	Yellow	Good	Medium	Medium	Fair	MS	R	S	MS	Medium	No
Lang	Ill.	'77	Yellow	Medium	Early	Short	Good		S	MS	MS	Medium	No
Lodi	Wisc.	'63	White	Good	Late	Tall	Strong		MS	S	MS	Low	No
Lyon	Minn.	'77	White	Good	Late	Med. Tall	Good	S	R	MR	MR	Medium	No
Mo. 0-205	Mo.	'51	Dark	Good	Early	Medium	Weak		R	S	MS	Medium	No
Multiline E Series	Ia.	..	Yellow	Very Good	Very Early	Short	Good	S	MS	S	MR	High	No
Multiline M Series	Ia.	..	Yellow	Very Good	Medium	Medium	Fair	S	MS	S	MR	High	No
Neal	Neb.	'63	Ivory	Good	Med. Early	Med. Short	Good	MR		S	MS	Medium	No
Noble	Ind.	'74	Yellow	Good	Medium	Medium	Strong	R	R	S	S	Medium	Yes
Nodaway 70	Mo.	'69	White	Very Good	Early	Medium	Good	S	R	S	MS	Medium	No
Orbit	N.Y.	'65	White	Low	Late	Medium	Good		MR	MS	MS	Low	No
Otee	Ill.	'73	Ivory	Good	Med. Early	Short	Good	R	MR	MR	MR	V.High	No
Otter	Minn.	'70	White	Med. Low	Medium	Medium	Good		R	S	S	Medium	No
Pettis	Mo.	'68	Dark	Good	Early	Medium	Fair	MR	R	S	MS	Medium	No
Portal	Wisc.	'66	Yellow	Very Good	Medium	Medium Tall	Good	MS	MS	S	MR	High	No
Random	Can.	'71	White	Low	Late	Medium	Weak			S	MS	Low	No
Rodney	Can.	'53	White	Good	Late	Tall	Good		MR	S	MS	Medium	No
Russell	Can.	'60	White	Low	Late	Medium Tall	Good		MR	S	MS	Low	No
Santee	Neb.	'65	Ivory	Good	Early	Medium	Good	S		S	S	Medium	No
Sioux	Can.	'67	White	Low	Late	Medium	Good	S	MR	S	MS	Low	No
Spear	S.D.	'75	White	Good	Medium	Medium	Strong	S	MR	S	MR	V.High	No
Stout	Ind.	'74	Ivory	Good	Med. Early	Short	Strong	MS	MR	MR	MR	Medium	Yes
Tippecanoe	Ind.	'65	Yellow	Good	Medium	Short	Strong	S	R	MS	MR	Medium	No
Trio	Neb.	'71	Yellow	Good	Med. Early	Medium	Good	MR	MR	MR	MS	Medium	No
Wright	Wisc.	'76	Ivory	Good	Med. Late	Medium Tall	Good	MR	R	MR	R	High	Yes
Wyndmere	N.D.	'66	Yellow	Good	Med. Early	Tall	Weak	S	R	S	MR	Medium	No

* S = Susceptible MS = Moderately Susceptible MR = Moderately Resistant R = Resistant

** Plant Variety Protection—To be sold by variety name only as a class of Certified seed

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