

Cooperative Extension Service

NORTH DAKOTA STATE UNIVERSITY - FARGO, NORTH DAKOTA 58102
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

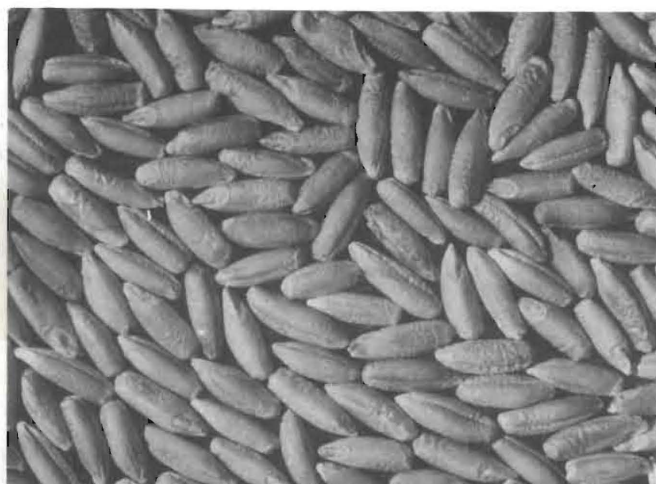
CIRCULAR
A-199

Grow WINTER RYE

- as a cash crop
- for better weed control

L. A. JENSEN
EXTENSION AGRONOMIST

CLARENCE SWALLERS
ASSISTANT PROFESSOR OF AGRONOMY
AGRICULTURAL EXPERIMENT STATION



THE PRODUCTION of a limited acreage of winter rye in North Dakota on the weedier fields or in the regular crop rotation offers the following main advantages:

1. Rye competes effectively with weeds.
2. Rye is a cash crop.
3. Rye seldom suffers severe rust injury.
4. Rye matures early, so there is less risk from heat, drouth and hail.
5. Rye permits better distribution of labor and machinery used for seeding and harvest.
6. Rye can provide some grazing for livestock.
7. Rye protects the field against wind erosion.

The main disadvantage of rye is that the average yield per acre is about the same as wheat and the market price per bushel is less, which means a lower per acre income than from wheat, malting barley or flax.

WINTER RYE HELPS FIGHT WEEDS

Winter rye is one of the most effective small grain crops for weed control in North Dakota. Even though rye may not be as profitable as wheat, some increase in rye acreage for more effective weed control would be desirable in areas where wild oats and other weeds are a problem. A small acreage of rye in the regular rotation on many North Dakota farms to control weeds will pay dividends by increasing future yields of other crops.

Winter rye provides more effective weed competition than spring sown grains. For this reason rye has a place in continuous small grain rotations but should not be followed by wheat or durum. Rye planted early in September, when moisture conditions are favorable for quick germination and growth, will tend to smother the weeds during the fall. The early, vigorous spring growth of winter rye provides strong competition to spring weed growth and the earlier harvest helps to prevent shattering of weed seeds that may occur in later harvested crops.

Alternating intensive summerfallow with winter rye and repeated fall tillage after rye harvest over a period of three to five crop years is effective on a field infested with perennial noxious weeds such as leafy spurge or creeping jenny. One season of fallow, followed by winter rye and cultivation after harvest, is effective in the control of other troublesome weeds such as perennial sow thistle, Canada thistle and wild oats.

There is no better cultural control of wild oats than sowing rye on fallow.

Case
S
5443
N 199
A8
no. 199

HOW PROFITABLE IS RYE?

Rye planted in North Dakota averaged nearly 1.2 million acres annually during 1930 to 1942. In 1943 the planted acreage dropped drastically to 430,000 and to 150,000 acres in 1945. During the past 20 years rye has averaged about 350,000 acres annually. During the past 6 years the acreage has averaged only 240,000 acres annually.

Ten times during the 20 years 1951-1970 North Dakota rye yields were higher than wheat yields, according to the Federal Crop Reporting Service. During the 10-year period 1961-1970 rye yields were estimated at 23.5 bushels per acre and "all wheat" yields at 23.0 bushels per acre. This speaks well for the capacity of rye to yield, considering that rye often is grown on more weedy and less productive fields.

Even with a slightly higher average yield per acre, rye has produced less income per acre than wheat because of a lower support and market price per bushel. However, when considering its ability to compete with weeds, its labor distribution and rust protection, rye can be considered a profitable crop. Rye outyields wheat in years when drouth, high temperature or rust lowers wheat yields. The potential income per acre for rye in much of North Dakota compares favorably with feed barley or oats and can be improved with better management practices.

ADAPTATION AND GROWTH CHARACTERISTICS

Winter rye is adapted to all sections of the state. Varieties available offer considerably more winter hardiness than winter wheat. Very seldom is winter rye lost due to winter kill.

Rye makes considerable growth during the cool temperatures of late fall and early spring. Damage from late spring frost sometimes occurs during the flowering stage, which may result in little or no seed set.

Rye heads seldom fill completely. Most rye florets are self sterile so cross pollination accounts for most of the seed set. Rye flowers remain open for some time but if conditions are not favorable for cross pollination, rye heads may have several empty florets.

WINTER RYE VARIETIES

Cougar is high yielding, winter hardy, late maturing, medium in height and has very good lodging resistance. It has small green and tan colored seed with medium test weight per bushel. Cougar is becoming a popular variety in North Dakota.

Frontier is medium to high in yield, very winter hardy, and medium maturity. It is tall and tends to lodge. The seeds are small, predominantly blue-gray in color and the test weight per bushel is high.

Caribou and Antelope are sister selections. They are winter hardy, have small mixed colored seed of medium test weight per bushel, are tall and medium in straw strength. Caribou has shown slightly better winter hardiness. Both varieties are lower yielding than Cougar or Frontier.

Less winter hardy varieties such as Pearl, Elk and Von Lochow yield well when not winter killed but are not considered satisfactory for North Dakota except in areas where winter wheat can be grown successfully.

SEED SELECTION

The top yielding varieties have been Cougar and Frontier (see table below). Frontier is slightly earlier, with higher test weight, while Cougar is shorter, with less lodging.

Rye cross-pollinates, causing varieties to become mixed. To assure varietal purity, it's best to obtain certified seed for which isolation is required.

WINTER RYE VARIETY YIELDS - BUSHELS PER ACRE
1969-70

Variety	Fargo	Minot	Carrington	Langdon	Williston
Cougar	45.0	62.7 ^{1/}	50.4 ^{1/}	62.9	41.2 ^{1/}
Frontier	40.6	62.0	58.0	57.8	44.0
Caribou	32.1	52.8	43.9	48.0	38.3
Antelope	37.1	--	46.1	54.2	37.7

^{1/} Poor stand 1969

Dormancy in winter rye seed is not a problem. New crop rye seed can be seeded the same year it is harvested without danger of dormancy.

Even though rye is a good weed fighter, seed should be cleaned well and graded to uniform size before planting to assure uniform stands. Stored rye seed loses its germination quicker than other cereals. Germination tests of both new and carryover seed is important. Standard germination for good rye seed is 80 per cent.

SELECTING THE FIELD

The purpose for which it is grown usually is the deciding factor in selecting the field for rye. Winter rye can be included in the regular crop rotation, it can be a temporary shift in crop acreage, or it can be grown for weed control purposes on a specific field.

Winter rye should not be grown on fields that will be sown later to winter wheat because shattered rye seed volunteers freely and will lower the market grade of wheat.

Fallow Ground - Rye yields best when sown on summerfallow. A good seedbed can be prepared and the reserve of moisture and available plant food provided by fallow helps insure maximum yields. The combination of fallow and winter rye is very effective in weed control. Many farmers are using this combination of rye on summerfallow for effective wild oats control. One disadvantage of rye on fallow is less protection against winter kill because fallow holds less snow than stubble.

Stubble Field - Rye often is sown in a clean stubble field. If such a field is relatively free of weeds and has a favorable moisture supply, it can result in satisfactory yields. The crop stubble provides excellent winter protection by holding snow and it saves seedbed preparation expense.

In many cases, some cultivation of the stubble may be advisable to provide a suitable seedbed. A light disking or the use of other tillage implements that will leave as much stubble as possible standing on the surface will provide the best winter protection. Weedy stubble fields usually are not satisfactory.

Fall Plowing - Fall plowed fields ordinarily will be less satisfactory for rye than either fallow or clean stubble. After producing a crop that season, the lack of reserve moisture and sometimes available plant food can result in poor growth. Fall plowing dries the soil and provides less winter protection than clean stubble fields.

Corn Ground - Corn stubble is a good place to grow rye. However, getting the corn crop off the field in time for seeding usually is a problem unless the corn is cut and removed early as silage.

TREAT THE SEED

Seed treatment is recommended for rye as for other small grains. Treating gives it a better start, protection from seedling blights and other rootrot organisms and from striped smut.

Treating the seed will not prevent ergot in rye. Thorough cleaning of the seed will remove many of the larger and more viable ergot bodies.

PLANT EARLY IN SEPTEMBER

Planting early in September will allow rye to become established before winter. Seeding during the first two weeks in September when there is enough soil moisture for rapid germination will insure a good stand and growth before freeze up and will provide the best weed competition.

Depending on the variety and seed size, from 4 to 5 pecks per acre is the recommended seeding rate.

RYE RESPONDS TO FERTILIZER

Limited experiment station trials conducted on rye with commercial fertilizer in North Dakota suggest that rye responds to fertilizer about like wheat. Farmers who have carried out field trials frequently report a good response.

Soil tests for both phosphate and nitrogen are the best guide on which to base fertilizer rates. Where soil tests are not available, 15 to 30 pounds per acre of phosphate fertilizer is suggested for rye seeded on fallow ground. On nonfallow, nitrogen at 10 to 40 pounds per acre in western North Dakota and 15 to 65 pounds per acre in the Red River Valley area, depending on subsoil moisture supply, are suggested in addition to the phosphate. The phosphate fertilizer and up to 30 pounds of nitrogen (except urea or cyanamid) should be applied by drill attachment at seeding time. Additional nitrogen can be applied broadcast, either in the fall or early spring.

RUST SELDOM INJURES RYE

In the severe rust epidemic on wheat and durum in the early 1950's only occasional and very slight rust was observed on rye and no yield reduction was reported. Stem and leaf rusts that attack rye are different than those which attack wheat.

RYE FOR LIVESTOCK FEED

Pasture - Rye is a less palatable pasture crop than wheat, oats and most grasses but is grazed readily when other green forage is not available. Rye makes early spring growth and often is available for grazing before other pasture, especially native grasses.

When rye is being grown for grain, grazing should be limited because it tends to reduce grain yields. Avoid fall grazing unless the crop is sown early. Even then, rye should not be grazed too short or too late in the season. Fall grazing tends to delay crop maturity and may increase the danger of winter kill.

Spring grazing offers the best opportunity on rye fields to be harvested for grain in North Dakota. Rye should not be spring grazed until it is about 4 to 5 inches tall and livestock should be removed before the crop begins to joint. This may permit 2 to 3 weeks of light spring grazing. Be sure the field is not too wet as trampling by livestock can injure the rye stand. Spring grazing will likely reduce grain yields somewhat but the value of the pasture may more than offset the grain yield reduction.

Hay and Silage - Poor rye stands are sometimes used for hay or silage, especially if they contain a good mixture of wild oats. Rye hay is not very high in quality. The stems are hairy and usually are coarse and tough. When used for hay, cut rye when it begins to head.

Rye is seldom used for silage. Best quality is obtained by ensiling just before the milk stage.

SPRING RYE

Spring rye, which is sown in the spring, can be expected to yield about the same as spring wheat. It should be sown early like wheat or barley. Spring rye does not have the advantages of labor distribution, weed control and erosion control that fall sown winter rye has but can be used as a spring sown fill-in crop.

Prolific is the only variety of spring rye being sown in North Dakota. It matures about the same time as spring wheat. Kernels are medium sized and blue-green in color.

CONCLUSIONS

- Winter rye is one of the most effective grain crops for weed control. It seldom rusts severely and allows distribution of labor and machine use on the farm.
- Rye has not been as profitable a cash crop in North Dakota during recent years as wheat, malting barley or flax. However, it does compare favorably in potential cash return per acre with crops such as feed barley and oats.
- Considering the weed control obtained, some winter rye on many farms can be very profitable over a period of years.
- Spring rye does not offer the advantages of labor distribution or weed control that is obtained from fall sown winter rye.
- Although a big shift to rye is not advised, winter rye is warranted for weed control and when crop acreage adjustments are necessary.



Use Pesticides Safely
FOLLOW THE LABEL