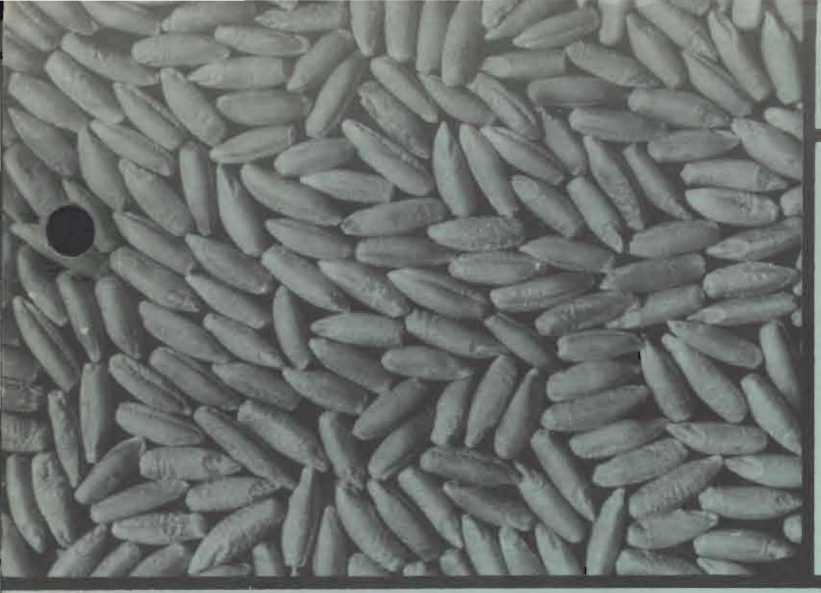

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Grow WINTER RYE

• as a cash crop
• for better weed control

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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 planting 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 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 quite 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. 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.

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 acres and has averaged about 350,000 acres annually during the past 22 years. Acreage seeded in the fall of 1965 dropped to 293,000 acres largely because of the wet fall weather which prevented seeding in many cases.

Seven times during the 15 years 1951-1965 North Dakota rye yields were higher than wheat yields according to the Federal Crop Reporting Service. During the same period, rye yields were estimated at 18.2 bushels per acre and "all wheat" yields at 17.8 bushels per acre. This speaks well for the capacity of rye to yield, considering that rye is often 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 a profitable crop. Rye outyields wheat in years when drouth, high temper-

ature 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 and 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

Caribou and Antelope are winter hardy varieties and have proven their excellent yield capacity over other varieties.

Caribou is high yielding, very winter hardy, medium in maturity and tall. It has small seed, somewhat mixed in color and high test weight per bushel. It was selected by the University of Saskatchewan but increased and released by the University of Minnesota in 1953.

Antelope is a sister selection of Caribou increased and released by the University of Saskatchewan in 1952. It has shown yield capacity about equal to Caribou in North Dakota tests. Winter hardiness has been about equal to Caribou except in the winter of 1964-65 at Dickinson.

Frontier is a new variety developed at the Swift Current, Saskatchewan, Experimental Farm and Canadian distribution was made in 1965. Canada describes this variety as high yielding, very winter hardy, medium in maturity and tall with small, predominantly blue-gray colored seed of high test weight per bushel. This variety has not been tested in North Dakota but some seed was sown in the fall of 1965 and limited quantities should be available for 1966 seeding.

Dakold is an old North Dakota variety carried in yield trials for comparison purposes. Seed of this variety is not available commercially.

Less winter hardy varieties such as Pierre, Elk, Pearl, Von Lochow and Adams are not satisfactory for North Dakota.

SEED SELECTION

The top yielding varieties have been Caribou and Antelope (see table below). Frontier may also become a popular variety when seed becomes available.

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

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.

WINTER RYE VARIETY YIELDS - BUSHELS PER ACRE

Variety	Fargo 1962-65		Edgeley [a/] 1956-64	Minot [b/] 1956-63	Langdon [c/] 1956-65	Dickinson [d/] 1960-65
	Fallow	Stubble	Fallow	Fallow	Fallow	Fallow
Dakold	43.9	23.2	42.4	42.0	39.5	28.2
Pierre	44.0	24.0	37.8	--	--	--
Antelope	47.4	23.1	41.3	45.2	44.1	28.8
Caribou	47.8	26.2	43.2	45.0	45.5	30.5

a/ No tests in 1965
b/ Wind 1964 trials abandoned and no trials 1965
c/ Winter killed 1957 - trials abandoned
d/ Hail 1965 - trials abandoned

SELECTING THE FIELD

The purpose for which rye is grown usually will be 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 will yield best when sown on summerfallow (See Fargo data in yield table). 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 is often 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 is usually 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.

About 15 to 35 pounds per acre of phosphate fertilizer, based on soil tests or field experience, are suggested for rye seeded on fallow ground. On nonfallow, nitrogen at about 20 to 50 pounds per acre, depending on subsoil moisture supply and area of the state, 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 is often 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.

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