

Hairy Vetch Production

in the

West Cross Timbers Area



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ON THE COVER

Vetch and winter grain or vetch and Bermuda grass mixture make excellent grazing for livestock in the West Cross Timbers Area.

Hairy Vetch Production in The West Cross Timbers Area*

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INTRODUCTION

The first publication on hairy vetch for the West Cross Timbers Area was sponsored in 1946 by the Rising Star Hairy Vetch and Abruzzi Rye Association in cooperation with the Upper Leon and Brown-Mills Soil Conservation Districts. The circular gave needed information to many new vetch growers. Because of the large increase of the hairy vetch acreage and the many problems involved, this circular is being published by the Texas A. and M. College Extension Service in cooperation with the Soil Conservation Service and the Upper Leon and Brown-Mills Soil Conservation Districts. Revised editions will very likely be necessary from time to time to meet new problems which will arise in this new and far reaching agricultural development.

*The instructions in this circular also apply to counties in the Grand Prairie and Rolling Plains Soil Regions, adjoining the West Cross Timbers Area.

USES OF HAIRY VETCH

Hairy Vetch is a valuable winter legume. It is well adapted to the West Cross Timbers Area and adjoining counties. The acreage has been rapidly expanding. This crop is destined to play an important role in the future agriculture of the region. Its five main functions are: (1) soil protection, (2) soil improvement, (3) grazing, (4) seed production, (5) hay.

Soil Protection—Hairy vetch in combination with winter grain is the most valuable crop for protecting the soil in this area which so far has been found. It protects the land against wind and water erosion in the fall, winter and spring at which time most damage is done by wind and rain.

Protective cover on the soil reduces soil losses from water by breaking the force of the rain drops and thereby preventing the splashing of the soil particles. This enables better penetration of water and results in less water runoff and soil erosion. The ex-

tra water thus absorbed by the soil and less erosion are big factors in larger and more profitable crop yields.

Soil Improvement — As a soil improvement crop, hairy vetch is unexcelled. It has the ability to utilize nitrogen from the air and store it in the soil for future crops. This nitrogen plant food is very important, but unfortunately, it leaches out easily, especially in sandy soils and it is lacking in most of the soils of the area. Vetch is also important in adding organic matter to the soil. This material is often referred to as "the life of the soil." Some of the functions of organic matter are: (1) It increases water absorption by the soil, (2) It increases the water-holding capacity of the soil, (3) It reduces water evaporation, (4) It helps to make some mineral plant foods of the soil available.

Some analyses of soils in the area planted to vetch for four years showed that they contained three times as much organic matter as average soils not planted to this cover crop.

Grazing — A mixture of vetch and a winter grain crop supplies much excellent and nutritious grazing rich in protein. This combination makes better balanced and more satisfactory grazing than vetch alone. A good cover of this mixture will often carry one cow per acre from four to five

months, depending on temperature and moisture conditions. Whenever a seed crop is to be harvested the grazing should be stopped about April 1 to 15.

Seed Crop—Hairy vetch for seed production is well adapted to the West Cross Timbers and adjoining areas. In addition to vetch seed being a good cash crop, it provides valuable grazing and also improves the soil fertility if the residue is properly managed.

Hay — Hairy vetch can be harvested for hay, but in doing so, most of the soil improvement benefits are lost. Furthermore, due to uncertain weather conditions in May, when vetch hay should be harvested, there is always risk involved in losing the hay crop. If it is harvested for hay a good time to cut it is when the vines are in full bloom. This will give a maximum tonnage of high protein hay. Analysis of good vetch hay usually shows from 15 to 20% protein.

GROWING HAIRY VETCH

Seedbed Preparation — A firm, smooth seedbed is important. On land following peanuts or cotton no special seedbed preparation is necessary. Stirring the soil will result in needless loss of moisture. In preparing a seedbed following corn or grain sorghum, however, it is best to chop up the stalks with a stalk

cutter. A tandem disk can be pulled behind the stalk cutter. This will chop up vegetation and work it into the top soil in one operation. Winter grain stubble land should be plowed or chiseled soon after the grain has been harvested. Shallow harrowing before planting vetch is a good practice to kill small vegetation and to improve the seedbed. A rain prior to seeding is helpful in firming the soil and getting a better stand. All rocks likely to interfere with the combining of the seed crop should be removed at the time of preparing the seedbed.

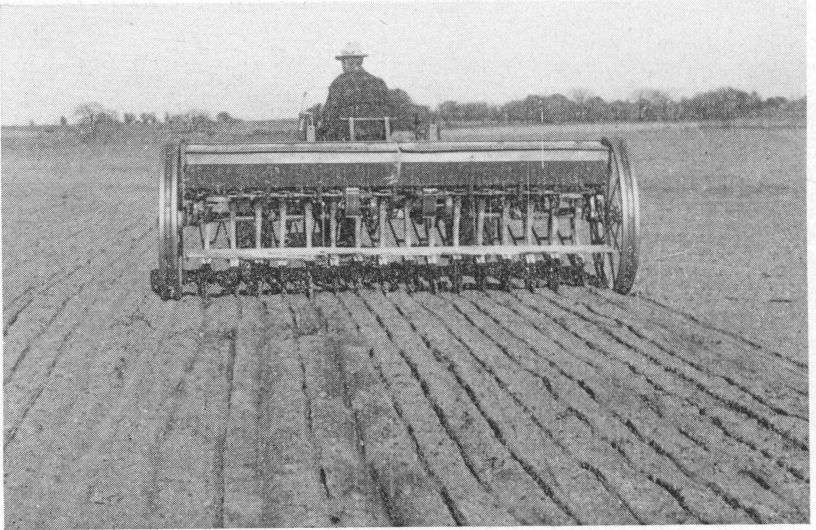
Rate of Seeding—The seeding of a mixture of 10 pounds of hairy vetch and 20 pounds of Balbo rye or 25 to 30 pounds

of Abruzzi rye per acre has proved satisfactory. When other winter grains are used with vetch the following rates are suggested: oats or wheat, 30 to 40 pounds per acre; speltz or barley, 45 to 50 pounds per acre. These last four named grain crops may be seeded with hairy vetch, but they are not as desirable for a supporting crop for vetch seed production as rye. If vetch is to be used only for grazing, these grain crops are satisfactory in the combination. In such cases a somewhat heavier rate of seeding of both vetch and winter grain may be made than when a seed crop is desired.

Fertilizing the Land and Inoculating the Seed—It is prac-



A barrel type seed treater that can be revolved on an axis is handy for inoculating the vetch seed and for mixing the vetch and grain, such as rye.



Seeding vetch and rye and applying superphosphate in one operation with a combination seed and fertilizer drill immediately after peanut harvest in Eastland County.



Showing vetch and rye in Brown County not fertilized on the left and fertilized on the right. Two hundred and forty pounds of 20% superphosphate increased the vetch green material 30 times, the rye 6 times and the total 10 times.

tically useless to try to grow hairy vetch without fertilizing the land and thoroughly inoculating the seed. A proven practice is to apply 150 to 250 pounds per acre of 20% superphosphate or its equivalent. If superphosphate is not available, 200 to 300 pounds per acre of 4-12-4 or 0-14-7 fertilizer may be used. The 4-12-4 or 0-14-7 is more suitable on the deep sandy soil which is more likely to be deficient in potash than loam or tight soils.

A good way to fertilize land for succeeding crops is to apply the fertilizer to hairy vetch with a combination grain and fertilizer drill or row planter, the seed and fer-

tilizer going down the same spout. It seems that the phosphate when in close contact with the seed, helps the inoculation.

If a grain drill is used without the fertilizer attachment, a spreader type fertilizer distributor can be used. When this method is followed, usually one-fourth to one-third more fertilizer should be used and worked into the top of the soil with a disk harrow or other suitable implement. It is best to harrow the land after working in the fertilizer to obtain a smooth seedbed.

Inoculation with the proper inoculant is very important. Crop failures will result if



Showing the effect of phosphate on the growth of vetch in Mills County. Two hundred pounds of 20% superphosphate per acre produced 4.7 tons of green material per acre as contrasted with only .95 ton per acre without the fertilizer.

vetch seed is not inoculated or if the nitrogen-fixing bacteria in the inoculant die from exposure to sunlight or dry condition of the soil. In order to be sure there will be enough nodules on the roots of the plants to fully utilize nitrogen from the air, it is usually good insurance to use twice as much of the inoculant as recommended on the container.

A good method of inoculating vetch seed is to use a regular seed treating barrel which can be revolved on an axis. This barrel treater is also handy for mixing the grain seed with the vetch. If no barrel treater is available, a tub or tight container such as a lard can or calcium ar-

senate can, may be used. Directions on the container for applying the inoculant, except doubling the amount used, should be followed closely.

Time and Method of Seeding — The best time to seed vetch in the area is from September 15 to October 15, depending on moisture conditions. Later plantings have been made with fair success up to December 1. Early seeding will enable vetch plants to establish a better cover for the land and also to provide earlier and better grazing. Moisture is usually more available at this time than later in the fall. Dry planting as a rule has not given favorable results. Seeding with a combination grain and ferti-



A cover crop of ten tons of green vetch in Eastland County being worked into the soil with a disk. The residue left on the surface conserves moisture and reduces run-off and erosion. If a stalk cutter is available the vines should be chopped into small pieces before disking.



Working vetch and winter grain into the soil for green manure with the use of a stalk cutter followed by a tandem disk.

lizer drill is the best and most practical method of sowing vetch and winter grain and applying fertilizer in one operation.

COMPANION CROPS

A mixture of winter grain and hairy vetch is desirable for vetch seed production. The grain stalks hold the vetch up for better exposure to sunlight and air and better formation and distribution of seed pods on the plant. Without the grain to support the vetch, the vines will mat down on the ground. This matting will interfere with seed production and the combining of the seed crop.

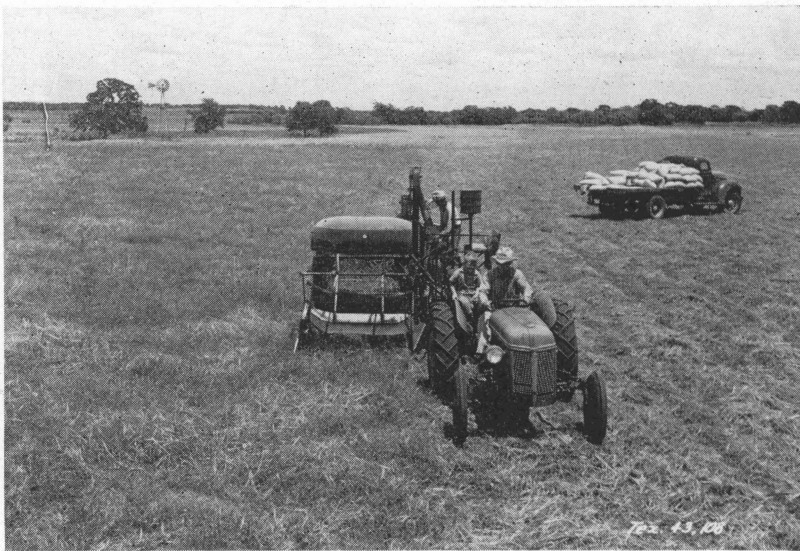
Abruzzi and Balbo rye are considered the best support-

ing crops for hairy vetch seed production, especially on sandy land. They will hold up the vetch better, give less competition because they mature early, and they have less shading effect than some of the other winter grain crops.

Speltz will be too green in some years to combine when vetch is ready to harvest. Oats is a good crop to seed with vetch for hay purposes, but it is not satisfactory as a supporting crop for vetch seed production. Wheat or barley may be used, but they do not stand up as well as rye.

HARVESTING THE SEED CROP

Vetch should be combined when most of the seed pods have matured. Harvesting



Harvesting vetch and rye seed with a combine in Brown County. The sacks should be filled loosely and turned often enough to prevent heating of the seed.

starts around June 15. Since vetch is subject to shattering when the seeds have fully matured, it is important to start combining before much of the seed crop is lost. In order to cut a clean swath there should be a divider bar on the land slide to press the vetch down. An auxiliary motor on the combine is also desirable because of the heavy load of straw that goes through the machine. The combine should be adjusted by slowing down the cylinder to prevent as much as possible the cracking of the seed. A pickup reel is desirable to keep the sickle clean and to provide a uniform flow of straw into the combine. The seed should be sacked loosely and the sacks turned often enough in the

field to prevent heating. Some growers place the sacks on logs for extra ventilation. A good plan is to place the sacks in single layers on logs under an open shed for drying.

CLEANING AND SEPARATING THE SEED

When vetch and grain seeds are dry, they should be run through a seed cleaner and then separated. Two types of separators are generally used: (1) The spiral type, (2) The larger type of commercial separator. Both are satisfactory for vetch and grain mixtures if the seed is cleaned thoroughly before separating the vetch seed from the grain. Spiral separators should be placed on a level and set ac-

ording to directions on the separator.

The Texas Seed Law requires a germination and purity test before seed is sold for planting purposes. After the seeds have been separated, representative one-pound samples should be taken and sent to the Seed Testing Laboratory, State Department of Agriculture, Austin, Texas, or some approved commercial testing laboratory for germination and purity tests if they are to be sold.

VOLUNTEER VETCH CROPS

A volunteer crop will follow normally where a vetch seed crop has been harvested. Since the best seed yields are made from first year seedlings, these volunteer vetch crops should be used principally for grazing and soil improving purposes. Rye, however, does not generally volunteer along with vetch and in that case the land should be plowed and harrowed. It should then be reseeded with rye and fertilized in one operation with a combination drill. This should be done when moisture conditions are favorable for fall seeding. Usually, 100 pounds of 20% superphosphate is applied and 20 to 30 pounds of rye is sown. When some other grain crop that does volunteer is harvested with vetch, it is also a good practice to plow and harrow the land in early fall along with adding addi-



The vetch and rye or other grain should be run through a seed cleaner as shown on the left and then through a spiral separator shown on the right to separate the vetch from the grain.

tional superphosphate. These volunteer crops should be cut into the soil with a disk or other implement in early spring and then followed with summer row crops such as peanuts or grain sorghums or with a winter grain crop in the fall.

VETCH IN BERMUDA GRASS PASTURES

Fertilized vetch makes a good combination with bottom land and upland bermuda grass pastures. A tandem disk or double disk can be used for preparing the bermuda pastures for seeding the vetch. Ten to twelve pounds of vetch seed and 150



The above plants grew in the same type of Nimrod sand in adjacent fields in Eastland county where peanuts had been produced for 35 years, but with different soil treatments. No. 1, reading from left to right, produced 70 bushels of peanuts per acre in 1946. It had three crops of hairy vetch plowed under which were fertilized with 100 pounds of 48% phosphate. No. 2 produced 36 bushels of peanuts in 1946. It had only two crops of vetch plowed under which received 100 pounds of 48% phosphate. No. 3 produced 23 bushels of peanuts. It received the same treatment as No. 2 except that the vetch was not fertilized and hence made very poor growth. No. 4 produced only 7 bushels per acre. It received 120 pounds of 20% superphosphate in 1945 and 100 pounds of 0-14-7 fertilizer in 1946 but no vetch. The peanuts in fields 1 and 2 made good yields because the fertilized and inoculated vetch improved the soil fertility.

to 250 pounds of 20% superphosphate or its equivalent should be used per acre.

A combination seed and fertilizer drill may be used for sowing the vetch seed and applying the fertilizer. In case a combination drill is not available, the seed and fertilizer may be broadcast and worked into the soil.

The vetch supplies high protein grazing and also stimulates the growth of the bermuda grass by better balancing the plant food with more nitrogen.

By allowing the vetch to go to seed and giving the pasture a light disking in the early fall, it will reseed itself. Additional applications of about 100 pounds of 20% superphosphate should be made annually before disking the pasture.

INSECTS

The northern pea aphid is the only injurious insect on vetch in the West Cross Timbers Area at the present time. This small, light green insect sucks juice from the vetch plants. This weakens the

plants, makes them less resistant to drouth, and reduces the seed crop.

To date there is no effective or practical control for this pest. Experiments with various insecticides may, however, develop effective control measures. As a rule, parasites keep the aphids in check.

The vetch weevil has done considerable damage to vetch in the northwest. Fortunately, this insect so far has not been found in Texas. Every precaution should be taken to prevent its introduction into Texas with infested seed.

SUMMARY

1. Hairy vetch is a valuable winter legume in the West Cross Timbers Area and adjoining counties for: (a) soil protection, (b) soil improvement, (c) grazing, (d) seed production, (e) hay.
2. Important points in growing vetch are as follows:
 - (a) Prepare a firm, smooth seedbed.
 - (b) Plant a mixture of 10 pounds of hairy vetch seed and 20 pounds of Balbo rye or 25 to 30 pounds of Abruzzi rye per acre.
 - (c) Other winter grain crops have been used but are not as satisfactory as rye with vetch for seed production. They are suitable when the vetch and grain crops are to be used only for grazing and soil improvement.
3. The seed crop should be harvested with a combine before all seeds are fully mature to prevent shattering. The seed can be dried or cured by sacking them loosely and turning the sacks often enough to prevent heating.
4. When the vetch and grain seed are dry enough, they should be cleaned and then separated with a spiral separator or a larger commercial type separator. A germination and purity test before selling the seed is required by law.
5. When vetch is harvested
 - (d) Seed vetch from September 15 to October 15, depending on moisture conditions.
 - (e) Apply 150 to 250 lbs. of 20% superphosphate or its equivalent per acre. If phosphate is not available apply 200 to 300 pounds of 4-12-4 or 0-14-7 especially on the deep sandy soils.
 - (f) Thoroughly inoculate the seed.
 - (g) Graze properly until about April 1 to 15 if the seed crop is desired.

- for seed it will often produce a volunteer crop. Volunteer vetch, however, usually is not satisfactory for seed production and should be utilized largely for grazing and soil improvement.
6. Hairy vetch makes an excellent combination with bermuda grass for nutritious grazing when the land is fertilized and the seed inoculated.
 7. The northern pea aphid is the only insect at present that has damaged the vetch crop in Texas and reduced the yield of seed.
 8. The vetch weevil is not found in Texas. Precautions should be used against its introduction with infested seed.

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