

Alabama Wheat Production Guide

Introduction

Alabama farmers are interested in growing wheat for many reasons. Some see this crop as a means of improving their cash flow by providing income in late spring. Wheat also adds flexibility to diversified farming operations. It can be grown for grain only, for grazing plus grain, or strictly for grazing. Also, the grain can either be sold as a cash crop or fed to farm livestock.

The benefits of using wheat in double-cropping situations are also attractive to many producers. Wheat can provide a second income from land devoted to summer row crops while simultaneously reducing winter erosion and nutrient losses. In addition, the advent of no-tillage planting of

summer row crops has made it easier and more feasible to use wheat in double-cropping situations.

Site Selection

Wheat can be successfully grown on a wide range of Alabama soils. It is best adapted to deep, well-drained soils of medium texture and medium-to-high fertility. Wheat will tolerate poorly drained, heavy-textured soils better than other small grains, but may “drown out” in extremely wet areas, and will be more susceptible to diseases under such high-humidity conditions.

Variety Selection

Each year, Auburn University agronomists conduct small grain variety trials at numerous locations

throughout Alabama to determine which varieties are the best adapted and highest-yielding, and have the most desirable characteristics for various purposes. You should grow wheat varieties which are known to be adapted to and productive in your area.

Important considerations in choosing a variety are disease resistance, winter-hardiness, time of maturity, straw strength, and insect resistance. Table 1 lists important characteristics of selected wheat varieties that are grown in Alabama.

Hessian fly problems on wheat are now widespread in Alabama. Several wheat varieties are available which have good resistance to this destructive insect pest.

Table 1. Characteristics Of Selected Wheat Varieties.

Brand-Variety	Resistance*				Test Weight	Maturity	Straw Strength
	Leaf Rust	Glume Blotch	Powdery Mildew	Hessian Fly			
AgriPro Hickory	poor	good	fair	fair	fair	medium	fair
Florida 302	poor	fair	fair	poor	good	late	good
Florida 304	good	fair	fair	good	good	medium	good
GA-Andy	poor	fair	poor	good	good	early	good
GA-Dozier	good	good	fair	good	good	late	good
GA-Gore	poor	good	good	good	good	medium	fair
GA-Stukey	poor	fair	good	good	fair	early	fair
Jackson	poor	fair	fair	poor	good	late	fair
Madison	poor	fair	good	poor	fair	medium	good
Morey	good	fair	good	good	good	early	good
NK Coker 9134	fair	good	fair	good	good	late	fair
NK Coker 9543	poor	good	fair	poor	good	late	fair
NK Coker 9803	good	fair	fair	poor	good	medium	good
NK Coker 9835	poor	good	fair	good	good	medium	good
Pioneer 2566	good	good	fair	good	good	late	good
Pioneer 2580	fair	good	good	good	fair	late	fair
Pioneer 2628	poor	fair	good	fair	good	medium	fair
Pioneer 2643	good	good	good	poor	good	late	fair
Pioneer 2684	poor	good	good	good	good	early	good
Saluda	poor	good	poor	good	good	late	good
Wakefield	fair	fair	fair	poor	good	late	fair

*Barley Yellow Dwarf—Although Barley Yellow Dwarf is a significant problem in Alabama, no current oat or wheat varieties have adequate resistance to this disease. All oat and wheat varieties are susceptible.

Additional information on yield, disease resistance, Hessian fly resistance, and other characteristics of wheat varieties can be found in the annual "Small Grain Variety Report" published by the Department of Agronomy and Soils, Alabama Experiment Station, Auburn University. You can obtain a current copy of the report at your county Extension office.

In addition to selecting a good variety, it is highly advisable to use good quality seed. Auburn University agronomists recommend the use of certified seed. If for some reason non-certified seed is used, run a seed test to make certain the seed is free of weeds and has a good germination level.

Seed Treatment

Fungicide seed treatments are an inexpensive but effective method of protecting wheat seed and seedlings from seed and soil-borne diseases. In general, certified seed purchased through a seed distributor is treated with a fungicide, usually captan or thiram. Often wheat seed from local sources is not treated at all.

It is recommended that a contact fungicide be used on all seed grown for grain. These fungicides may be formulated for machine application, for drill box treatments, or both. Machine applied products are cheaper and provide better protection than comparable drill box treatments. However, availability of mechanical seed treatment is limited in some areas.

Drill box treatments can provide good protection from most seed and soil-borne diseases. The real key to the performance of drill box treatments is thorough coverage of the seed. To obtain good distribution of the fungicide over seed, add half of the required amount of fungicide to the hopper filled with half of the seed and thoroughly mix. Then add the remaining seed and fungicide to the drill box and mix until all seed is covered.

Loose smut of wheat cannot be controlled with contact fungicides be-

cause the fungus is found within the seed rather than on the seed coat. Use systemic fungicides containing carboxin, difenoconazole, tebuconazole, or triadimenol for loose smut control. Current seed treatment recommendations are listed in Circular ANR-458, "Small Grains Pest Management Guide." Treat all wheat harvested as certified or foundation seed, as well as all seed held from last year's crop, with a material to control loose smut and a contact fungicide.

Disease Resistant Wheat Varieties

Foliar diseases have been important factors limiting wheat production in Alabama. Septoria glume blotch, leaf rust, and powdery mildew have the potential to severely reduce wheat yields. Disease resistant varieties are the most effective and economical method of controlling foliar diseases of wheat. The disease resistance of selected varieties is listed in Table 1.

Seedbed Preparation

Preparation of a smooth, firm, vegetation-free seedbed aids in precise planting and is conducive to obtaining a good wheat stand. Disking is probably the most common method of seedbed preparation for wheat in Alabama.

However, many studies suggest that some sort of deep tillage prior to planting may be beneficial on Coastal Plain soils. In these studies, chiselploving or turn-ploving usually resulted in an increase of 5 to 15 bushels per acre compared to disking or to no-till.

Table 2. Planting Dates For Wheat In Alabama.

	Northern	Central	Southern
Grain only	Oct. 15-Nov. 1	Oct. 15-Nov. 15	Nov. 1-Dec. 1
Forage plus grain	Sept. 15-Nov. 1	Sept. 15-Nov. 1	Oct. 1-Nov. 15
Forage only*	Aug. 25-Sept. 10	Sept. 1-15	Sept. 15-30

* In most situations, wheat grown for forage only should be planted in combination with ryegrass and perhaps annual clovers. Such mixtures of winter annual species are normally more productive and provide grazing over a longer period of time than can be obtained by using a single species.

Planting Dates

The optimum time for planting wheat depends on the location within the state and also the intended use or uses of the crop. Plant wheat for forage or forage plus grain earlier than wheat planted for grain alone. However, wheat which is planted too early may be damaged by insects and diseases and may accumulate excessive fall growth. On the other hand, wheat planted too late may be winter damaged.

Winter wheat varieties require a certain amount of cold weather before the plants will form seed heads. Most varieties require 4 to 9 weeks of cold weather.

However, some early varieties, such as GA-Andy, do not require as much cold weather as other wheat varieties. Do not plant these early-maturing varieties too early since cold weather in the fall may satisfy their cold requirement. When this happens, these varieties may joint and bloom prematurely. Yield losses may occur. Optimum planting date is November 15 through December 15 in the regions suitable for these early maturing varieties. When planting more than one variety of wheat, it is best to plant the later maturing varieties first and the earliest maturing varieties last.

Recommended dates of planting for other wheat varieties are provided in Table 2.

Planting Rate And Depth

Planting rate

The quantity of seed needed per acre varies in different situations. First,

seeding rates depend largely on the intended use or uses of the crop. More seed should be used in fields for grazing than in areas where wheat is being grown for grain only.

Second, the method of planting also influences the quantity of seed needed. The best method for planting small grain seed is with a grain drill or other drill-type planter which allows precise planting. If the seed are to be broadcast and disked in, increase the seeding rate 20 to 25 percent.

Increase the seeding rate with any of the following conditions: late planting, no-till planting, planting into a dry seedbed, or aerial planting. The recommended seeding rates and depths for planting with a drill into a prepared seedbed are listed in Table 3.

Table 3. Seeding Rates And Depths For Wheat Planted With A Drill.

Item	Seeding Rate*	Depth (in.)
	(lbs./a.)	
Grain only	60-120	1-1½
Forage plus grain or forage only	90-120	1-1½

* For broadcast wheat increase seeding rate by 20 to 25%.

Table 4 is provided to assist in calibrating a grain drill for wheat.

Table 4. Grain Drill Calibration For Wheat (Seed/Row Foot).

Row Width (in.)	Seeding Rate (bu./a.)		
	1	1½	2
6	10	15	20
7	12	18	23
8	13	20	27
9	15	23	30
10	17	25	33

Depth of coverage

Place small grain seed in firm contact with moist soil if possible. Cover with enough soil to prevent rapid drying. In medium- to fine-textured soils with warm temperatures and adequate moisture, place seed ¾ to 1 inch deep.

In sandy soils subject to rapid drying or in soils with less than optimum moisture, place seed as deep as 1½ inches. Do not cover small grain seed with more than 1½ inches of soil. Deeper coverage may result in loss of vigor or failure of seedlings to emerge.

For uniform depth of coverage, smooth the seedbed and adjust the grain drill so that all openers are planted at the same depth. If some openers are planted too deep or too shallow, poor seed emergence and poor stands may result in those rows.

Liming And Fertilization

Soil testing is the only way to determine how much lime and fertilizer is needed for wheat production. Follow recommended procedures when taking soil samples. Avoid atypical areas such as depressions or eroded areas. A good fertilizer recommendation depends on a good soil test.

Liming

The recommended pH range for wheat production is 5.8 to 6.5. Base all liming applications on a soil test. For optimum results, incorporate any needed lime into the topsoil before planting time.

Nitrogen

For the production of grain without grazing, apply 20 pounds per acre of nitrogen (N) at planting or soon after wheat emergence. Apply an additional 60 to 80 pounds per acre of N in February. Omit the fall N application when wheat is planted behind soybeans or peanuts.

When the N source is applied correctly, comparison studies have shown little or no difference in effectiveness. However, gaseous losses from urea or liquids containing urea can be important when conditions favor high evaporation, when there is high soil pH (7.0 or higher), or where large quantities of plant material cover the soil surface. Ammonium nitrate is the preferred N source under these conditions.

The timing of the spring application of N can be quite important.

Recent research at Auburn University has shown that mid-February appears to be the optimum time to make this N application. Too much N may increase the incidence of smuts and certain foliar diseases.

Phosphorus And Potassium

Each of these elements is important in wheat production. Needs vary from field to field. Base the fertilization needs of these elements on a soil test.

Other Nutrients

Available magnesium is routinely determined on soil samples received by the Auburn University Soil Testing Laboratory. When magnesium is low and liming is needed, dolomitic lime is recommended. Calcium is also supplied by lime and is generally not deficient in areas where there is a suitable soil pH.

Sulfur may be deficient in soils where little or no sulfur has been applied recently. An application of 10 pounds per acre of sulfur each year is suggested to prevent sulfur deficiencies. Use a sulfate form of sulphur. Apply the sulphur in mid-February with the nitrogen application.

Micronutrients are generally available in Alabama soils in adequate amounts for wheat production. Therefore, routine application of micronutrients to wheat is not recommended.

Guidelines For Use Of Foliar Fungicides

Use foliar fungicides only in fields with good yield potential and where losses to diseases are a distinct possibility. In order to get an economic return from the use of foliar fungicides, wheat must have a yield potential of at least 35 bushels per acre. The use of a fungicide is especially recommended where grain will be marketed as certified or foundation seed. See Extension Circular ANR-543, "Wheat Diseases And Their Control," for additional information on identification and control of wheat diseases.

Insect Control

The Hessian fly is the most important insect pest of wheat in Alabama. Plants infested in the fall may die. Spring-infested wheat often lodges or has heads that are reduced in size.

The fly survives between wheat crops in the pupal or flaxseed stage. Four to five generations per year occur in the South. The best way to avoid losses to the Hessian fly is to plant resistant varieties.

Fall armyworms are sometimes a problem in wheat production in the fall before frost. True armyworms can be a problem in the spring (March and April). Spray armyworms when 2 to 3 worms per linear row-foot are present and damage is observed. For information on specific insecticide rates and restrictions, see Extension fact sheet IPM-458, "Small Grains."

Aphids are sometimes a problem in wheat production—either in the fall before frost or in March and April. There are four aphids commonly occurring on wheat in Alabama. Aphids by themselves rarely cause economic problems to Alabama wheat.

Occasionally one type of aphid, the greenbug, causes the wheat plant to turn yellow. Heavy feeding may cause the plant to die. Heavy feeding also typically results in "greenbug spots" in the field. The center of the spots is made up of dead plants, surrounded by plants which are heavily infested and beginning to turn yellow. Spray greenbugs when 10 or more occur per plant in the fall or when 20 or more greenbugs occur per plant in the spring.

Aphids more frequently damage wheat by transmitting viruses. Barley Yellow Dwarf is the most serious virus disease that this insect transmits. Early season aphid control has proved very beneficial. Seed treatment with Gaucho has resulted in substantial yield increases, especially in north Alabama.

Cereal leaf beetles are present in the northern half of Alabama. The larvae are yellow but are usually covered with black or brown fecal material. Control population levels of 1 to 2 larvae per tiller (0.5 to 1 per flag leaf) when 30 percent of cereal leaf beetle eggs have hatched in wheat. The threshold level in barley and oats is 1.5 adults or larvae per flag leaf.

Weed Control

In Alabama, several weed species, including wild garlic, mustards, and yellow rocket, are often problems in wheat. A properly timed application of the correct herbicide at the right rate can minimize the effects of weeds.

For detailed information, see the Extension fact sheet IPM-458, "Small Grains."

Effect Of Grazing On Grain Production

Grazing wheat during the winter usually reduces grain yields by 3 to 6 bushels or more per acre. This loss may be justified when the value of the grazing is taken into consideration.

Late spring grazing will seriously reduce grain yields. If a grain crop is desired, remove cattle from the field when the wheat begins to "joint" in prepara-

tion for heading. This is generally around late February or early March.

Harvesting And Storage

Harvest wheat when the moisture content in the grain is 14 percent or less. Harvest the grain as soon as possible after it reaches this level. One method of determining when the wheat is dry enough to combine is to pull a few heads and rub them together between the palms of the hands. If the kernels shell out and most of the central stems of the head break, then the moisture content is about right. Otherwise, the wheat is too green to harvest.

If the separated grain feels damp or is easily dented with the thumbnail, it is too wet to combine. Using a moisture meter is the most reliable way to determine the moisture content of the grain.

Wheat can be stored safely at 12 percent moisture or less if the grain is aerated. If the grain is not aerated, wheat should be dried to a 10 percent moisture content.

Bins should be thoroughly cleaned before storage of grain. A grain protectant is recommended, especially if the grain will be stored longer than 6 months. If grain becomes infested with insects, fumigate only as a last resort.

See the current Extension Circular ANR-500A, *Alabama Pest Management Handbook—Volume 1*, or contact your county Extension agent for current grain protectant recommendations.



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Use chemicals **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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