Annual Grains

Habitat HOW-TO's

Wildlife need and generally prefer the seed and fruit from native plants. However, annual grain plantings can be used to supplement native forages and provide an accessible source of high quality food and cover during severe winter weather. The following information is designed to give you basic guidance for planting annual grains.

Seedbed Preparation

Annual grains require a firm level seedbed free of weeds and other competing vegetation. Initial weed control for site preparation can be accomplished using herbicides (see *Habitat How-To* entitled Fescue Eradication*), or conventional tillage.

Plows are the most commonly used implement for primary tillage. Plows can break loose or shear off a furrow slice, invert the soil, and break it into clumps. They are effective tools for breaking up tough sod and turning it under. However, any other tillage equipment such as chisel plows, harrows, or heavy disks that can penetrate through tough sod and prepare a site for further seedbed preparation will work.

Ground that is plowed will need to be worked a little more prior to planting. After plowing, a disk is the most commonly used implement for breaking up large clods and working the soil into a fine seedbed. When planting on sites that have been previously cropped, disking may be all that is necessary. Rotary tillers can also be a very useful tool. Rotary tillers typically have hooks, knives, or tines of various shapes that rotate, cutting through the soil and preparing a fine seedbed in a single operation. In thick sod, lighter rotary tillers will require several passes to prepare a good seedbed.

Planting Methods

Annual grains are typically planted using three basic types of equipment: broadcaster seeders, planters, and drills. Broadcasters sling seed out of a holding compartment and the seed falls directly to the seedbed. Broadcasting seed is a

Figure 1. Annual grains should always be planted next to good cover for wildlife. This corn on the edge of a switchgrass field is a good example.

Controlling Erosion When Planting Annual Grains

One heavy rain on a sloping field that has just been tilled can cause very significant soil erosion. Soil erosion is a loss to landowners, water quality, and wildlife. Eroded soil can cover crops in low areas, fill road ditches, clog drains, and cover roads. It can enter streams and cover gravel beds and other important stream resources, thus degrading critical wildlife habitat. The following suggestions can help reduce soil erosion on your land.

1. Avoid using conventional tillage methods (plowing & disking) on steep slopes. A permanent stand of grasses or trees on sloping ground is more beneficial to wildlife than tillage practices that will cause erosion.
2. The most effective system for controlling soil erosion is no-till planting. Soil disturbance is limited to a narrow slit that serves as the seedbed when the crop is planted and residual vegetation serves as a soil stabilizer.
3. Use the minimum amount of tillage necessary to control weeds and prepare an adequate seedbed. Extra tillage wastes money, time, and soil.
4. Avoid fall tillage for spring plantings. Wait until spring. This practice eliminates valuable winter food and cover for wildlife and causes soil nutrient loss.
5. Till and plant with the contour of the land. Any tillage system can be improved by planing with the slope rather than up and down a slope.

Annual grain plantings can provide an accessible source of high quality food and cover during severe winter weather.

planting method that requires a well-prepared seedbed and additional tillage or culti-packing after seeding to get good seed-to-soil contact. Broadcasters range from those small enough to be carried and cranked by hand to seeders driven by an electric motor or tractor power take off that are capable of holding several hundred pounds of seed.

Basic grain planters, such as the old two-row corn planters used by many wildlife enthusiasts, still require a prepared seedbed, but place the seed into the soil and pack over the seed in one operation.

True no-till grain drills require no seedbed preparation other than a herbicide treatment to control weeds. No-till grain drills have a cutting disk that will slice through sod or last year's crop residue allowing seed to drop directly into a furrow and then pack the seed firmly in the furrow, all in one operation.

In general, planters and drills offer better fine-tuning of seeding rates and seeding depths for large grains such as corn and sunflowers, but no-till drills are rather large pieces of equipment and are not suited to small tractors or small plots.

What, When, and How Much to Plant

For specific information on grain selection, planting location, and management, refer to the *Habitat-How To* entitled Food Plots. In general, high-quality food can be provided for wildlife in late winter by planting strong-stemmed annual grains such as grain sorghum (milo) or corn. Wheat, oats, or other cereal grains can provide winter forage for deer and turkey and mature at the right time to provide brood-rearing areas and early summer grain for quail and turkey. Sunflower and millets can serve as excellent food sources for songbirds and doves that are residents or passing through during fall migration.

The annual grain planting (Table 1) guide provides planting rates, dates, depths, and other useful information for common annual grains planted for wildlife. Keep in mind that if you plant a mixture of annual grains, seeding rates for each plant should be reduced relative to the number of different plants in the mix (for example, if you are planting a mixture of three plants cut the seeding rate for each plant by 1/3). Seed for common annual grains should be readily available at your local farm supply store.

There are a wide variety of other crops that can be planted for wildlife as separate plots or with annual grains. For instance, grain plots with soybeans or other legumes* will attract insects beneficial to quail, turkey, grouse, and their chicks in early summer and will provide quality browse for deer. Many different wildlife forages are available commercially from seed dealers that specialize in wildlife products. However, most of these forages are simply common plants with new names or varieties of common plants. The planting guide for miscellaneous wild-

life forages lists some of the more popular plantings along with seeding rates and dates (Table 2).

Lime and Fertilizer

All wildlife plantings will respond to appropriate soil amendments*. Soil pH can greatly affect the availability of soil nutrients for plant use. Most annual grains will have adequate production for wildlife if the soil pH is near 6 – 6.5. If the soil pH is low, lime can be added to raise it. Soil tests are the only way to accurately determine soil pH and lime needs. However, in the absence of soil tests, an application of 2 tons of lime per acre will usually show positive results. Lime should be applied about 6 months before the actual planting date to affect soil pH by planting time. Annual grains also respond well to fertilizing. Again, soil tests are the only way to accurately determine fertilizer deficiencies and needs. In the absence of soil tests most annual grains will respond well to a general application of 75 to 100 pounds of nitrogen (N), 60 to 80 pounds of phosphate (P), and 50 to 70 pounds of potash or potassium (K) per acre. Another option that may be used on moderate to good sites with good results is 200 pounds of 10-10-10. Fertilizer amendments can be incorporated into the soil during seedbed preparation. Any additional nitrogen can be applied 4 to 6 weeks after planting. Legumes such as soybeans and cowpeas do not need nitrogen added since they produce their own.

Before planting any specialty wildlife crops, be sure to consider the potential invasiveness of plants.

Figure 2. Winter wheat offers excellent winter forage and seed during the summer.

Ten Tips For Successful Annual Grain Plantings

1. Take soil samples and address lime and fertility needs prior to planting. Apply lime 6 months prior to planting.
2. Identify soil conditions of the planting site and match plants accordingly. For example, sunflowers and grain sorghums can tolerate droughty soils while Japanese millet can grow in wetter conditions.
3. Select annual grains or wildlife forages that meet your overall land management objectives. Corn is strong stemmed and can provide a late winter food source for deer and turkey, but grain sorghums can provide better winter cover and seed for quail. Similarly, wheat planted in the fall can be excellent cool season forage, but might not be available in heavy snow.
4. Check for seed quality. Seed found at bargain prices can often have low germination rates or even unknown germination rates and seeding rates may need to be adjusted accordingly.
5. Prepare an adequate seedbed. Annual grains need firm seed-to-soil contact and should be planted at the right depth for adequate soil moisture.
6. Inoculate legumes for enhanced seed survival and germination.
7. Stay within recommended seeding rates and dates. While out-of-season plantings can sometimes produce good results, the likelihood of success is greatly reduced. More is not always better. Overseeding annual grains can result in excessive competition between plants and greatly reduced seed production.
8. Planting a mixture of annual grains can provide better plant diversity and habitat, but competition may reduce the total seed production if seeding rates are not adjusted according to the number of species in the mix.
9. Weed control may be necessary for good seed production for crops such as sunflower. However, many wildlife species benefit from annual weeds stimulated by soil disturbances. These plants may be as beneficial to wildlife as the intended annual grain planting (see related Habitat How-To, Strip Disking).
10. Wildlife need food, cover, and water provided in the right arrangement in the right amount of space. These needs can not be met by simply planting annual grains. Avoid over emphasizing the need for annual grains in your wildlife management practices at the expense of other habitat improvements.

Table 1. Annual Grain Planting Guide

CROP	PLANTING DATES	RATE (lb\ac)	DEPTH (inches)	TIME OF MATURITY
Corn	April 1 – May 30	10 –18	1 – 3	Sept. 15 – Oct. 30
	Remarks: Provides grain in fall and later winter for deer, turkey, quail, and squirrels. Also provides fall and winter cover for wildlife.			
Wheat	Sept.15 – Oct.15	60 – 90	1 – 2	May 10 – June 1
	Remarks: An annual winter grass. Commonly used in Kentucky as a cover crop. Beneficial to wildlife as a fall and winter forage and an early summer grain crop.			
Rye	Sept.15 – Oct. 30	55 – 85	1 – 2	June 15 – June 30
	Remarks: Tall winter annual grass. Can exceed 5 ft. Is more winter hardy than most small grains and is suited to soils low in fertility and sandy soils. Rye is a cereal grain, not to be confused with annual or perennial ryegrass which is not considered a grain crop. Beneficial to wildlife as a fall and winter forage and an early summer grain crop.			
Oats	March 1 – April 1 Sept. 15 – Oct. 30	65 - 95	1 – 2	July 1 – July 10
	Remarks: Winter hardy cereal grain that requires better growing conditions than wheat or rye. It requires more moisture, but well-drained soils, and is more sensitive to heat. Beneficial to wildlife as a fall and winter forage and a mid summer grain crop.			
Barley	Sept. 15 – Oct. 15	70 – 95	1 –2	June 5 – June 15
	Remarks: Winter hardy cereal grain. Very sensitive to acid soils. Adapted to hot and dry growing seasons. Beneficial to wildlife as a fall and winter forage and an early summer grain crop.			
Rice	April 1 – May 30	90 – 100	½ - 1	July 1 – Oct. 15
	Remarks: Annual grass that grows 2 – 4 ft. tall. Best growth occurs when roots are submerged in water. Suited to shallow water wetlands*. Seed can be broadcasted or drilled then flooded when plants are 6 – 8 in. high. Primarily a fall seed source for resident and migrating waterfowl.			
Buckwheat	April 1 – July 20	30 – 60	1 – 2	Sept. 20 – Oct. 10
	Remarks: A broadleaf short season crop adapted to many soil types. One of the few grains suited to a mid season planting. Provides a small seed beneficial to quail.			
Sweet Soghum (Sorgo)	May 1 – June 10	2 – 3	1	Sept. 1 – Oct. 15
	Remarks: A tall sorghum variety known for its syrup qualities. Can reach heights of 15 ft. Planted less for wildlife than grain sorghum.			
Grain Soghum (Milo)	May 1 – June 10	6 – 9	1 – 1.5	Sept. 1 – Oct. 20
	Remarks: Adapted to a wide variety of soil conditions. Most common grain sorghum hybrids are 2 to 5 ft. tall. Beneficial to wildlife as a fall and winter grain. Can also provide fall and winter cover for small game.			
Browntop Millet	May 1 – Aug. 1	20 – 25	½ - ¾	July 1 – Oct. 1
	Remarks: Shatters easy and will reseed. Annual summer grass. Beneficial to wildlife as a late summer grain crop.			
Foxtail Millet	May 1 – Aug. 1	20 – 25	½ - ¾	July 15 – Oct. 15
	Remarks: Varieties include German, common, and Hungarian. Annual summer grass. Beneficial to wildlife as a late summer and fall grain crop.			
Pearl Millet	May 1 – Aug. 1	20 – 25	½ - ¾	July 15 – Oct. 15
	Remarks: Sometimes called cattail millet. Does not shatter easily and will hold seed into winter. Annual summer grass. Beneficial to wildlife as a late summer and fall grain crop.			
Proso Millet	May 1 – Aug. 1	20 – 25	½ - ¾	July 1 – Oct. 1
	Remarks: Most often used for doves. Does well on dry sites. Annual summer grass. Beneficial to wildlife as a late summer and fall grain crop.			
Japanese Millet	May 1 – Aug. 1	20 – 25	½ - ¾	July 1 – Oct. 1
	Remarks: Best millet for wet soils. Beneficial to wildlife as a late summer and fall grain crop. Most often planted for ducks. Annual summer grass.			
Sunflowers	April 1 – May 10	10 – 15	1 – 2	Aug. 1 – Sept. 15
	Remarks: Broadleaf annual. The most commonly used variety for wildlife is Peredovick. Beneficial to wildlife as a fall and winter grain crop. Good planting for doves and songbirds.			
Soybeans	May 1 – July 1	60	1 – 2	Sept. 15 – Oct. 30
	Remarks: A warm season annual legume capable of growing under a wide variety of soil conditions. Beneficial to wildlife as a forage and grain crop. Can provide brood rearing habitat for turkey and quail. Inoculate seeds before planting.			

Table 2. Miscellaneous Grains and Forages for wildlife.

CROP	PLANTING DATES	RATE (lb\ac)	DEPTH (inches)	TIME OF MATURITY
Cowpeas	May 15 – July 1	60	1 – 3	Sept. 1 – Oct. 1
	Remarks: A warm season annual legume beneficial to wildlife as a forage and grain crop. Inoculate seeds before planting.			
Trailing Soybeans	April 15 – June 1	6 - 8	1	Oct. 1 – Nov.15
	Remarks: Similar to soybeans. Also called quail haven reseeding soybean. Produces long vines up to 15 ft. and abundant seed that shatters and falls to the ground. Can be grown with strong stemmed annual grains. Beneficial to wildlife as a forage and grain crop. Inoculate seeds before planting.			
Canola and Rape	April 1 – May 15 Aug. 1 – Sept. 15	3.5 - 4	½	Aug. 1 – Oct. 1 Nov. 1 – Dec. 31
	Remarks: Canola and rape are similar and associated with a group of plants called Brassicas or the mustard family. They are broadleaf, winter hardy annuals primarily grown as a fall and winter wildlife forage. Forage will have some regrowth after browsing.			
Kale	April 1 – May 15 Aug. 1 – Sept. 15	3.5 - 4	½	Aug. 1 – Oct. 1 Nov. 1 – Dec. 31
	Remarks: Kale is also a Brassica. A broadleaf winter hardy annual primarily grown as a fall and winter wildlife forage. With the exception of a stemless variety it does not re-grow after browsing.			
Turnip	April 1 – May 15 Aug. 1 – Sept. 15	1.5 - 2	½	Aug. 1 – Oct. 1 Nov. 1 – Dec. 31
	Remarks: Also a Brassica. Broadleaf winter hardy annual primarily grown as a fall winter wildlife forage, but also has a large, edible root. Foliage will re-grow after browsing.			
Swede	Aug. 1 – Sept. 15	1.5 - 2		Nov. 1 – Dec. 31
	Remarks: Also a Brassica. Broadleaf winter hardy annual primarily grown as a fall and winter wildlife forage, and has a large, edible root. Foliage does not re-grow after browsing.			
Sesame	April 15 – May 15	4 – 5	1 - 2	July 15 – Aug. 15
	Remarks: An annual broadleaf plant. Produces abundant seed.			
Chufa	April 1 – June 1	40 –50	1 – 2	July 15 – Sept.1
	Remarks: Chufa is a sedge and has the appearance of other sedges (grass-like plants) that grow on poorly drained soils. Small tubers produced on the roots are beneficial to turkey and waterfowl. Grows best in sandy and silty clay loams.			
Egyptian Wheat	April 15 – May 15	4 – 6	1	Aug. 15 – Oct. 1
	Remarks: Egyptian wheat is a grain sorghum. It is a tall variety that grows 7 – 10 ft. Provides winter cover. Unlike other grain sorghums, Egyptian wheat is not prone to damage by flocks of blackbirds. Its spindly seed heads prevent blackbirds and other relatively large birds from perching on the upper stems to eat the seeds.			

Figure 3. Grain sorghum (milo) is a strong-stemmed annual grain that withstands snow and ice well.

SUMMARY OF OPTIONS:

Type of Grain:
Variable (see table)
Planting Date:
Variable (see table)
Seeding Rate:
Variable (see table)
Site Preparation:
Weed Control, Herbicide Treatment, Soil Amendments, Conventional Tillage
Planting Method:
Broadcast Seeder, Grain Planter, No-Till Drill

***Related *Habitat How-To* references:**

Fescue Eradication
Cropland Management
Food Plots
Legumes
Soil Amendments
Shallow-water Wetlands

Planning for My Property

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