

Planting Oats for Forage

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Introduction

Oats are fast-growing small grains that have long been used for grazing, hay and silage. Oats can be used to fill forage gaps in either spring or fall. They are popular for grazing in fall or as a hay crop in spring. Oats have a history of being planted as a nurse crop when establishing orchardgrass (*Dactylis glomerata* L.) or other cool-season grasses, especially when mixed with clover (*Trifolium* spp.) or alfalfa (*Medicago sativa* L.).

Characteristics

Spring oat and winter oat:

Spring and winter oat (*Avena sativa* Schreb.) grow to 24-36 inches tall. They are leafy plants with an open panicle-type seed-head with seed spikelets that droop downward. A primary distinction between spring oat and winter oat is in cold tolerance. Choosing which type depends on the time period when grazing and forage is needed. Spring oat provides quick forage in fall, but will winterkill during cold weather. Winter oat has cold tolerance to survive moderately cold weather. However, even winter oat is less winter hardy than winter wheat or

cereal rye and may be damaged by very cold temperatures. Research from New York indicated that both spring and winter oat suffered freeze damage at 28 degrees Fahrenheit when leaves were not acclimated to cold temperatures, suggesting that a sudden early fall frost could injure either type. After 4 weeks of cold acclimation, severe freeze damage occurred for spring oat at 18 F and 14 F for winter oat. Most references suggest prolonged temperatures at or below 20 F will cause freeze injury. Severity of damage depends on variety and stage of growth when freezing temperatures occur. Well-tillered vegetative plants would be more tolerant than seedlings or plants that have initiated stem elongation.

Black oat: Black oat (*Avena strigosa* Schreb.) originated in the Mediterranean region. It is named for the long, black primary awn in the seed spikelet. Historically used in Europe before the introduction of the more productive common oat (*Avena sativa*), black oat is now considered a weed in common oat crops. Forage yield is similar to common oat varieties. Currently, black oat is grown

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in South American countries as a winter cover crop. It has become popular in the southeastern United States as a cover crop likely because it is reported to have some weed and nematode control properties. The only variety available in the U.S. is SoilSaver, which is a joint release between Auburn University and the Institute of Agronomy of Paraná, Brazil (IAPAR). Soil-Saver has poor cold tolerance, similar to spring oat, and will winterkill in most of Arkansas so is best planted in spring if used as forage. Another variety, called Cosaque, is not a true black oat but rather an *Avena sativa* common oat with a black or dark-colored seed hull. Cosaque has cold tolerance similar to winter oat and can survive moderately cold temperatures.

Planting methods

Oat seed weighs 32 lbs per bushel, so seed size is large compared to other grasses such as tall fescue or ryegrass. Seeding depth should be approximately 1 inch. The seeding rate is 90-120 lbs per acre. That rate can be reduced by 25% to 50% if planting as a nurse crop or in mixture with other forages. Oats are often planted in mixture with rye, wheat or ryegrass. The oat provides forage much earlier in fall. If the oat component does winterkill, the other more cold-hardy forages remain for grazing in late winter and spring.

Oat forage can be planted in spring or fall. Establishment is best on a tilled seedbed, but can be no-till drilled into an existing sod that has been sprayed with a nonselective herbicide. It can also be interseeded into bermudagrass sod in late summer if fall grazing is desired. When planting oat into bermudagrass sod from late August to early September, the bermudagrass sod must be suppressed with a nonselective herbicide such as glyphosate or by moderate disking at the time of planting. Graze or cut the bermudagrass to 2-3 inches and allow time for the sod to “green up” before spraying the herbicide. If the bermudagrass is sprayed too soon after mowing, there will not be enough green leaf tissue to absorb the herbicide, resulting in poor suppression. A glyphosate rate of 1 pint per acre is often sufficient

for sod suppression, but some producers have applied as much as 1 quart per acre. Herbicide suppression of the bermudagrass sod in late summer seldom has any long-term negative effect. Bermudagrass stands normally grow back the following spring with no noticeable effect.

Spring oat or winter oat can be planted for forage in late February to mid March in a tilled seedbed or in a suppressed grass sod. For north Arkansas, planting should be in the later part of that date range. Spring-planted stands will reach maturity in 60-75 days after germination. The recommended stage of growth for hay or silage harvest is at late boot to early heading. Forage quality declines rapidly after onset of heading as the plant progresses to full maturity. Grazing can begin earlier when forage is more vegetative. (For information on digestibility at different stages of plant maturity, refer to FSA 3063 Using Cool-Season Annual Grasses for Hay and Silage).

For no-till planting into bermudagrass sod in spring, sod suppression is important. Even though bermudagrass is dormant in late winter, many small winter annual weeds are often present that, if left uncontrolled, can quickly overtake a developing stand of oats. The weeds/sod can be suppressed by burning, if enough dry forage residue is present in late winter, or by spraying with a nonselective herbicide.

Since oats are usually planted for a quick forage crop, fertilizer should be applied at planting to support rapid growth. Normally fall nitrogen fertilizer rates should be 60 lbs per acre of N due to a relatively short fall growing period. In spring, oats are often used for hay and silage so nitrogen rates can increase up to 100 lbs per acre N. Fertilizer P and K should be applied based on soil test recommendations for winter annual pasture or hay.

Forage yield

Oats intended for fall grazing should be planted in late August to early September. Later fall plantings seldom produce enough forage

for a fall grazing. University of Arkansas tests showed that delaying planting from Aug. 31 to Sept. 22 reduced fall dry matter yield of Jerry spring oat by approximately 50% and delaying planting until Oct. 13 reduced dry matter by approximately 50% compared to the September planting (Figure 1).

Plantings of spring oats made in late summer (late August to early September) will often reach maturity with visible seedheads by mid to late November. Forage at this stage of growth is not winter-hardy but can be considered as “standing hay” to graze or could be harvested as a silage crop. University of Arkansas tests on tilled seedbeds have shown up to 3,600 lbs of forage dry matter per acre by late November (Figure 2). Spring oat can be planted in mixture with cereal rye, wheat or ryegrass to give an extended grazing season. The spring oat may winter kill after the fall grazing period, but the other winter annuals will remain for forage in late winter through spring. Winter oat can also be planted during the same time frame with adequate yield for grazing. Spring-planted stands of either winter or spring oat have produced similar forage dry matter yield (Figure 3).

Late winter plantings of spring or winter oat made in late March will produce 2/3 of the dry matter yield of late February or mid March plantings (Figure 4). These same plantings will outperform winter wheat. (Figure 5)

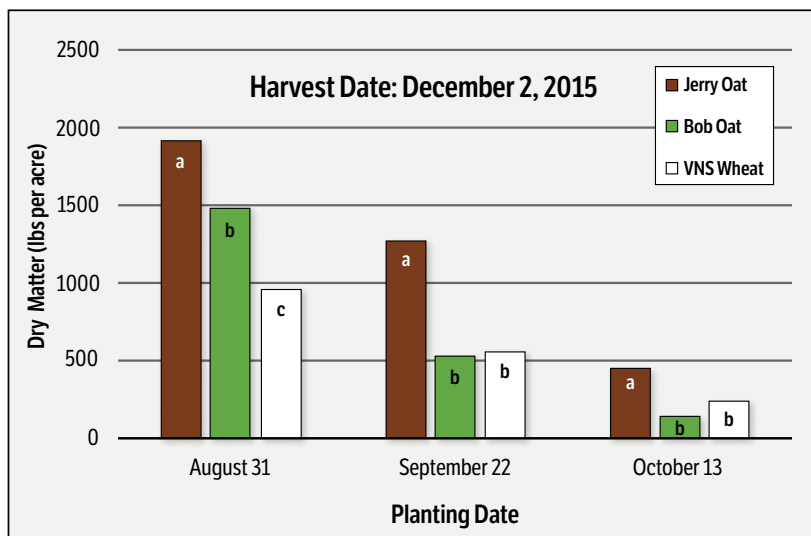


Figure 1. Influence of planting date on fall dry matter yield of spring oat, winter oat and wheat. 2015-WREC, Fayetteville, AR

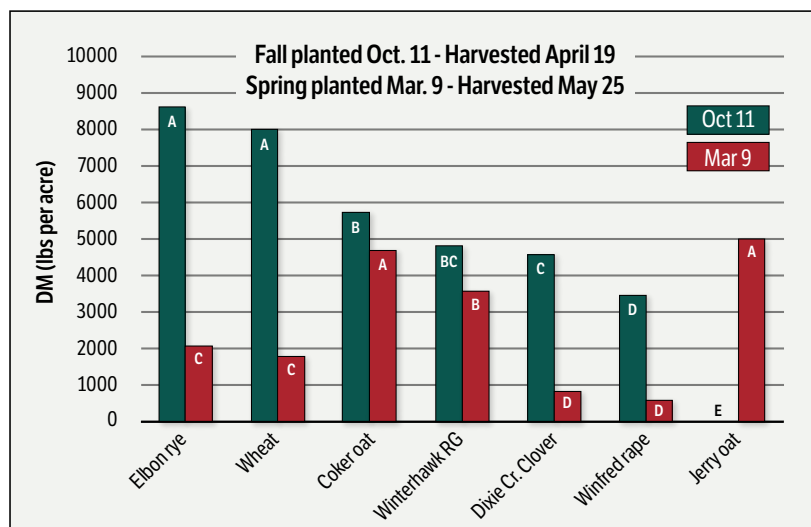


Figure 2. Influence of fall planting date on fall dry matter yield of seven cool-season annual forages. WREC – Fayetteville, 2016. Dashed line indicates suggested dry matter adequate for initiation of fall grazing.

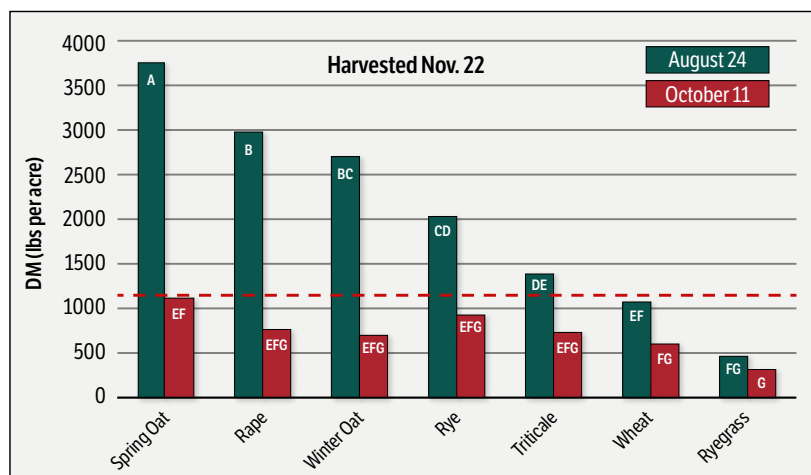


Figure 3. Influence of fall or spring planting dates on dry matter yield of seven cool-season annual forages. WREC - Fayetteville-2016-17.

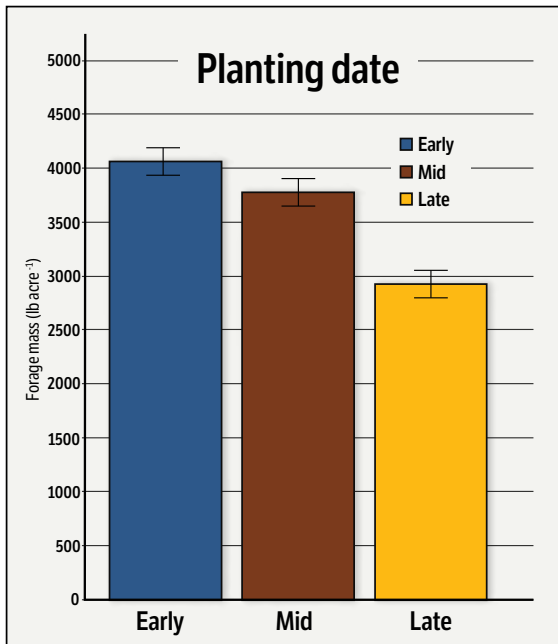


Figure 4. Influence of planting date on dry matter yield of cool-season annual forages. ASU-Jonesboro, 2021-2024. Early (late February), Mid (mid March), and Late (late March) planting dates presented.

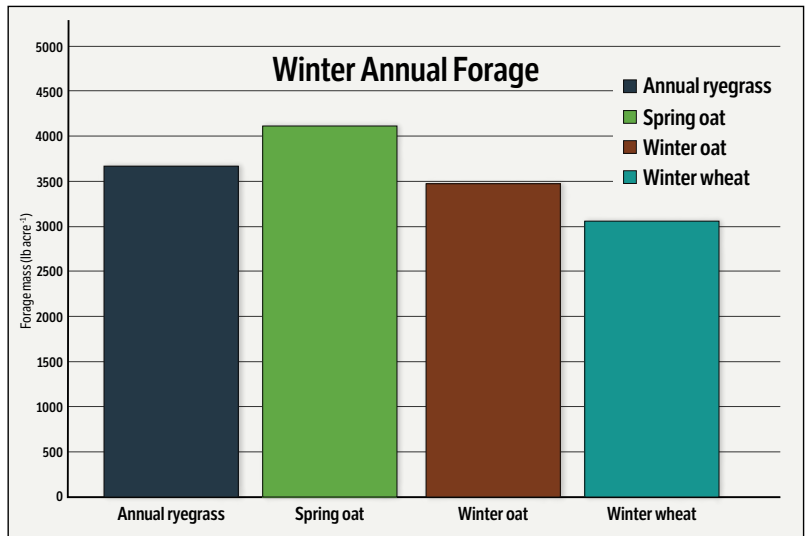


Figure 5. Dry matter yield of four cool-season annual forages. ASU-Jonesboro, 2021-2024.

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