



Small Grain Cereals for Forage Production

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Small grains are a group of forage species that are used predominantly for grain production, but in the southern USA they could be used as multipurpose crops for grazing, baleage and hay production. This group includes barley (*Hordeum vulgare*), cereal rye (*Secale cereale*), oats (*Avena sativa*), triticale (*X Triticosecale* spp.), and wheat (*Triticum aestivum*). One of the advantages of using small grains is that they can be planted in the fall a little earlier than annual ryegrass and could be ready to graze within 45 days under optimum weather conditions. Small grains can help relieve producers from feeding hay and allowing annual ryegrass pastures to develop a good growth before grazing.



Figure 1. *Small grains*, which include oats, wheat, triticale, and rye, play an important role in winter grazing forage crops rotations in the southern USA.

Small Grain Species

Barley – Barley is the earliest maturing small grain species. This small grain is not as winter hardy as

cereal rye or wheat. It should be planted earlier (September 1 to September 20) to allow becoming well established. Barley is adapted to well drained, loamy soils. It does not do well in sandy or wet soils (does not tolerate waterlogged conditions). One of the disadvantages of using barley is lower forage production compared to other small grains, but it has much higher overall forage digestibility

Cereal Rye – Rye is more tolerant of cold weather and soil acidity than other small grains. It can be mixed with annual ryegrass to provide annual ryegrass as a companion crop to extend the grazing season. Cereal rye has a rapid growth in both fall and spring when compared to other small grains. It is also the earliest maturing small grain due to its high biomass production in the late fall and early winter. Early maturity could be an advantage when overseeded into warm-season perennial pastures such as bahiagrass (*Paspalum notatum*) and bermudagrass (*Cynodon dactylon*). It is more adapted to better drained soil and lower soil pH than other small grains. Cereal rye becomes stemmy and unpalatable earlier in the spring than other small grains.

Oats – They are generally the coldest sensitive of the small grains and temperatures below 39 °F can greatly reduce forage growth and grazing potential. Oats when planted earlier can provide late fall grazing. Similar to barley, oats should be planted early to allow them to get well-established before cold weather can impact seedling development. They are best adapted to well-drained clay and sandy loam soils and they do not produce optimum growth under extremely dry or wet conditions as compared to wheat or cereal rye. Oats are also more susceptible to leaf rusts than cereal rye or wheat.

Wheat – Wheat is commonly planted species for grazing. It is less susceptible to cold injury when compared to oats, but both species have very similar forage yield production. Wheat grows at temperatures between 38°F and 77°F. In a forage system, it is recommended to use cultivars (varieties) that are resistant to the Hessian fly (*Mayetiola destructor*). Wheat tends to be more heat sensitive than cereal rye and oats and cannot be planted early. Wheat provides mores of the forage production in later winter and early spring. Wheat is adapted to moist soils (wet clay soils), but grows best on well-drained, loamy soils. It is less tolerant to poorly drained soils than cereal rye and triticale.

Triticale – This forage crops is a cross between wheat and cereal rye. It has characteristics and production very similar to wheat. Triticale does not tiller as much as wheat. Triticale will grow on most soil types. It is can be planted at lower pH soils than other small grains and it can do well in waterlogged conditions. Triticale has stress tolerance and disease resistance that are typically greater than wheat, but is slightly more susceptible to ergot than wheat.

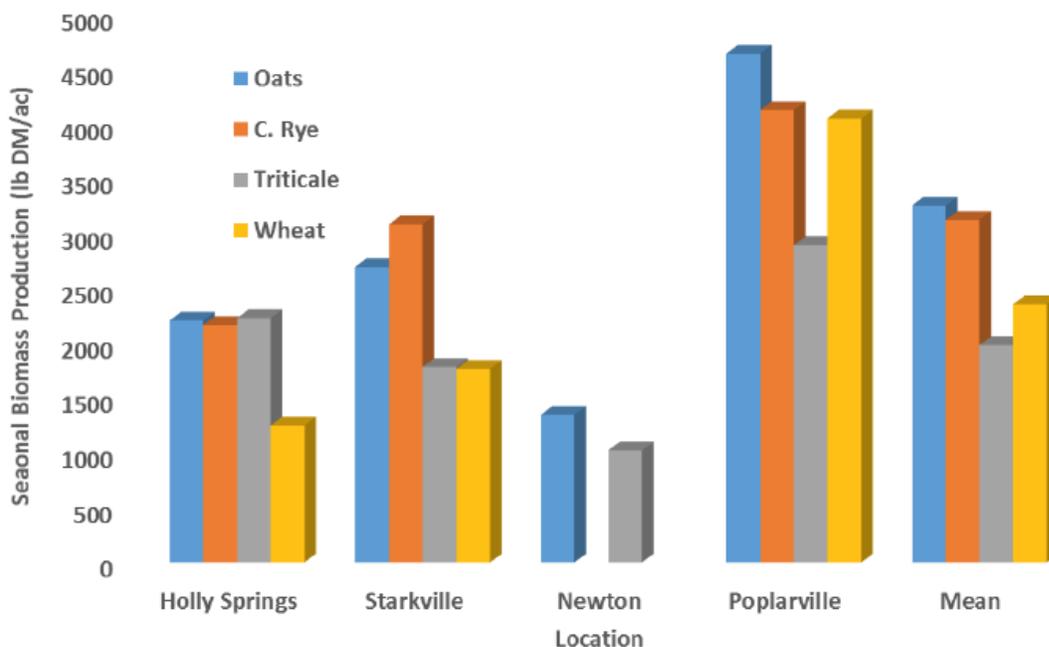


Figure 2. Average biomass production of small grains as forage crops across different locations in Mississippi. Data collected in oats and rye from 2012-2016 and in triticale and wheat during 2012. Source: White et al., 2012-2017.

Summary – Small cereal grains can be a very versatile crop and provide an excellent source of forage for stocker cattle. Before selecting a species and variety, it is a good idea to learn about the positive and also limiting characteristics of each species. When selecting a species, remember to make sure that will fit into your climatic conditions, is adapted to soil conditions and fits the intended grazing purpose. Overall, the grain species will not vary considerably in quality, but they do vary in yield (Fig. 2) Not all small-grain species are equal when it comes to forage production due to differences in seasonality, cold tolerance and recovery. Maximizing the forage potential of any of these cereal crops depends on several basic production factors. It is important to follow the recommended plant-ing dates for each species. All small grains respond to nitrogen. Adequate fertilizer amounts are required for maximum forage production with small grain cereals.

Upcoming Events

October 27, 2017—North Mississippi Beef Expo, Senatobia, MS

For upcoming forage related events visit: <http://forages.pss.msstate.edu/events.html>

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