

Crabgrass as a Warm-Season Forage Crop

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Crabgrass is often classified as a weed, but it also can be a useful forage crop. It makes sense to take advantage of any attractive opportunity to provide forage to cattle and other livestock, so it also makes sense to consider using, encouraging, and even planting crabgrass.

There are actually several species of crabgrass, with large or hairy crabgrass (*Digitaria sanguinalis*) and smooth crabgrass (*Digitaria ischaemum*) being most common. Crabgrass is widely adapted, but does best on well-drained soils, especially sandy loam, sandy clay loam, or clay loam soils. Though crabgrass is an annual, it usually is not difficult to obtain reseeded stands year after year. Its dry matter yield is rather erratic, depending on how early a stand is obtained in spring and on factors such as fertility and rainfall, and can range from only one or two tons/acre to over five tons/acre. In general, smooth crabgrass found naturally on many Piedmont and Mountain farms is low yielding but can provide forage at a critical time in mid to late summer. Large hairy crabgrass is commonly found in the Coastal Plain and some very high yielding types have been seen at many locations.

The forage quality of crabgrass is typically better than that of most other summer grasses. For example, crabgrass hay is usually of higher quality than that of bermudagrass, bahiagrass, or more the most commonly planted summer annual grasses such as pearl millet or sorghum-sudan hybrids. In grazing tests with yearlings in Oklahoma, average daily gains of yearling calves on crabgrass have been as high as 1.8 pounds; by comparison, ADG's on bermudagrass or bahiagrass are typically around 1.0 pound.

The most common situation where crabgrass benefits forage programs is in places in which it volunteers. If pastures or hayfields are thinned by adverse weather conditions or other stresses, crabgrass often will "fill in gaps" in perennial forage stands and thus make a significant contribution in years in which such fields would otherwise produce much lower yields.

However, planting crabgrass can also be a highly appropriate forage production strategy. Perhaps the best example is in fields in which winter annuals are planted on a prepared seedbed each autumn. The reason this works well is because the growing seasons of winter annuals and crabgrass are quite complementary, and it is relatively easy and inexpensive to establish a crabgrass stand as the following explanation indicates.

Once a good stand of crabgrass has been obtained and managed for reseeding in a given year, alternating with winter annuals planted on a prepared seedbed thereafter is a simple matter. Shallow tillage prior to planting winter annuals will incorporate crabgrass seed and usually result in an "automatic" crabgrass stand the next spring, even if no spring tillage is done.

However, to further enhance the chances of obtaining a crabgrass stand in such a situation, or to get it started earlier, a producer can simply shallowly disk the winter annual stand (about 3 inches deep) once production has declined significantly in spring (around early May), and a new crabgrass stand will normally appear. An alternative approach would be to run a heavy tooth chain harrow over the field. Once a crabgrass stand is present, fertilization is the primary management practice required. By late August or early September, crabgrass growth declines, which is just about the perfect time to replant the winter annuals. If there is a strong seedbank present it is possible for a crabgrass stand to develop without any tillage, but heavy animal impact in late winter or a heavy rain in late spring may be needed to get a strong stand.

Obtaining Seed

Crabgrass seed is not stocked by most local seed suppliers but can be special ordered. However, there is a great deal of genetic diversity within crabgrass, and therefore one cannot be certain about the species or variety if purchasing "common" crabgrass seed.

Years of work with crabgrass by R.L. Dalrymple and others at the Noble Foundation in Ardmore, Oklahoma, culminated with release of a variety of large hairy crabgrass named 'Red River' in 1988. More recently Mr. Dalrymple released a second variety of crabgrass named 'Quick-n-Big' which is a proprietary variety of Elstel Farm Seeds . Quick-n-Big comes on faster than Red River, and is in general a larger coarser textured plant that passes its prime nutritional value earlier than Red River. For this reason, many producers use a mixture of the two varieties, Quick-n-Big to give early yield and Red River to provide higher quality forage later in the summer. Because these varieties are known to be productive with regard to forage yield and quality, it makes sense for any producer who wants to plant crabgrass to purchase seeds of these variety rather than take a chance on common crabgrass seed.

When purchasing crabgrass seed it is possible to purchase new crop seed or aged seed. Fresh crabgrass seed may have a relatively low initial germination rate compared to aged seed, so if a quick thick stand is desired then aged seed may be a better choice. On the other hand, if the producer plans to grow crabgrass in successive years, then planting new crop seed may help build a seed bank that will germinate later in the first season and into the following year.

Establishment

Crabgrass should be planted on a clean, fresh seedbed after the danger of frost is past in spring. The seedbed should be firm enough at planting that when the farmer walks on it, their shoe print is no deeper than 1/2 inch. Seed can be drilled about 1/4 inch deep or simply broadcast over the soil surface. It may be helpful to use a cultipacker after seed have been broadcast, as this favors rapid germination and may avoid washing of seed by a heavy rain. **Note, the most common mistake in planting crabgrass is putting the seed too deep!** Broadcasting after running a drag harrow and then running a cultipacker has proven to be an excellent way of no-till establishment on areas damaged during winter

grazing or hay feeding, or following a very hard grazing (or haying) of the last growth of winter annuals.

Good stands have been obtained with as little as 2 pounds of seed per acre, but use of 3 to 5 pounds per acre helps ensure quick cover and a thick, productive stand. The seed can be mixed with a small quantity of a low analysis starter N-P-K (nitrogen-phosphorous-potassium) fertilizer. The fertilizer/crabgrass seed broadcasts or flows through a drill better than crabgrass seed alone.

If adequate moisture is present, some crabgrass seed will germinate within a few days, though the stand may continue to thicken over a period of 2 months or more from additional seedling establishment resulting from slower-germinating seed. It is not unusual for a crabgrass stand to be 6 inches high and suitable for grazing within around 30 days.

Topdressing with additional N can be done after the grass has emerged and seedlings are in the early tiller stage. This should be done when the soil is dry on top. A season-long total of 120 pounds of N per acre in split applications (and if the crabgrass stand is established early perhaps even 3 applications and thus higher season-long rates of N during a good summer growing season) is justifiable. Nitrogen applications after mid-August are probably not justifiable.

Crabgrass has been especially useful in repairing winter feeding areas that are damaged from heavy animal impact. After the end of the hay feeding period (February to April depending on the location), clean up old hay residue by burning or spreading and use a light harrow to break ruts and other very uneven ground. Use a chain harrow to smooth the area and then broadcast about 5 to 10 lb/acre of crabgrass seed. Often this is best accomplished by mixing the seed with pelletized lime or fertilizer. Additional dragging or cultipacking may help the stand, but is generally not necessary. After about 3 weeks (assuming a good rain follows planting) there should be a stand of crabgrass and annual broadleaf weeds. Spraying with 1 to 2 pints of 2-4 D per acre will control the broadleaf weeds and allow crabgrass to dominate the stand. This technique will not only repair the damaged area, but because of the nutrient accumulation at those sites it will result in a high yield of desirable forage without fertilizer application. After repeating this practice several years and allowing reseeding to occur, the same steps can be followed with no additional seed added.

Management

Crabgrass germination begins when soil temperature is around 58 degrees. Though disking a field to encourage volunteer crabgrass may be most appropriate in mid-spring in a field in which it is alternated with winter annuals, it will otherwise be best to disk a field in which there is known to be adequate crabgrass seed in late February or early March. The reason is that if there is no winter annual stand to be concerned about, this will allow crabgrass to get an earlier start and thus make more total forage growth.

If it is not necessary to till a crabgrass field in late summer or early autumn in order to plant winter annuals, there will continue to be some crabgrass growth until a killing frost occurs. However, late summer/autumn production is low and the forage is lower in quality and should be utilized by animals that have relatively low nutritional requirements.

Because crabgrass is quite tolerant of defoliation, it can be grazed or cut as low as 3 inches. If rotationally stocked, it is best to begin grazing when pastures are no more than 12 inches high, rotate animals off when they are between 3 and 6 inches high, and restock when they are 6 to 8 inches high. In Noble Foundation tests with yearlings, stocking rates have generally been 1,000 to 1,100 pounds of calf per acre and the length of the grazing season has varied from 60 to over 120 days.

Crabgrass should be cut for hay in the boot to heading stage (normally 18 to 24 inches high), which should allow at least two harvests per year. When regrowth is desired and accumulated crabgrass forage is tall, cutting height may need to be more than 3 inches because some green leaf tissue should be left to favor quick regrowth. If crabgrass is cut before it makes mature seed, one way to get enough seed for reseeding is to leave a 6-inch uncut strip between mower swaths. If crabgrass makes mature seed before being cut for hay, forage quality will be lower.

Other things being equal, the first harvest of the year will result in the best hay, sometimes containing more than 15% crude protein and 65% total digestible nutrients. Crabgrass hay normally cures more slowly than bermudagrass, but more quickly than sorghum-sudan hybrids or pearl millet. Hay made from crabgrass is often dark in color because it cures slowly and consequently may not look as good as it is. While there is little research on making crabgrass haylage, practical experience has been that crabgrass makes very acceptable haylage if baled at an average of 50% moisture (35 to 65% moisture is acceptable).

Reseeding

It is usually easy to get crabgrass to reseed, and in most systems it commonly reseeds even when you don't want it to. However, it is a good idea to allow the crabgrass to make one strong seed crop during summer or autumn. A stand which gets started growing in early spring will be capable of making seed as early as June or early July.

One proven practice is to allow the crabgrass to make a good seed crop in late summer (last growth of the year) and to then graze the mature plants hard with dry cows before making preparation for seeding winter annual. This is especially useful in fescue systems with fall-calving cows as it ensures a strong seed bank, and also gives the cows a break from fescue toxins during late pregnancy.

Nutritional Value

University of Arkansas researchers conducted an in-depth analysis of the nutritive value

of crabgrass. A primary reason for decline in nutritive quality as a forage crop matures is the accumulation of stem material which is less digestible than leaf matter. However, with crabgrass the quality of the stem is quite high especially compared to other warm-season grasses. The amount of fiber (NDF, neutral detergent fiber) in crabgrass remained relatively constant and quite low during July and August, 55 to 62%. By comparison, some other common forages contain the following fiber concentrations: bermudagrass - 64 to 82%, bahiagrass - 70 to 78% and dallisgrass - 68 to 71%. Obviously, the crabgrass contains appreciably less fiber and in the Arkansas study this resulted in crabgrass being broken down in the rumen 44% faster than bermudagrass. The crude protein content of crabgrass ranged from 21% in the early growth and decreased to 16% in late August. The highest requirement that a beef cow would have is about 12% thus the protein content is more than adequate. In terms of forage quality, crabgrass offers a clear advantage over other warm-season perennial grasses by offering lower fiber concentration and faster digestion rates. The high quality of the stem material appears to be the main factor associated with these differences.

Summary

Crabgrass is a very important forage plant that most often occurs as volunteer stands of either large hairy crabgrass or smooth crabgrass. Both types have good nutritional value, but the large hairy types are higher yielding and there are named varieties available for seed purchase. Crabgrass can be used in rotation with small grains to provide high quality summer grazing, and can be used to repair areas damaged during winter feeding.

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