Chapter 3

Using native warm-season grasses as forage for livestock

The use of nwsg is not limited to wildlife habitat—they also can provide excellent forage for livestock. In fact, when properly hayed or grazed, nwsg can still provide nesting and brood-rearing habitat as well as winter cover.

The primary characteristic that makes nwsg attractive as a forage crop is that they are warm-season grasses (C_4 plants), meaning they produce the majority of their growth during the summer period, when high temperatures result in reduced growth of cool-season grasses (C_3 plants). On an annual basis, on the same soils and with similar management, C_4 plants will outproduce C_3 plants in terms of total tonnage, by about 1.5–2 times. For example, switchgrass will often produce 5–6 tons per acre of forage versus about 2.5–3 tons per acre for tall fescue. C_4 plants are also more efficient at using soil moisture than C_3 grasses and thus are much more resistant to drought conditions. Because of this growth strategy, nwsg can be used to help fill summer forage voids in livestock operations.

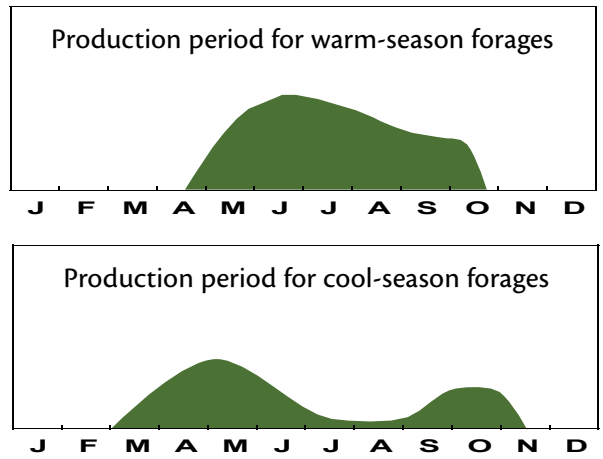

Fig 3.1 Nwsg produce the majority of their growth from June through August. This can be a real advantage for hay and livestock producers.

Native warm-season grasses for hay

Nwsg can make a highly desirable hay crop. Yields of 2–6 tons per acre can be expected, depending on the species grown, rainfall, soil type and other environmental conditions. Little bluestem, a shorter growing species adapted to drier sites, typically produces only about 1.5–2 tons of

Fig 3.2 Switchgrass is the most commonly hayed nwsg in the Mid-South. It produces outstanding tonnage with high quality when managed correctly.

forage per acre. Big bluestem and indiangrass produce about 2.5–4 tons per acre and switchgrass and eastern gamagrass produce about 4–5 tons of forage per acre. On particularly productive soils and with good summer rainfall, these figures could be higher. Yields will be reduced in dry summers, but nwsg are less sensitive to drought than cool-season grasses and yield reductions will not be as pronounced. While all of these species respond to N fertilization, the response is not as strong as with tall fescue or bermudagrass. This is a real benefit to the forage producer.

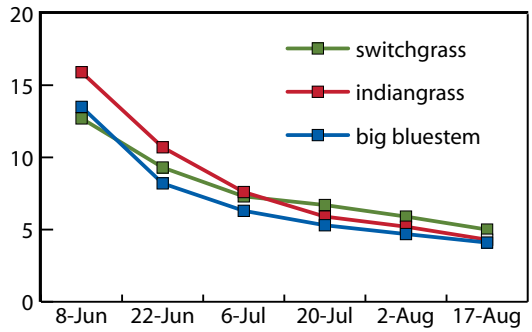

Fig 3.3 Regardless of grass species, forage quality declines over time as the grass matures (without harvesting). Periodic harvesting or grazing (at the correct time) will ensure quality hay throughout the summer. (Perry and Baltensperger 1979)

The nutrient content of nwsg forage can be as high as 16–17 percent crude protein, but normally is 8–12 percent at optimum harvest. It should be noted that in relationship to plant maturity, nwsg forage quality deteriorates more quickly than with cool-season grasses. That is because lignification is more rapid after boot stage in nwsg. Therefore, when managing nwsg, timing of harvest is more critical than with cool-season grasses.

Fig 3.4 This eastern gamagrass field has just begun to flower and is ready to cut for hay.

One of the values of nwsg for hay is the time of production — summer. Two main factors influence the nutrient content of a hay crop. First is the stage of maturity of the plant. Maximum tonnage and high-quality nutrition do not occur at the same time. As plants mature, protein and energy content decreases, while fiber content increases. Although maximum tonnage might occur in August, forage quality at that time is relatively low. Optimum nutrient content is available in May and June, depending upon species. From a practical standpoint, grasses should be cut ***before*** seedheads begin to emerge. Hay produced from a young, immature plant can be outstanding quality, while hay from a mature plant will be low quality. This trend holds true for all forage crops, warm-season **and** cool-season.

Fig 3.5 By mid-July, this previously uncut eastern gamagrass has produced elongated stems with mature seed. Hay quality at this point is significantly reduced.

Fig 3.6 High temperatures and low humidity decrease hay drying time — a major factor influencing hay quality. An inherent advantage nwsg have over cool-season grasses is that warm weather makes better hay-making conditions. This eastern gamagrass was cut the second time in mid-July.

The second factor that influences hay quality is exposure to the environment. Once a plant is cut for hay, protein and energy content slowly begin to drop as a result of respiration losses. These losses do not stop until the plant dries. If rain falls on forage that has been cut but not baled, leaching of protein and energy can occur. High temperatures and low humidity will decrease drying time, resulting in little nutrient loss. Cool, wet conditions cause slow drying, resulting in higher nutrient loss. If the hay is rained on during the drying process, even more nutrient loss will occur.

Delayed harvest and exposure to the environment are the two major factors influencing hay quality; thus, nwsg have fewer problems in hay production than cool-season grasses. There is less chance that rain may delay harvest. Once hay is cut, higher temperatures enable hay to dry faster, resulting is less respiration and leaching loss. The summer growth of nwsg is easier to produce for hay than the spring growth of cool-season grasses. Another factor favoring hay curing of nwsg is the taller cutting heights. When nwsg hay is cut properly (8 inches), the drying hay is suspended above the ground on the residual stems, allowing greater air circulation and more rapid drying than is experienced with lower-growing species.

Switchgrass and eastern gamagrass are most often planted in pure stands for haying or grazing. Most varieties of switchgrass and eastern gamagrass

Robin Mayberry

Sample #	NO NUMBER		SWITCH HICKMAN		SWITCH KNOX	
Lab Number	15734		15735		15736	
Sample Type	EAST.GAMMA GRASS		SWITCHGRASS HAY		SWITCHGRASS HAY	
Moisture (%)	17.34		8.13		22.64	
Dry Matter (%)	82.66		91.87		77.36	
	DM BASIS	AS-FED BASIS	DM BASIS	AS-FED BASIS	DM BASIS	AS-FED BASIS
Protein (%)	10.26	8.48	11.27	10.35	9.75	7.54
Fat (%)	3.84	3.17	3.40	3.12	4.11	3.18
Fiber-ADF (%)	36.77	30.39	39.69	36.46	35.72	27.63
Fiber-NDF (%)	64.68	53.46	63.70	58.52	66.80	51.68
Calcium (%)	0.37	0.31	0.32	0.29	0.08	0.06
Phosphorus (%)	0.17	0.14	0.27	0.25	0.19	0.15
Magnesium (%)	0.19	1.44	0.23	0.21	0.26	0.20
Potassium (%)	1.47	1.74	2.95	2.71	1.32	1.02
TDN	61	50	57	52	61	47
NEl (MCal/lb)	0.62	0.51	0.58	0.53	0.63	0.49
NEm (MCal/lb)	0.51	0.50	0.55	0.51	0.61	0.47
NEg (MCal/lb)	0.34	0.28	0.29	0.27	0.34	0.26
RFV	87		85		85	

Figs 3.7 and 3.8 (UT forage test) This switchgrass hay from Hickman Co., TN was cut in late May 2006 and contained 11 percent crude protein with only 39 percent acid detergent fiber. Quality hay such as this is possible through the summer when nwsg are cut and managed correctly.

begin to flower in late May; therefore, these grasses are commonly hayed from mid- to late May for an optimum hay quality-to-tonnage ratio.

In most areas of the Mid-South, big bluestem begins to flower in late June/early July, while indiangrass and little bluestem usually flower later in July and August. Often, big and little bluestem and indiangrass are used together in a native warm-season hayfield. This is because all three flower relatively late and all are resistant to imazapic (Plateau® and Journey®

herbicides), which makes establishment easier in some areas. Mixtures of big and little bluestem and indiangrass are normally hayed in late June, which is advantageous for many wildlife species that nest in May and June.

In most cases, a second cutting can be taken from nwsg about four weeks after the first cutting. There are, however, two very important considerations in harvesting nwsg hay. First, cutting height is extremely critical to maintenance of stand vigor and longevity. The reason for this is the growing point for nwsg is aboveground. Thus, when a cutting is made below this level, carbohydrate reserves are used to extend a new growing point. This not only weakens the plant, but also results in lost growing time and reduced forage accumulation. This problem is made worse by the fact that virtually no leaf surface area exists below 6 inches and low cutting heights can effectively eliminate the plant's ability to photosynthesize at all. In these circumstances, the plant has to use additional stored reserves just to re-grow leaves. Cuts below even 8 inches reduce quality by increasing steminess of the hay. An 8-inch harvest height is recommended. This may present some problems depending on equipment limitations, but nevertheless, efforts should be taken to reach this goal. These problems are very much the same as with growing and harvesting warm-season annuals such as millets and sudangrass.

Fig 3.9 Harvesting nwsg hay at the appropriate height (above the growing point) is important to maintain stand vigor. Cuts below 8 inches actually reduce hay quality because additional stem is harvested.

A second and related problem is timing of the second or final harvest — in some cases a third harvest could be possible. Like other perennial forages, such as alfalfa, nwsg need time at the end of the growing season to fully restore carbohydrate reserves for the winter dormancy period. Because there is little growth in nwsg after mid-September, it is critical to allow adequate time for re-growth prior to this time. Previously hayed nwsg should be 12–18 inches tall before fall dormancy. To achieve this, a good rule of thumb is to **rest the stand after September 1 at the latest,** and early August is preferable.

If nwsg are managed with low cutting heights and late-season harvests, stands could be seriously weakened and even eliminated within a few years. It is especially critical to not over-harvest during the first two years after establishment when nwsgs are developing their deep root systems. Producers should not expect to harvest any hay during the year of establishment and perhaps only 40–50 percent of full yield during the second

year after establishment. Only one cutting should be taken the second year and cutting height is especially important that year. Most likely the main reason nwsg are no longer common in Southern grasslands is mismanagement and their sensitivity to overharvest and overgrazing.

Native warm-season grasses for grazing

The advantage of nwsg as a grazing crop is similar to their advantage as a hay crop. Most producers across the Mid-South use cool-season grasses as the main pasture crop because of the long production season for these grasses. However, during the high temperatures and droughts of the summer months, cool-season grasses are dormant and unproductive. Pastures may become overgrazed, which stresses the plants even further, resulting in stand loss and increased weed pressure.

Nwsg are adapted to high temperatures and limited moisture conditions, which allows them to be used during the summer period. By converting 10–30 percent of the acreage in a cool-season grazing program to nwsg, animals may be grazed on actively growing forage during the summertime, which provides much higher-quality forage while allowing cool-season grasses to rest and minimize overgrazing. Research has shown cattle gain well during the summer on nwsg (see Table 3.1), particularly during the first half of summer. The potential for improved summer performance and the ability to rest cool-season pastures make nwsg an attractive component of a forage program. This strategy also reduces the need for hay, which can be required to supplement cool-season forage during mid-summer.

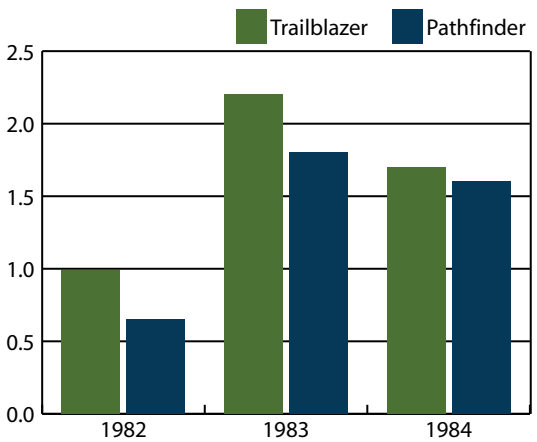

Figure 3.10 Average daily gain (pounds) of steers grazing two switchgrass varieties in Nebraska (Anderson and co-workers 1988).

As discussed for haying, nutrient reserves can be limiting for nwsg when an adequate stubble height is not maintained. This is also true if nwsg are consistently grazed below 8 inches. Yield and persistence may be reduced and increased weed problems may occur. If a stubble height of 8 inches is left, more leaf area will be present for rapid re-growth and to rebuild reserves for next year's production. As with haying, when grazing after early August, the ability of the plant to rebuild reserves for next year's growth is reduced, which can reduce the next forage crop. If nwsg are grazed late in the growing season (September), vigor is reduced and a change in stand

Terry Best

Fig 3.11 This mixed pasture of big bluestem, indiangrass and switchgrass is approximately 2 feet high and ready to graze—22 May 2006.

composition may occur. Disturbance at this time can reduce grass density and, as a result, increase forb density. While this may be good for wildlife, it is not necessarily good for forage quality. Other plants that may appear at this time include cool-season grasses. This is not desirable from a forage or wildlife perspective. Because cool-season grasses mature much earlier than warm-season grasses, forage quality of a warm-season stand is reduced if over-mature cool-season grasses are present.

The primary concern in managing nwsg as pasture is to avoid overgrazing by following the guidelines regarding stubble height and late-season grazing discussed above. **Overgrazing can eliminate nwsg in a pasture!** The basic tool to avoid this problem is to control grazing pressure. This can best be accomplished by monitoring the condition of the stand. For most species suitable for grazing in the Mid-South, (big bluestem, indiangrass, switchgrass and eastern gamagrass), grazing should be initiated when the stand reaches approximately 24–30 inches in height. With lighter stocking rates, grazing could be initiated sooner, perhaps with grass heights of 12–18 inches. Initiation at these lower heights can be particularly appropriate for creep-grazing calves. Cattle should be removed from the stand when stubble heights reach 8–10 inches. Depending on stocking rates (density) and available moisture, this will allow from less than one week to as much as six weeks grazing. A rotational grazing system is strongly recommended to prevent over-grazing.

Terry Best

Fig 3.12 Happy is the cow belly deep in quality forage! This is especially true during summer when cool-season grasses are dormant and provide poor-quality forage.

Rest periods should generally be four weeks or more to allow adequate regrowth. Understocking will result in some plants going to seed. This will result in cattle avoiding these areas and concentrating on the more tender and palatable grasses where grazing pressure had been adequate. Over a season, this can result in "holes" being created in the stand through over-grazing these areas.

As with haying, no production should be anticipated during the year of establishment. During the second year, only one entry should be used and residual heights should be monitored carefully. Late-season grazing should **NOT** be permitted during the second year.

Cattle performance is excellent on nwsg pastures and good gains can be realized. However, producers new to managing these grasses may find cattle unfamiliar with nwsg and may need to learn to accept them initially. Once they are familiar with them, acceptance is high.

It is very important to remember forage quality is influenced by stage of maturity (see Figure 3.3). Crude protein and digestible energy of nwsg can be high, but if plants are allowed to produce seedheads, or if hay harvest or grazing is delayed more than 35–40 days, nutrient content will be reduced.

Table 3.1. Results of several grazing studies with steers on various grasses.						
Species	**Average daily gain (lbs)**	**Steers per acre**	**Steer-days per acre**	**Location**	**Duration**	**Reference**
Switchgrass	2.4	3.6	144.1	NC[1]	3 years	Burns and others 1984
Tall fescue and coastal bermudagrass	1.3	3.8	na[2]			
Switchgrass	2.1	2.0	64.8	SD	3 years	Krueger and Curtis 1979
Big bluestem	1.5	1.9	80.6			
Indiangrass	2.4	1.4	44.9			
Sideoats grama	1.9	1.5	56.3			
Eastern gamagrass	1.65	3.0	270.0	AR	3 years	Aiken and Springer 1994
Switchgrass	1.45	2.1	139.0	IA	4 years	Barnhart and Wedin 1984
Switchgrass	1.9	na	81.0	IA	3 years	George and others 1996
Big bluestem	2.4	na	72.0			
Switchgrass–rotational	2.4	na	174.0			
Big bluestem–rotational	2.9	na	187.0			

[1] 630 lbs/ac/year N applied to all species during study
[2] Data not reported in original article

Table 3.2 Nitrogen fertilization recommendations for native warm-season grasses used for forage. University of Tennessee Extension.		
use	**early summer**	**mid-summer**
	lb actual N per acre	
hay *mid-summer application should be eliminated if soil moisture is limited	45–60	45–60
grazing * apply N only if extra forage growth is needed.	45-60	up to 60 lb N

Fertilization and burning

Soil fertility is important when growing nwsg for hay or grazing. Although nwsg are adapted to poor soil fertility, soil pH should be kept above 5.8 and adequate levels of nitrogen, phosphate and potash must be provided to produce large amounts of high-quality forage. Once the stand is established, phosphate and potash levels should be maintained at medium levels and monitored through soil testing every couple of years. Nitrogen should be applied after weeds have been controlled, when soil moisture is not limiting and if extra forage production is desired.

Robin Mayberry

Fig 3.13 Heavy nitrogen applications are not necessary to obtain high-quality native grass hay, such as this switchgrass in Hickman County, Tennessee. Rates above 100 pounds of N per acre per growing season do not improve yields.

Few data exist from the South for fertility management for most nwsg. One key exception is switchgrass, which has been studied because of its potential for producing biofuels. Results from those studies suggest 50–100 pounds of N per acre *annually* result in maximum switchgrass yields. Higher rates do not result in improved yields. Where high hay production is desired for any species or species mixture, a split application of 25–50 pounds of N per acre should be applied approximately two weeks after dormancy breaks in the spring (roughly mid- to late April), and a second application of 25–50 pounds per acre about two weeks after the first cutting is taken when the grasses are actively growing. As with most crops, N should not be applied during periods of markedly reduced growth, such as during drought periods.

Burning helps rejuvenate nwsg and can improve forage quality. Burning in late March and early April can help reduce invasion of cool-season grasses and stimulate growth of nwsg. Ideally, burning should be conducted when nwsg have produced approximately 1 inch of new growth. Continued burning in late summer and early fall (August –September) may reduce grass dominance and increase forb cover. While this might be desirable from a wildlife perspective, it would not be necessary or even desirable (depending upon forbs present) for forage production. If a reduction in grass density is desired for wildlife habitat, disking in the fall will promote desirable forbs more so than fall burning (see ***Disking*** on p.120).

Figs 3.14, 3.15, 3.16 The ideal time to burn nwsg grown for hay or grazing in the Mid-South is early to mid-April, just before or as the grasses begin to produce new growth. This stimulates quick re-growth and added nutrition.

Terry Best

30 March 2006

Terry Best

7 April 2006

Terry Best

7 April 2006

Maximizing forage production and wildlife habitat

Nwsg are hayed and grazed when many wildlife species are nesting and rearing young. Waiting until after the nesting season to hay or graze will result in poor-quality forage, especially if switchgrass or eastern gamagrass is used. Because big and little bluestem and indiangrass produce stems and flower later in the growing season, optimal haying dates are later than with switchgrass or eastern gamagrass. Thus, haying bluestems and indiangrass should enable early nesting attempts to be completed. By late June, initial nests of all songbirds have hatched and the nestlings fledged. The majority of wild turkey and many bobwhite nests also have hatched by this time. Thus, quality forage is still available with big bluestem and indiangrass after the primary nesting season. Haying at any date, however, can still produce detrimental effects on grassland songbird populations. Figures 3.17 and 3.18 show how haying anytime prior to early August may result in population declines of grasshopper and Henslow's sparrows. Other grassland birds may fare better, especially if the field is hayed no more than once per year.

Proper grazing intensity will not interfere with active nests as long as stock density is not too high. Including little bluestem in a nwsg mixture is especially important for nesting cover.

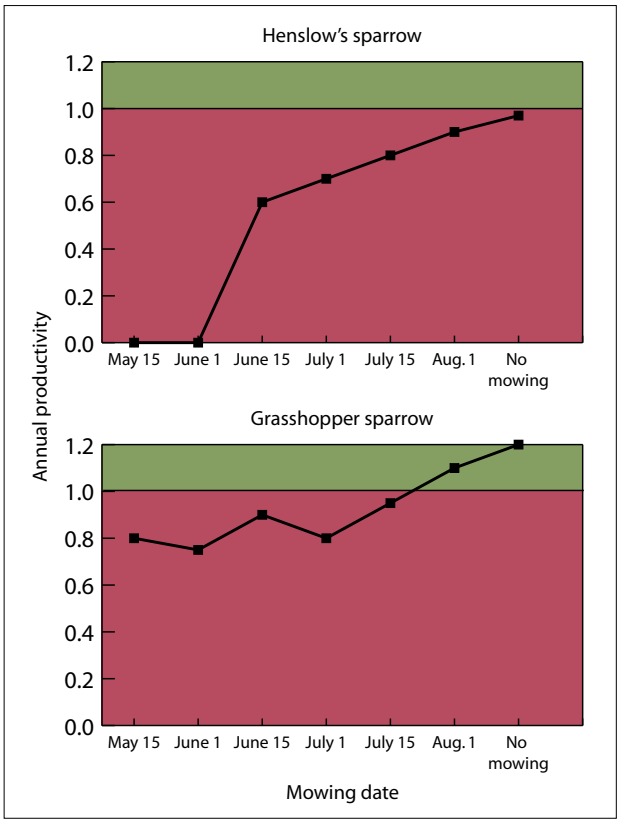

Figure 3.17 Estimated average annual productivity of Henslow's sparrows and grasshopper sparrows at Fort Campbell (assuming adult survival = 0.5, juvenile survival = 0.25, and birds can fledge up to three successful broods within one breeding season). Points below one female young per female indicate decreasing populations (red area) and points above 1 indicate increasing populations (green area) for each mowing date and for no mowing within the breeding season. Henslow's sparrows do not re-nest in the same field after mowing, but grasshopper sparrows will nest in mowed fields with reduced success (75 percent of average nest success). (Giocomo 2005)

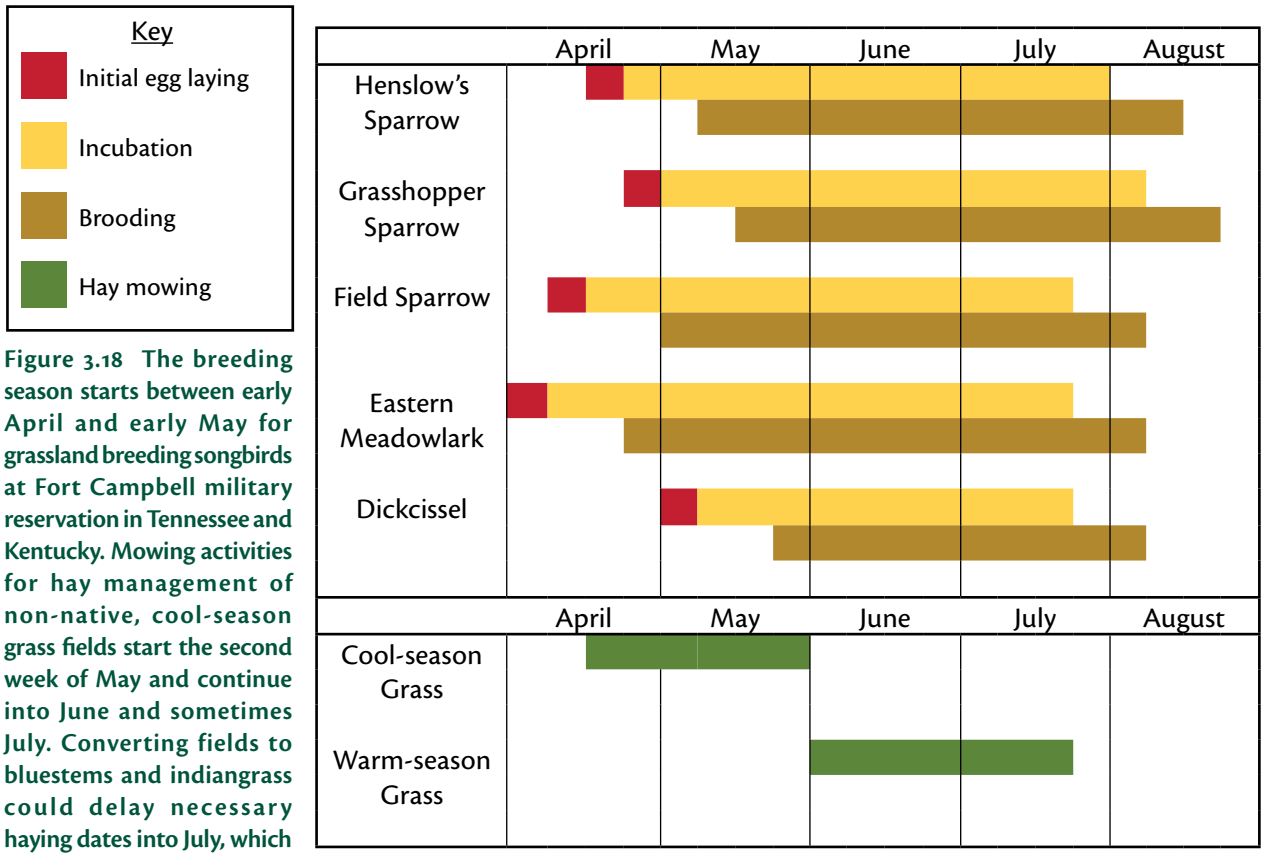

Figure 3.18 The breeding season starts between early April and early May for grassland breeding songbirds at Fort Campbell military reservation in Tennessee and Kentucky. Mowing activities for hay management of non-native, cool-season grass fields start the second week of May and continue into June and sometimes July. Converting fields to bluestems and indiangrass could delay necessary haying dates into July, which coincides with the end of the breeding season for grassland birds. (Giocomo 2005)

Another important consideration for wildlife is to cut or graze the nwsg stand only once per year. Getting a second cutting or grazing after haying will limit cover for wildlife the following winter—appearing much like a field of cool-season grasses. The re-growth produced between the first cutting and first frost provides excellent habitat for many wildlife species at a time when cover is often limiting. **Winter cover is an extremely important benefit (for wildlife) of nwsg grown for livestock forage.** Nwsg grown for haying and grazing may be too dense to provide quality brooding cover and there are few (if any) forbs present to provide cover, forage or seed. If considerable re-growth is not allowed after haying or grazing to produce adequate cover during winter, the stand will not provide as much benefit for wildlife.

Resting nwsg from haying and grazing is another way to improve wildlife habitat in a nwsg forage system. By excluding livestock and refraining from haying a portion of a field every year, additional wildlife habitat is made available. Many other practices and recommendations for improving wildlife habitat using nwsg are described in Chapters 2 and 5.

Robin Mayberry

Figs 3.19 and Fig 3.20 Winter cover is a most important consideration when growing nwsg for hay or grazing. By allowing sufficient re-growth before dormancy, cover is provided for a variety of wildlife species through winter. The cover provided in this switchgrass field, which was hayed only once during the growing season, is in stark contrast with the total lack of cover provided by a cool-season hayfield, such as this tall fescue.

Landowner "testimonials"

August 18, 2003

Dear Mike,

I just wanted to let you know how impressed I am with my plot of warm season grasses. I planted about 5 acres of indiangrass and big bluestem in April, 2002. I achieved an excellent stand with good germination immediately. This was surprising in itself due to the soil types and landscape on which it was planted. It was planted on Smithdale/Shubuta soils (sandy-loam to clay-loam), with slopes between 6 and 15 percent. These are naturally low pH and low fertility soils (~4.5), so I was a little skeptical.

My reason for using these grasses was primarily for hay production, with the by-product of maintaining a resident quail flock [covey] on my property. I have noticed good use by many different species of small game and birds, as well as heavy use by white-tailed deer as a bedding area.

As far as hay production, this was my first year to cut hay. Since this is sort of experimental for me, I did not lime or fertilize this spring to make a comparison. On a single cutting in early July, it produced 1.3 tons of hay per acre. I hope to at least triple that next year with a controlled burn in spring, then fertilizing and liming.

Overall, I am well pleased with what I have seen of these grasses and plan to make them a part of my planned hay production next year.

Thanks for your input and help,

Craig Chrestman
Private Soil Consultant/Agronomist
Morris Chapel, TN

27 October 2003

Dear Dr. Harper,

I have a field of Cave-in-Rock switchgrass that was planted in 2001. Before planting, I kept the field "clean" for a year by spraying Roundup. The switchgrass emerged fine with almost no weed pressure. Keeping it clean during the extra weed cycle really helped on weed suppression. It was not fertilized at any time. In some other areas, I have used a half rate of Atrazine or hit it with 2-4,D to suppress some of the weeds during establishment. The switchgrass tolerated it well.

The first year it grew 2.5 feet tall and headed out. The second year it was 6 foot on heading out, thick as a jungle, and only a few marestail and a brier or two. I allowed it to stand for wildlife cover during the 2002 season.

The third year, 2003, I decided to cut about an acre for hay. The grass was taller than the tractor and, believe it or not, I cut the switchgrass before it headed out. It produced 10 rolls 4x5 feet in size. These commonly weigh 900 to 1000 pounds per roll. There was so much grass after cutting that I had difficulty raking it.

I had two TWRA biologists that wanted to see the switchgrass in the multiple role of hay and wildlife. When they came, the rolls were still on the field. … [They were most impressed with the hay yield.] The biologists also commented on the large number of quail that were calling all around us.

By the middle of August, the switchgrass had re-grown and headed out to about 5-feet tall. I decided to use this for summer grazing. While I was constructing a temporary fence, I ran out several deer that was using the area for bedding cover. At this point, I decided to leave it for the deer to bed in and as escape cover for the plentiful rabbits and quail that were nearby. I have also found turkeys nesting on the edge of it next to the woods.

Most of the switchgrass I have planted is 6 to 12 inches tall the first year but full height the second year. The gamagrass took 3 years to get a decent stand density. I have planted about 5 acres of bluestem, indiangrass, and switch mixture in Cumberland County. The soils are loamy over sandstone bedrock, infertile, and a pH of 5.5. Growth is slow but after 3 years it has a decent stand. Stool size and height seem to be better each year. I burned it last year for the first time and it really helped it.

Carlie McCowen, Soil Scientist
Overton County

November 24, 2003

Dear Dr. Harper,

I appreciate you and Dick Conley taking time to come to the farm and discuss our haying program.

The final production figures for our eastern gamagrass were outstanding. Our 3-acre field yielded 3 cuttings this summer. The first cutting yielded 29 rolls; the second cutting yielded 25 rolls; and the third cutting was square baled and yielded 280 square bales.

Our orchardgrass/ladino clover field didn't produce as well. The first cutting produced 21 rolls; the second cutting produced 400 square bales. We did not get a third cutting on the orchardgrass.

Before you figure the yields were fairly close between the gamagrass and the orchardgrass, remember the gamagrass field is 3 acres, while the orchardgrass field is 15 acres! … Both fields were cut exactly the same leaving about 2 inches of stubble. Both fields were fertilized at the same time with 400 pounds per acre of 19-19-19. Also, I cut the eastern gamagrass before it began to seed out.

Needless to say, we are converting more acreage to eastern gamagrass this year. Thank you again for your time and assistance.

Sincerely yours,
Ralph Carroll, Farm Manager
Congleton Farm
Loudon County

27 November 2003

Dr. Harper,

Our overall experience with native warm-season grasses has been very good. To begin, we took advantage of the instruction from the Tennessee Wildlife Resources Agency, specifically that from Dick Conley. We started plating warm season grasses in 1994. By killing out the fescue, we hoped to establish better quality hay and improve wildlife habitat at the same time. After becoming established (2 years later), we planted another 40 acres. We circled a 30-foot border with lespedeza and bi-color lespedeza for quail food. We were one of the first in the area to plant and harvest eastern gamagrass. In the past 9 years, we have increased our planting of warm-season grasses to over 200 acres.

It is very easy to sell hay from native warm season grasses. At first, some people were afraid to try it because of the unknown. But once people realized there was no [endophyte] (plus the clean-up is better than fescue/orchardgrass and there is less waste), we increased our harvest to meet customer's needs. Rodeo, burro, and llama customers prefer native warm season grass over orchardgrass and timothy. Horse customers really like the protein and the ease of clean-up. The weight gain in beef cattle seems better with native warm-season grasses than with cool-season grasses. Now that the news of warm-season grass is widespread in our community, most customers put their order in a year in advance. We typically add 2–3 new customers per year. People gladly pay in advance to store hay on the farm.

Our hay-tonnage production with eastern gamagrass and big bluestem/indiangrass has been tremendous. We always cut our grass at an early stage for tenderness and protein. With eastern gamagrass, the 2nd cutting seems better than the first. Out of 3 acres, harvest is close to 60 round bales (850-pound bales) for both the first and the second cuttings. The eastern gamagrass seems to grow twice as fast as the other warm-season grasses and at least 3 times as fast as fescue, which allows for a third cutting of eastern gamagrass. We fertilize our native grass fields in the spring. We pull soil samples and normally use 12-24-24 or 19-19-19. We lime when needed, usually about every 3 years. Out of 3½ acres of big bluestem/indiangrass, harvest is an average of 600 square bales (55 pounds each) and it is cut before the grasses begin to flower. We do not cut the big bluestem/indiangrass a second time—we leave it for wildlife habitat.

We have found several wild turkey nests in eastern gamagrass fields that were not harvested. Deer also use these fields extensively for bedding. Our quail population has doubled because there is great cover and insects for broods. The rabbit population has tripled as the warm-season grass fields provide great cover from predators. In short, the hunting has never been better on the property and there are more songbirds around than ever before. We couldn't be more pleased with the native warm-season grasses and highly recommend them to anyone interested in hay production and wildlife habitat.

Sincerely,

Hartman Farm
Gene Hartman, Owner
Steve Woodby, Farm Manager
Roane County, TN

Mr. Mike Hansbrough,

Thanks for contacting me about baling the big bluestem and little bluestem hay. At 60 years old, I have farmed all my life either full or part time. I gave up row-cropping cotton nearly 15 years ago to concentrate on raising cattle and custom baling for the public. I had been custom baling some for about 5 years prior to that. I guess that I have baled every type of hay common to this area. I have baled for horse people as well as cattle farmers, square bales to large rolls. This was the first time for me to bale big bluestem and little bluestem and it turned out to be a learning experience for me. I cut the hay on Monday with a mower-conditioner, and planned to bale on Wednesday. This hay cured very fast, even the hay on the bottom of the windrow. On Wednesday, it rained about ½ inch, Thursday it came another shower, however, to my surprise on Friday, I found the hay to be in good condition for baling without the need for raking. The hay fed into the baler very well and was easy to roll. I was amazed at the tonnage produced. This was the most hay per acre that I have ever baled. I hope the cows like it and that the protein value is good.

I plan to seed some acreage for my own use with the big bluestem. I like the yield, the ease of cutting and baling, and the way it cures. I also like the time of year that this hay is ready for harvest as it is during my slow season of baling.

Sincerely,

Max G. Laman
Gadsden, TN