

**University of Tennessee / USDA-NRCS
Early Successional Habitat Field Day**

Executive Summary

*Craig A. Harper, Department of Forestry, Wildlife, and Fisheries
John P. Gruchy, Department of Forestry, Wildlife, and Fisheries*

Event Summary

The UT/NRCS Early Successional Habitat Field Day was conducted June 22, 2006 at Mayfield Farm in McMinn County Tennessee. The Mayfield Farm is one of seven study sites used in early successional habitat research by the University of Tennessee in conjunction with the USDA/NRCS Bobwhite Restoration Project. The event featured morning and afternoon tours with a break at lunch for technical sessions and vendor booths (see attached agenda). Topics included native warm-season grass (nwsgr) establishment and management, establishing quality early successional habitat using the seedbank, bobwhite biology, and prescribed fire management among others (see attached flier). Dinner included ribs, chicken, and side dishes prepared by the Mayfield family and ice cream provided by Mayfield dairy. Several state and federal wildlife professionals, NRCS employees, extension agents, and private landowners were in attendance. Initial reports were very positive. This field day would not have been possible without financial and logistical support from many contributors (please see attached acknowledgements).

Attendance

More than 150 natural resources professionals, and private landowners were in attendance, not including field day staff from UT, NRCS, TWRA, vendors, and others. Vendor booths were present from Roundstone Native Seed Inc., Turner Seed Inc., BASF, Tekota Land Clearing and Vermeer Equipment Co. (Gyro Tracs), Quail Unlimited, Tennessee Wildlife Resources Agency, and NRCS.

Attendance by classification

Private landowners	40
NRCS personnel	24
Other Natural Resources Professionals	
North Carolina Division of Wildlife Management	16
Kentucky Dept. of Fish and Wildlife Resources	13
Georgia Division of Natural Resources	8
Tennessee Wildlife Resources Agency	4
Tennessee Division of Forestry	13
Tennessee Valley Authority	8
National Parks Service	7
USDA Forest Service	6
University of Tennessee / Extension	6
Private consultants	3
Georgia Forestry Commission	2
Oak Ridge National Laboratory	2
Fort Loudon Electric Cooperative	2
Mississippi State University	2
<hr/> Total	<hr/> 154

Private landowners in attendance owned or managed lands in Tennessee, Kentucky, Georgia, South Carolina, Arkansas, and Mississippi and accounted for 28% of total attendance. Natural resources professionals from 13 agencies were present, comprising 58% of attendance. NRCS personnel made up the remaining 16% of field day attendance.

Materials

Each field day attendee was provided with a handout, including notes from each presenter (see attached handout), results from UT/NRCS cooperative studies, and a detailed list for all plantings and herbicides used on the Mayfield study area. Additionally, copies of the following publications were also made available.

A Landowner's guide to native warm-season grasses in the mid-South
UT Extension Publication 1746

A southern pine management guide for Tennessee landowners
UT Extension Publication 1751

Wildlife habitat options in USDA conservation programs
A pamphlet explaining Farm Bill programs to landowners in Tennessee

Increase farm income & restore bobwhite quail habitat: A conservation practice for agricultural producers
A pamphlet explaining CP-33 to landowners

The Northern Bobwhite Conservation Initiative: A plan for quail population recovery
An article reprint from Quail Unlimited Magazine explaining the NBCI

Habitat buffers for upland birds: Strips of vegetation for bobwhite quail and wildlife
USDA/NRCS Tennessee Job Sheet explaining CP-33

Materials available from vendor booths included herbicide labels and information, seed price lists, and other publications.

Evaluation

Survey protocol

We conducted an online survey of field day attendees using SPSS Dimensions online survey software. We obtained functioning email addresses for 105 of the 153 field day participants (68%). Field day attendees were contacted via email 6 days after the field day occurred and asked to participate in a short online survey. We sent a second message one week after the initial email reminding participants of the survey. Survey questions evaluated participant's opinions of specific field day topics, overall field day value, scope of impact, preferred information dissemination methods for future study results, and suggestions for improvement (see attached field day evaluation form).

Results

Demographic

	Attendance	Surveyed	% Surveyed	Responded	Response rate
Landowners	40	19	48%	14	74%
NRCS personnel	24	23	96%	22	96%
Res. Mgt. Prof.	90	63	70%	35	56%
Total	154	105	68%	71	68%

Overall, we obtained survey results from 46% of the total number of field day participants.

Topics

Each of the following tables represent each demographic's opinion of our coverage of topics, including nwsg establishment and management, bobwhite biology, prescribed fire management, production pine management for wildlife, grassland songbird management, nwsg grazing management, Farm Bill programs for landowners, seed drill calibration, and sprayer calibration.

Percentage landowners ranking overall coverage of topics from highest to lowest

	Nwsg manage.	Nwsg estab.	Bobwhite biology	Fire manage.	Pine mangle	Grassland songbirds	Nwsg grazing	Farm Bill	Drill calib.	Sprayer calib.
High	82	64	25	55	27	38	50	18	40	38
	18	36	63	27	27	25	10	64	60	63
	0	0	13	18	27	25	40	9	0	0
	0	0	0	0	9	13	0	9	0	0
Low	0	0	0	0	9	0	0	0	0	0

Percentage NRCS personnel ranking overall coverage of topics from highest to lowest

	Nwsg manage.	Nwsg estab.	Bobwhite biology	Fire manage.	Pine mangle	Grassland songbirds	Nwsg grazing	Farm Bill	Drill calib.	Sprayer calib.
High	76	62	67	61	23	38	64	50	70	75
	19	29	19	11	31	38	14	17	20	17
	5	10	14	22	38	19	18	22	10	8
	0	0	0	6	8	5	5	11	0	0
Low	0	0	0	0	0	0	0	0	0	0

Percentage resource management professionals ranking overall coverage of topics

	Nwsg manage.	Nwsg estab.	Bobwhite biology	Fire manage.	Pine mangle	Grassland songbirds	Nwsg grazing	Farm Bill	Drill calib.	Sprayer calib.
High	80	67	39	55	23	40	38	25	62	57
	20	30	39	7	15	43	34	29	23	29
	0	3	18	31	42	13	14	29	8	7
	0	0	4	0	4	0	3	7	0	0
Low	0	0	0	7	15	3	10	11	8	7

Overall value

Survey participants were asked if they learned new information by attending the field day, if they would like to attend more UT/NRCS field days like this one, and to rank the overall value of this field day on a scale of 1 (lowest) to 5 (highest).

	Learned new information	Attend more UT/NRCS field days	Overall value				
			1	2	3	4	5
Landowners	100	100	0	0	9	18	73
NRCS personnel	96	100	0	0	5	27	68
Res. Mgt. Prof.	97	100	0	0	0	48	52
Mean	98	100	0	0	5	31	64

Scope of impact

Survey participants were asked how many acres they owned/managed and on how many acres they planned on implementing management practices discussed in the field day. Mean results are presented along with an extrapolated estimate of the total amount of acreage potentially impacted by the field day obtained by multiplying the mean acres impacted by the total number of participants from each demographic (*n*).

	Mean acres managed	Mean acres impacted	Mean % impacted	<i>n</i>	Total acres impacted
Landowners	700	170	25	40	6,800
NRCS personnel	5,000	220	5	24	5,280
Res. Mgt. Prof.	28,000	520	2	90	46,800
					58,880 acres

Future information

Survey participants were asked by which means they would like to receive information about future UT/NRCS project results. Mean responses are presented.

	Workshop	Newsletter	Email	CDROM	Fact sheet	Other	none
Landowners	73	55	91	64	73	0	0
NRCS personnel	55	45	36	0	55	5	0
Res. Mgt. Prof.	48	65	77	26	65	10	6
Mean	59	55	68	30	64	5	3

**University of Tennessee / USDA-NRCS
Early Successional Habitat Field Day**

Agenda

8:00 – 8:30	Registration
8:30 – 8:40	Introduction and Acknowledgements
8:40 – 11:30	Morning Field Session
11:30 – 1:30	Lunch Demonstration sessions Vendor booths and exhibits
1:30 – 4:30	Afternoon Field Session

Speakers

Gary Bates, Extension Forage Specialist, University of Tennessee
Dick Conley, Private Lands Biologist, Tennessee Wildlife Resources Agency
Jim Giocomo, Post-doctoral Research Associate, University of Tennessee
Mark Gudlin, Private Lands Liaison, Tennessee Wildlife Resources Agency
John Gruchy, Graduate Research Assistant, University of Tennessee
Mike Hansbrough, Wildlife Biologist NRCS
Craig Harper, Extension Wildlife Specialist, University of Tennessee
Robin Mayberry, Wildlife Biologist, NRCS
Steve Roark, Area Forester, Tennessee Division of Forestry
Larry Tankersley, Extension Forester, University of Tennessee
William White, Technical Specialist, BASF
Chris Wolkonowski, Wildlife Biologist, NRCS
Lee Woodall, Technical Specialist, BASF

**University of Tennessee / USDA-NRCS
Early Successional Habitat Field Day**

Acknowledgements

We are indebted to the Mayfield family for allowing us to conduct this field day and a portion of this research project on their property. Without the generous contribution and cooperation of Michael, Scottie, and Lisa, this field day would not have been possible. Additionally, we recognize Mayfield Farm and Nursery for financial and logistical contributions which greatly improved the quality of this field day.

Sponsors

Mayfield Farm and Nursery
Mayfield Dairy
USDA-NRCS/MSU Bobwhite Restoration Project
Southeast Tennessee RC&D Council
Roundstone Native Seed LLC
Turner Seed Company
Quail Unlimited
Tennessee Wildlife Resources Agency
Southeast Tennessee RC&D Council
McMinn County USDA-FSA/NRCS

Contributors

Mayfield Farm and Nursery
Tekota Land Clearing – Rick Loyd
Tennessee Wildlife Resources Agency – Dick Conley, Mark Gudlin, David Whitehead,
Bill Smith
McMinn County Extension – Tim Woods
University of Tennessee – Chris Shaw, Michael McCord, Barry Baird, David Carpenter, Tim
Ward, Mirian Wright

Tractors and trailers

Gene Hartman
Boyd Reynolds
Roger Robertson
Jerry Armstrong
Gary Mason
Ritchie Tractor
Dooley Tractor

Native warm-season grass buffers – short mix

Species	PLS per acre	Cost (\$) per lb
Little bluestem	2 lbs	10.90
Sideoats grama	2 lbs	6.90
Indiangrass	0.5 lbs	8.90
Partridge pea	1 lb	9.00
Purple prairieclover	8 oz	25.00
False sunflower	4 oz	35.00
Roundhead lespedeza	4 oz	130.00
Maximillian sunflower	4 oz	25.00

Warm-season annual firebreak

Species	PLS per acre	Cost (\$) per lb
Iron clay cowpeas*	50	<1.00
Grain sorghum	6	<1.00

Annual lespedeza firebreak

Species	PLS per acre	Cost (\$) per lb
Kobe lespedeza*	8	1.85
Korean lespedeza*	8	1.20

Cool-season perennial firebreak

Species	PLS per acre	Cost (\$) per lb
Alfalfa #	12	4.50
Red clover#	8	2.50

* inoculated

Pre-inoculated

Herbicides

Chemical	Application	Rate per acre	Cost (\$)
Plateau	NWSG establishment / fescue renovation	6 oz / 12 oz	
Pursuit	Pre-emergence weed control in legumes	4 oz	526 / gal
Select	Post-emergence grass selective	10 oz	187 / gal
Gly-4	Fescue renovation / burn down	2 quarts	60 / 2.5 gal
Butyrac	Broadleaf control in grasses / legumes	2 quarts	35 / gal
Prowl	Pre-emergence in several crops	3 pints	59 / 2.5 gal
2,4-D	Broadleaf control in grasses	3 pints	16 / gal
Arsenal	Post-emergence woody control	18 – 24 oz	206 / quart
Garlon	Post-emergence woody control	5 quarts	245 / 2.5 gal

Soils amendments – soil test often, as soil conditions can be unpredictable!

Year	Planting	pH	Lime (recommended)	P / K	Lime (applied)	P / K (applied)
2005	Alfalfa	5.4	2 tons	12 / 130	2 tons	90 / 60
2005	Cowpeas	5.7	2 tons	12 / 67	2 tons	90 / 120
2006	Alfalfa	5.9	2 tons	4 / 170	0 tons	90 / 60
2006	Cowpeas	5.8	2 tons	8 / 250	0 tons	90 / 60

RENOVATING TALL FESCUE FIELDS

Eradicating tall fescue is a priority of the Northern Bobwhite Conservation Initiative (NBCI), but there are questions regarding the most effective methods to eliminate tall fescue and stimulate desirable native plants. Currently, there are approximately 170,000 acres of CRP sown to cool-season perennial grasses (CP-1) in Tennessee, which receive government subsidy and provide little or no benefit to wildlife.

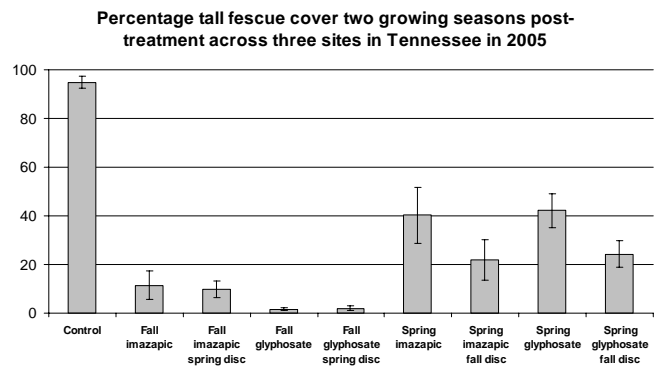
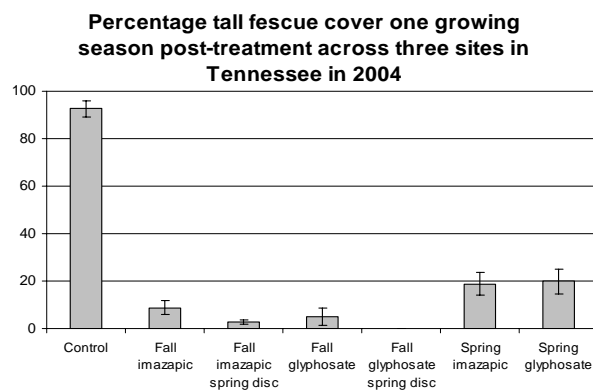
Study design and methods

Eight treatments with control areas were replicated within each of 3 tall fescue fields across Tennessee, 2003-2004. Treatments included fall application of glyphosate (Gly-4 Plus[®] 2qts/acre) and fall application of imazapic (Plateau[®] 12 oz/acre) (both with and without discing the following spring) and spring application of glyphosate (2qts/acre) and spring application of imazapic (12 oz/acre) (both with and without discing the following fall). Vegetation structure and composition were measured throughout the growing season and fall of 2004 and in the winter, spring and throughout the 2005 growing season.

Results

Preliminary results for the 3 sites are presented.

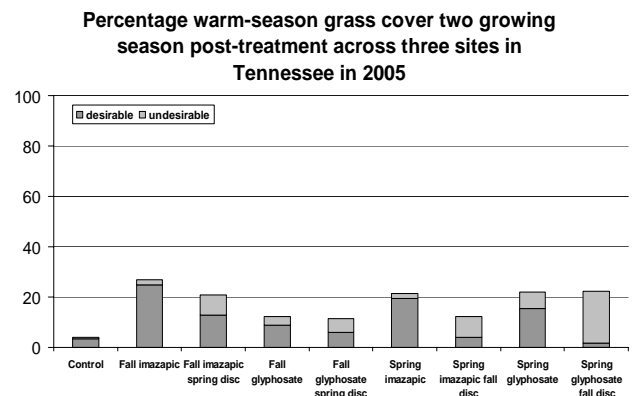
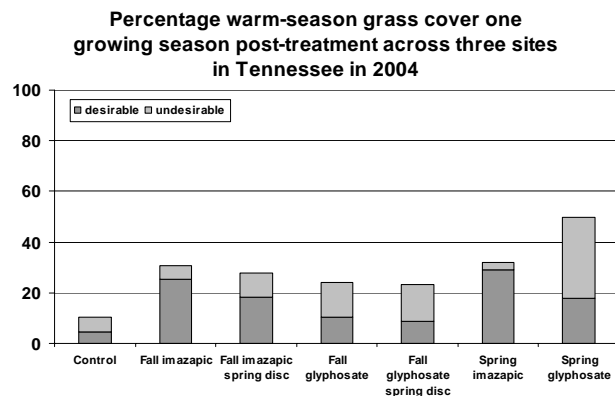
All treatments reduced tall fescue coverage one growing season after treatment application.



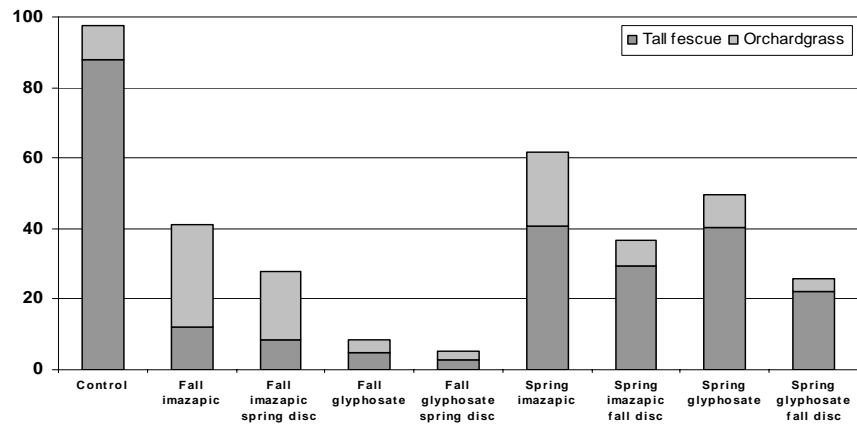
Fall glyphosate, fall glyphosate followed by spring discing, fall imazapic, and fall imazapic followed by spring discing reduced tall fescue coverage more effectively than spring herbicide applications two growing seasons after treatment.

Reduction in tall fescue coverage improved openness at ground level during the brooding season and overhead and vertical cover during the wintering period for bobwhites. Discing following herbicide application increased desirable forb coverage, including common ragweed, beggar's-lice, and beggar-ticks (*Bidens* spp.).

Imazapic reduced coverage of some undesirable species, such as johnsongrass, and increased coverage of broomsedge; however, on 2 sites, imazapic applications resulted in increased coverage of orchardgrass, which was structurally identical to tall fescue.



**Percentage CSG cover two growing seasons
post-treatment across three sites in 2005**



Discussion

Fall glyphosate applications are recommended to eradicate tall fescue.

After tall fescue is killed, a pre-emergence application of imazapic the following spring may be necessary to control johnsongrass, crabgrass, yellow nutsedge, and many other undesirable species.

We feel this treatment has great potential throughout the mid-South where broomsedge is present in the seedbank. We do not believe big or little bluestem, indiangrass, or switchgrass provide any better wildlife habitat than broomsedge. Many landowners do not need to spend considerable time and money planting when broomsedge and/or the above species are already present in the seedbank.

Dormant-season discing (before March) is recommended to stimulate desirable forbs in the seedbank and improve bobwhite brood-rearing habitat. Discing later in the spring (April and May) is more likely to stimulate undesirable plants, such as johnsongrass, goosegrass, broadleaf signalgrass, and crabgrass.

Although, successfully establishing nwsg without planting is highly dependent on the seedbank, properly managed fallow areas provide excellent wildlife habitat with or without much coverage of nwsg. We feel 20 – 50 percent coverage of nwsg with 50 – 80 percent coverage in desirable forbs and scattered desirable shrubs provides optimum early successional habitat for a diversity of wildlife species. Interspersion of managed unplanted old-fields and planted nwsg fields can be used to increase habitat diversity.

MANAGING NATIVE WARM-SEASON GRASSES

To address the decline of northern bobwhite, nwsg are commonly recommended instead of non-native perennial cool-season grasses. If not managed, however, nwsg can become dense and rank over time and habitat benefits are reduced.

Study design and methods

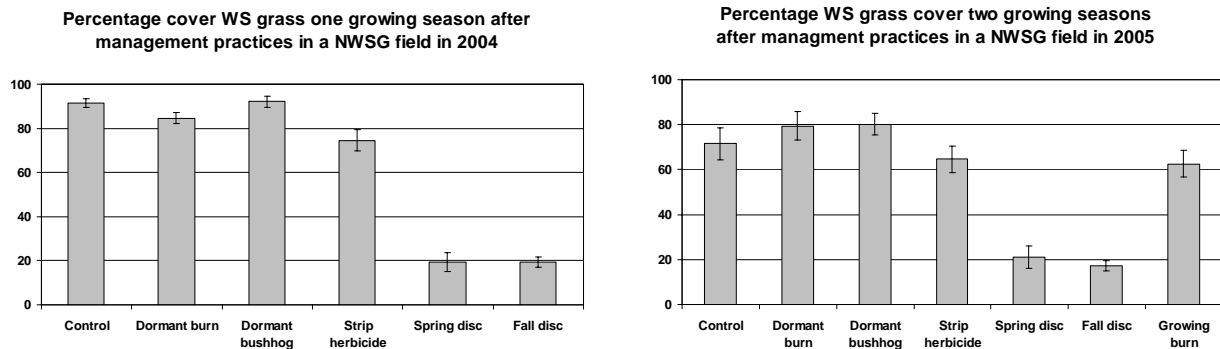
We tested 6 management practices. Fall discing (November), dormant-season mowing (March), dormant-season burning (March), spring discing (March), growing-season burning (September), and alternate-tip application (May) of clethodim (Select® 10 oz/ac) with control areas were replicated within each of 3 previously unmanaged nwsg fields across Tennessee, 2003-2004.

Vegetation structure and composition were measured throughout the growing-season and fall of 2004, and in the winter, spring, and throughout the 2005 growing-season.

Results

First-year results for the nwsg field in McMinn County, TN are presented.

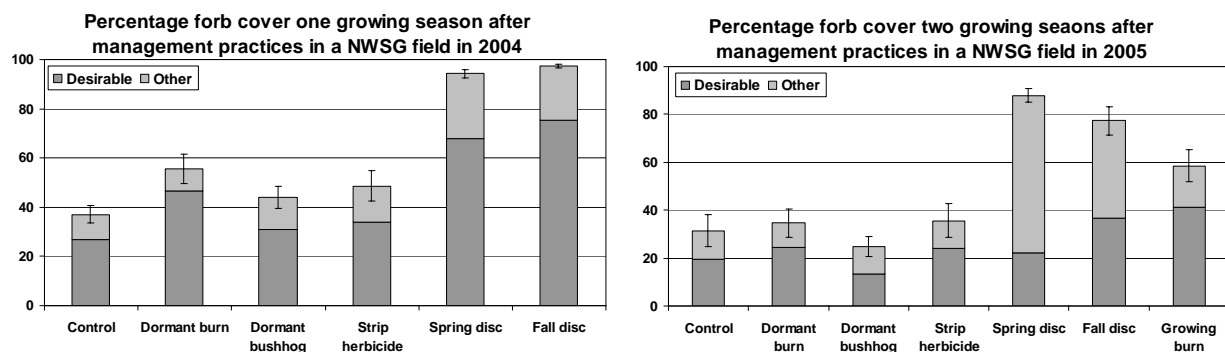
Percentage cover of planted nwsg was reduced in discing treatments, but remained similar to control in all other treatments.



Spring and fall discing had greater percentage forb cover and openness at ground level than all other treatments. Discing and burning treatments increased percentage bare ground and decreased percentage litter and litter depth.

In the first growing season after treatment application, discing plots contained desirable forbs such as ragweed, goldenrod, and beggar's-lice (*Desmodium spp.*) with few undesirable forbs.

In the second growing season after treatment application, discing plots contained undesirable forbs (primarily thistle) released from the seedbank.



Discussion

Bushhogging provided no bobwhite habitat benefits.

Dormant-season fire increased nwsgr vigor, which increased vertical structure and overhead cover during the wintering period one growing season after burning. Additionally, dormant-season burning reduced coverage of undesirable species, such as nimblewill.

Strip applications of a grass-selective herbicide decreased canopy coverage of planted nwsgr.

Desirable forb response was low after strip-herbicide application, likely from a lack of seedbank stimulation associated with fire or disking. Residual tall fescue, orchardgrass, and smooth brome existing prior to nwsgr establishment was released after nwsgr canopy was reduced.

Despite the presence of undesirable forbs in the second growing season, disking treatments improved brood-rearing conditions for bobwhites greater than any other treatment.

It is important to understand our plots were **disced** (>4 passes). “Light disking” (2 passes) will **not** yield the same desirable effects as disking. Past studies have shown habitat benefits increasing in the first year after light disking, but were reduced by the second growing season.

We believe habitat benefits from soil disturbance (disking and burning) far out-weigh the possible negative effects of stimulating unwanted plants from the seedbank. If unwanted weeds, such as thistle, bermudagrass, sericea lespedeza, sicklepod, marehail, or plantain, are present in the seedbank, managers should be prepared to deal with these plants using appropriate control methods, both chemical and mechanical. Further, this only **accentuates the importance of getting rid of unwanted species prior to planting!** The only way to achieve a desirable, *long-term* plant community is to deal with undesirable species head-on and manage the site as needed. **This may take several years on some sites!** But, if ignored, undesirable plants **will** eventually pioneer into the site and habitat conditions will decline. If you choose not to disturb the site because of fear of releasing non-desirable species, habitat quality for most early succession obligates will suffer.

CONTROLLING WOODY INVASION

Woody cover is an important component of bobwhite habitat; however, some species such as red maple and sweetgum grow aggressively and may dominate unmanaged areas.

Habitat quality for bobwhites is reduced as undesirable woody species become dominant and reduce coverage of desirable forbs and grasses.

Study design and methods

Six treatments with control areas were implemented in a completely randomized design on a CRP field originally planted to tall fescue with extensive invasion by sweetgum, red maple, winged elm, green ash, and yellow poplar in 2004 to determine the most effective method for reducing coverage of woody plants.

Treatments included dormant-season burning in March, applications of triclopyr (Garlon-4[®] at 5qts/acre), imazapyr (Arsenal AC[®] at 24 oz/acre), and glyphosate (Gly-4[®] at 4qts/acre) in July, bushhogging in August, and growing-season burning in September.

Vegetation structure and composition were measured one growing season post-treatment.

Results

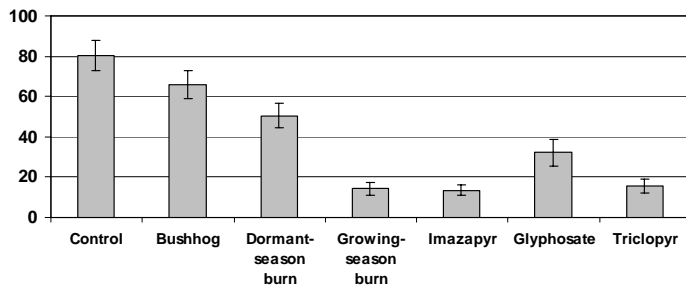
Percentage woody cover was reduced by all treatments except bushhogging.

Arsenal[®], growing-season burn, and Garlon[®] most effectively reduced woody cover.

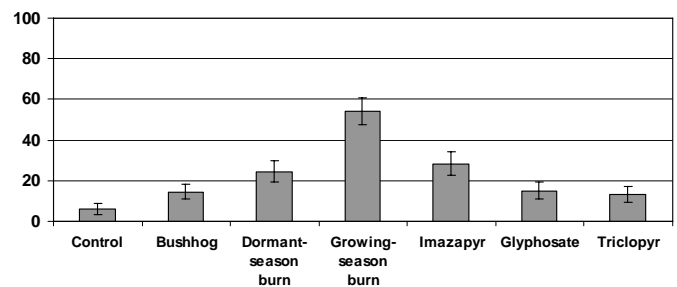
Percentage cover of desirable legumes, such as partridge pea, beggar's-lice, and native lespedezas, was highest in growing-season burn, Arsenal[®], and dormant-season burn treatments.

Arsenal[®] increased coverage of forbs and blackberries, while Garlon[®] increased coverage of warm- and cool-season grasses.

Percentage cover of woody species one growing season post-treatment



Percentage cover of desirable legumes one growing season post-treatment



Discussion

We recommend growing-season fire in September for managing fields invaded by undesirable woody species.

If burning is not possible, Arsenal[®] applications should increase coverage of desirable legumes and blackberry while reducing woody cover.

Arsenal[®], however, will harm nwsg if already present and will not control undesirable legumes, such as sicklepod or locusts.

Garlon[®] provides control of sericea lespedeza and will not kill most nwsg; however, Garlon[®] applications will kill blackberries, which are most desirable, and release residual tall fescue.

FIREBREAK MANAGEMENT

Prescribed fire is essential when managing for bobwhites and other wildlife dependent upon early successional habitat. Burning, however, is not recommended without adequate firebreaks in place.

Firebreaks are commonly created with a tractor and a disc, and are usually 1 – 2 tractor-widths wide. Firebreaks may be plowed, but the firebreak will need discing if planted.

Firebreaks may be planted or left fallow. Fallow firebreaks can provide a quality food source and quality habitat, depending on the seedbank (see table below).

Common name	Scientific name	CP	ADF	Selectivity by deer	Value as brood cover	Seed value for birds
blackberry	<i>Rubus</i> spp.	19.29	18.91	Med	High	High
Canadian horseweed	<i>Conyza canadensis</i>	32.85	19.75	Low	Low	None
goldenrod	<i>Solidago</i> spp.	16.14	26.19	Med	Med	None
honeysuckle	<i>Lonicera japonica</i>	16.16	34.21	Low	Low	Low
old-field aster	<i>Aster pilosus</i>	23.25	30.69	High	Med	None
partridge pea	<i>Chamaecrista fasciculata</i>	29.56	36.47	Low	Med	High
passion flower	<i>Passiflora incarnata</i>	36.64	18.91	None	None	Low
pokeweed	<i>Phytolacca americana</i>	32.01	11.98	High	High	High
ragweed	<i>Ambrosia artemisiifolia</i>	17.80	23.90	Med	High	High
sericea lespedeza	<i>Lespedeza cuneata</i>	22.19	32.62	None	Low	Low
3-seeded mercury	<i>Acalypha virginica</i>	24.66	16.73	Med	Med	Med
beggar's-lice	<i>Desmodium</i> spp.	28.22	20.70	Med	High	High
winged sumac	<i>Rhus copallinum</i>	23.05	12.46	Med	Med	Med
prickly lettuce	<i>Lactuca serriola</i>	-	-	High	Low	None

Crude protein and acid detergent fiber analyses for selected forbs and shrubs collected in June after burning the field you are looking at in April, 2005. It is important to note that while some species are selective browsers or grazers, plants are not necessarily eaten based on nutritional content. For example, deer did not browse or graze all of the plants in the chart above. While old-field aster, prickly lettuce, and pokeweed were heavily browsed, blackberry, goldenrod, ragweed, and 3-seeded mercury were only browsed occasionally. For other species, such as passion flower and sericea lespedeza, there was no sign of browsing at all, even though crude protein and digestibility ratings were high.

If planted, a variety of plantings may benefit wildlife most. Both warm- and cool-season forages and seed-producing crops will provide a supplemental food source year-round for wildlife. However, warm- and cool-season plantings should be planted separately, not mixed! Different sections of the firebreak can be dedicated to different plantings.

Before planting, firebreaks should be amended with lime and fertilizer as recommended from a soil test. Lime and fertilizers should be incorporated into the root zone by plowing or discing.

Recommended warm-season forages include: iron-clay cowpeas, re-seeding soybeans, American jointvetch, and alyceclover.

Recommended cool-season forages include: wheat, oats, crimson, arrowleaf, red, ladino, white-dutch, and alsike clovers, alfalfa, and Austrian winter peas.

Recommended seed-producing crops include: cowpeas, soybeans, grain sorghum (milo), sunflowers, Egyptian wheat, millets, and kobe/Korean lespedeza.

Recommended mixtures for firebreaks can be found at:

<http://www.utextension.utk.edu/publications/pbfiles/PB1743.pdf>

Annual firebreaks facilitate the continual need to disc, provide quality forage or seed, and lead to fallow growth after maturity. Re-seeding annuals can be managed for years without re-planting.

Perennial firebreaks can be practical especially when a field is not going to be burned again for 2 to 3 years. Be aware, however, there is no such a thing as a “perennial green firebreak.” Perennial firebreaks fill up with leaves and dead plant material that allow fire to creep across the firebreak. Even firebreaks planted in the fall to annual cool-season plantings often contain leaves and other debris that require disking to inhibit the fire from creeping across the firebreak.

Regardless, never plant perennial grasses (especially non-native cool-season grasses) in firebreaks!

Proper inoculants should be used for all legumes unless pre-inoculated seed is used.

Pre-emergence herbicides are recommended with the appropriate plantings. Pursuit[®], Butyrac[®], and Prowl[®] have been most effective in reducing weed pressure when planting labeled crops. We highly recommend reading herbicide labels **carefully** before application.

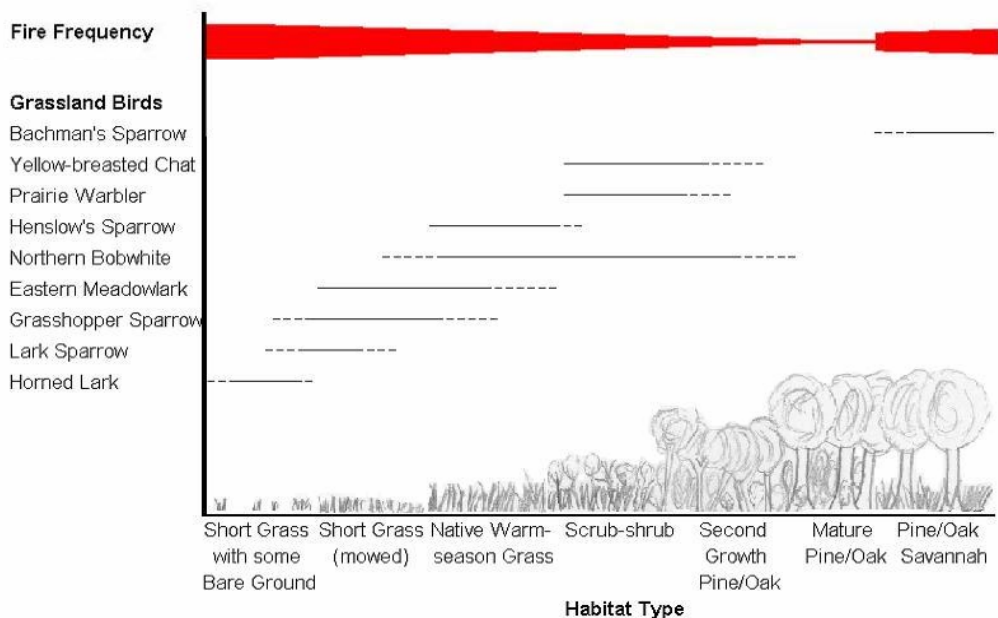
Post-emergence grass-selective herbicides (such as Select[®] and Poast Plus[®]) are very effective in reducing grass weeds, such as johnsongrass and crabgrass.

It is most important to realize planting firebreaks is certainly secondary in importance to the quality cover produced by burning the field. Rarely, if ever, is food a limiting resource for bobwhites. Without question, cover requirements must be met first. And, most often, when cover requirements are met, food resources are available by default.

We recommend placing firebreaks approximately 30 feet from the field's edge, especially if woods are adjacent to the field. This allows a soft edge to develop between the field and woods edge. Thinning undesirable trees 50 – 100 feet into the woods allows additional sunlight to enter the woods and further enhance the ecotone from forest to field.

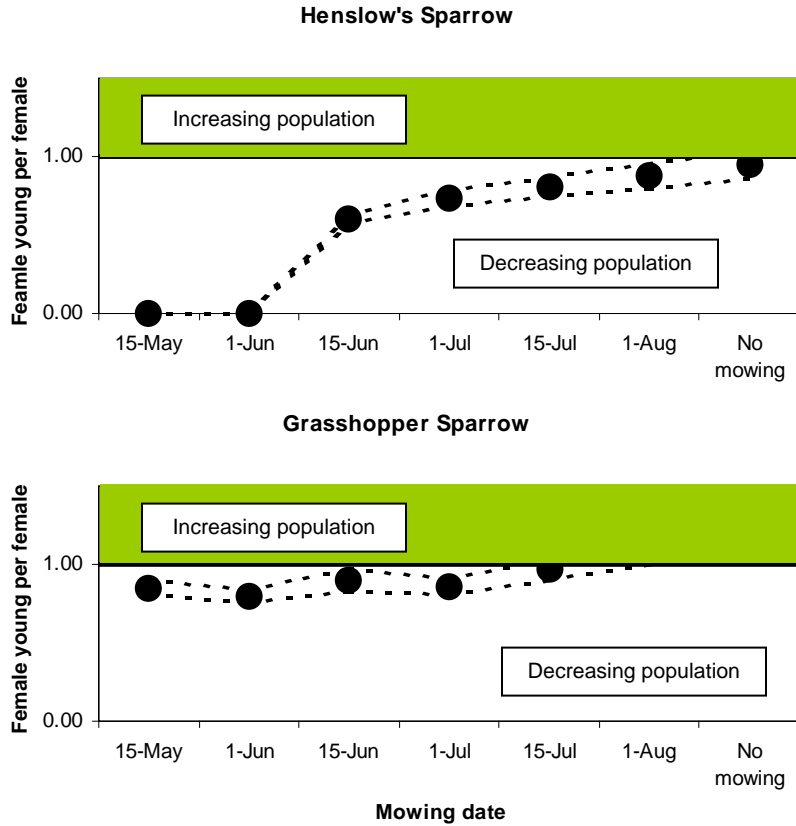
Managing for grassland songbirds

Grassland songbirds and other early-successional birds use a variety of habitats, but many have very specialized habitat requirements that rely upon the time since disturbance (e.g, fire, mowing...) to maintain the required habitat conditions. Some grassland birds, like Grasshopper Sparrows and Eastern Meadowlarks, will only use large fields (> 100 acres) with very few tall trees.

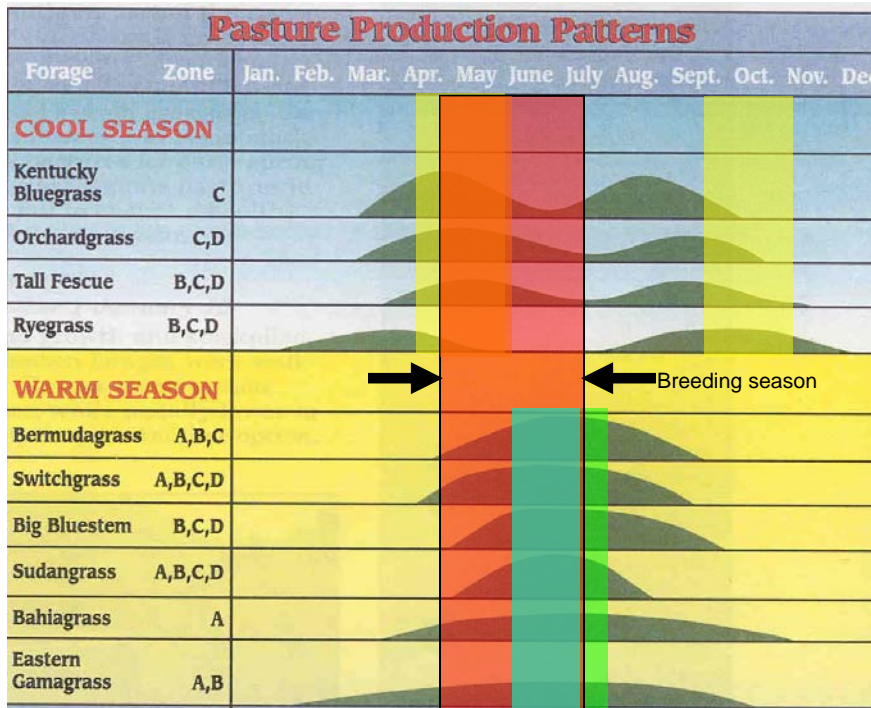


Productivity during the breeding season is one of the major factors influencing population persistence. Nesting in grasslands is much more difficult than nesting in forests. There is less area to conceal a nest because of the lack of vertical structure. As a result, grassland birds, such as Eastern Meadowlarks and Grasshopper Sparrows, experience higher predation rates than many birds that nest in trees. To compensate for the higher predation rates, most grassland songbirds are prolific breeders and can make 8 or more nesting attempts within a season. The lucky pairs can produce between 2 and 3 successful broods, each containing 3-5 young, within each nesting season. Even though some pairs can produce up to 15 offspring within a season, most populations, under favorable conditions, are just barely replacing themselves each generation.

Using information collected from more than 1400 nests monitored in fields at Fort Campbell Army Base on the border of Kentucky and Tennessee, we were able to create population models to simulate the impacts of different field management dates on grassland bird populations. In most cases, we found whole field management in May, June, and July had serious negative impacts on bird populations within the fields. Stable populations became populations that could not replace themselves even with birds re-nesting immediately after the field management. Avoiding management between April 15 and August 15 will allow most birds to successfully fledge their young, and most populations can remain stable or increase.



To manage for maximum benefits for nesting birds and other wildlife, mowing for aesthetic reasons during the songbird breeding season (April 15-August 15) should be avoided. If hay production is an objective along with providing wildlife habitat, native warm-season grasses are recommended because peak growth time for haying is later with these grasses than with cool-season grasses. Delaying mowing until early-August will have a reduced effect on grassland bird populations.



Burning Native Warm-Season Grasses

Pre-Establishment

- Reduces surface vegetation to enhance establishment

Post Establishment

- Reduces old growth to allow better development of new grass
- Can reduce competition from non-desirable plant species
- Stimulates growth
- Increases seed germination and growth of forbs
- Creates open structure for wildlife
- Prevents stagnation of the grass stand (after 3 – 4 years)
- Keeps maintenance costs lower
- Fire is the most efficient way to maintain fields compared to mowing/spraying/discing

How often to burn

- Every 2 to 4 years for wildlife management
- Should not burn all at once, but in rotation to vary wildlife habitat
- To control woody invasion, growing-season burns or frequent dormant-season fire (annual or every other year) will be required for a few years
- For annual hay production, burn every 1 – 2 years in March/early April

How to Burn Safely

1. Establish good firebreaks (containment lines)
 - Bare soil is the best firebreak
 - If green firebreaks are planted along perimeter of burn area 20 – 40' wide, it may still be necessary to disc to break dead fuels
 - Mowing the edge puts fuel low to the ground. Mow as early as possible to allow fuel to settle and compact. Discing will still be required to break fuel. A mowed strip is **not** a firebreak!
 - Roads and creeks may serve as firebreaks, but a wider break may still be necessary
2. Have a plan
 - Have a sketch or topographic map showing the burn site, breaks, buildings, etc.
 - Determine the reason for the burn to determine what kind of fire to use (head, backing, flanking)
 - Determine manpower/equipment needs and have available prior to burn

Crew: *Burn Boss* orchestrates burn, *Igniters* set fire, and *HOLDERS* keep fire contained

Equipment: Tractor with plow, sprayer set up with a hose, 4-wheeler, dozer;

Tools: Rakes, shovels; a drip torch is a good investment (~\$100) if burning regularly

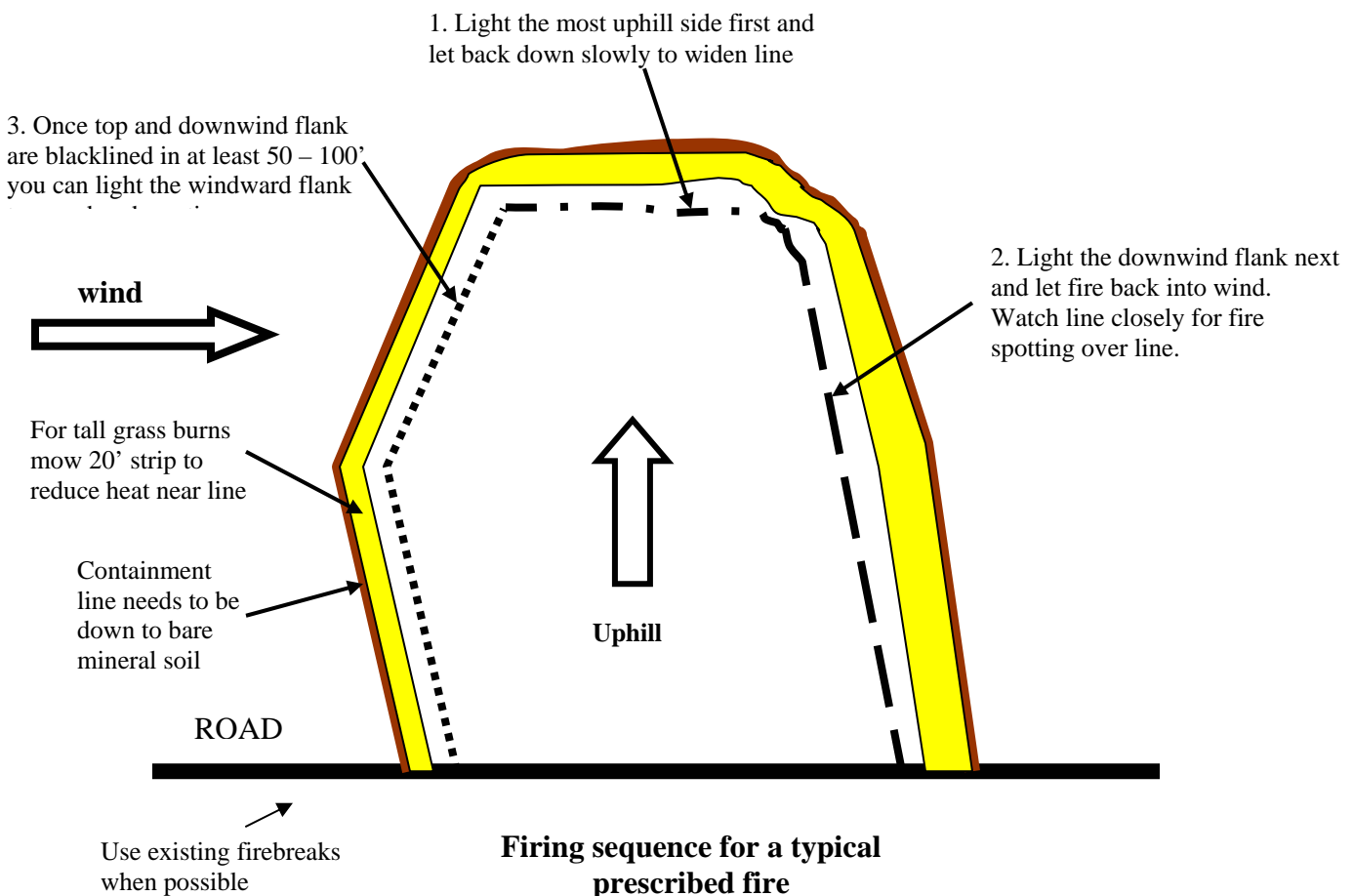
3. Wait for the right weather
 - Warm-season grasses burn hot and can move fast, so it may be desirable to pick conditions that make it burn cooler and slower
 - 3 weather factors to monitor: Humidity, temperature, and wind
 - **Humidity**: 30 – 40% is best. Do not burn native grasses below 25%
 - **Temperature**: The lower, the cooler the fire (40 – 60 degrees best); avoid over 80
 - **Wind speed and direction**: A steady wind is a good thing (predictable, helps create desired heat). Calm conditions usually end up having variable winds (not good). 3 – 12 miles per hour wind is suggested. Avoid burning when winds are predicted to be over 12 or are expected to shift (approaching cold front)

Picking **wind direction** may be important depending on situation. Select a wind direction that will place high risk areas up wind of the fire (smoke)

Sources for weather forecast

- Morristown NWS (www.srh.noaa.gov/mrx/) Click on current conditions for humidity, temp. Best place to go is the forecasts and click **wildfire forecast**, and get predicted humidity, temperature, wind speed, and direction for today and tomorrow, so is a great place to help decide when to burn.
- NOAA weather Radio
- Call the NWS in Morristown at 423-586-3771 to use an automated forecast system.

- Get a burning permit from TDF (October 15 to May 15)
 - Get their opinion if it's a good day to burn
 - Let your neighbors know you're burning (it's the law in some circumstances)
 - Let the local 911 office know you're burning, as they may get calls on it. Contact local fire department so they will be aware of your burn when calls start coming in!
4. Conduct the burn
- Get the crew together, go over the plan
 - Begin burning at the top of a slope and into the wind to reduce heat and spread rate near the containment lines. This is a critical time for fire to spot over.
 - This creates a black line that widens your firebreak
 - Keep the fire a backing fire if possible as this is easiest to control and is thorough (may take a while). To speed up, set the other flank once blacklines are wide enough
 - Letting fire run with the wind or uphill (a head fire) is fast, but risky (high heat, spotting)
 - Holders patrol containment lines, hang out where fire is closest to line.
 - Watch for fire creeping in areas with no bare dirt containment lines.
5. Safety Considerations
- Have an escape route picked out ahead of time
 - No polyester clothing, wear leather boots and gloves.
 - Do not allow people or equipment in unburned tall grass during a prescribed burn (fire too fast, too hot, escape would be slow)
 - Don't be hesitant to cancel the burn if conditions aren't right
6. Smoke Concerns
- Use caution when near or upwind of smoke-sensitive areas such as towns, schools, roads.
 - Do not burn if smoke-sensitive areas lie within 1/2 mile downwind.
 - Plan to burn with clear weather and steady, dependable wind
 - Try not to burn close to dark (inversion of night air makes smoke stay low)
 - Smoke tends to settle in drainages late in the day





The Natural Resources Conservation Service provides leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources. NRCS employees provide technical assistance based on sound science and suited to a customer's specific needs. We provide financial assistance for many conservation activities. Participation in our programs is voluntary.

Farm Bill Programs:

Conservation Reserve Program - This program takes highly erodible and other environmentally sensitive lands out of crop production and establishes a soil-conserving vegetative cover on them under a 10-15 year contract. Periodic signup periods are announced by USDA when applicants can offer whole-field enrollments. Applications are scored and ranked against other applications from across the country. USDA later announces the minimum score that will be accepted for enrollment under contracts. Options most beneficial to wildlife, such as CP2 Native Grasses and CP4D Permanent Wildlife Habitat offer potential for higher scores and greater likelihood of offer acceptance. In the CRP, the participant receives an annual payment during the term of the contract in addition to 50% cost share for cover establishment and required management.

Continuous Conservation Reserve Program - This portion of the Conservation Reserve Program includes the most highly beneficial, small acreage or buffer (strip) practices, such as Bobwhite Quail buffer strips. A landowner can apply at any time and if the land being offered meets the criteria for a specific practice, the offer will be automatically accepted by USDA. Some of the practices qualify for an annual payment that is 20% higher than the same land offered under the General Signup practices, plus qualify for an up-front Signing Incentive Payment of \$100 per acre for a 10-year contract or \$150 per acre for a 15-year contract, plus an additional Payment Incentive Practice of 40% of the cover establishment cost. CCRP practices in Tennessee include: CP8A Grass Waterways, CP9 Shallow Water Areas for Wildlife, CP15 Contour Grass Strips, CP21 Filter Strips, CP22 Riparian Forest Buffer, CP27 Farmable Wetlands, CP28 Farmable Wetland Buffers, CP31 Bottomland Hardwood Restoration, and CP33 Habitat Buffers for Upland Birds.

Environmental Quality Incentives Program - Although all private agricultural land and forested land is eligible, this program is utilized mainly by hay and livestock producers or other landowners with water quality issues. Offers are scored according to specific practices to be implemented, and are ranked against other offers within each grand division of the state (east, middle and west Tennessee). The program provides either 50% to 75% cost share for implemented practices. The contract length can be from 1 to 10 years. Beneficial practices for wildlife are exclusion of livestock from streams, streambank stabilization, wildlife field borders, riparian buffers and conversion of cropland or exotic pasture grasses to native warm season grasses for forage.

Wildlife Habitat Incentives Program - Provides 75% cost share for selected practices to develop, enhance and maintain good wildlife habitat under 5- to 10-year contracts/management plans. Currently, there is no maximum contract payment. Similar to TWRA's Farm Wildlife Habitat Program, most cost shared improvements are targeted mainly towards open land wildlife species in decline, such as bobwhite quail, cottontail rabbits, and shrub and grassland songbirds. Major practices include eradication of fescue and sericea lespedeza and conversion to native grasses, forbs and legumes, and establishing woody or other escape cover where needed. Approved management practices such as prescribed burning, strip disking, and herbiciding. Offers are scored and ranked against other offers in the state according to wildlife benefits of practices implemented and other criteria. Highest scoring offers are accepted on a periodic basis as money becomes available. All private land is eligible, except for acreage that is currently enrolled in another USDA conservation program.

Additional Farm Bill Programs – Wetlands Reserve Program, Grassland Reserve Program, Conservation Security Program

TWRA Programs:

Farm Wildlife Habitat Program - This program provides approximately 75% cost share under a 5-year contract, up to a maximum of \$1,000 in any state fiscal year, to improve wildlife habitat. Cost shared improvements are targeted mainly towards open land wildlife species in decline, such as bobwhite quail, cottontail rabbits, and shrub and grassland songbirds. Major practices include eradication of fescue and sericea lespedeza and conversion to native grasses, forbs and legumes, and establishing woody or other escape cover where needed. Approved management practices such as prescribed burning, strip disking, and herbiciding. The option is available to plant native warm season grasses for dual hay/wildlife benefits, and 75% can be hayed in the third, fourth and fifth years of the contract. Upon approval of a plan, the landowner signs a contract agreeing to implement the practices and protect and maintain them for 5 years. Cost-share payments are received after the practices have been completed and inspected. Applicants are considered on a first-come first-served basis. Contact the small game biologist in a TWRA Regional Office.

Contact Information:

Contact Your Local USDA-NRCS Office For More Information.

TWRA Biologist

Region 1- 731.423.5725

Region 2- 615.781.6622

Region 3- 931.484.9571

Region 4- 423.587.7037

NRCS Wildlife Biologist

West Tennessee

Michael Hansbrough

731.668.0700 Ext.112

Middle Tennessee

Chris Wolkonowski

615.893.9295, Ext.112

East Tennessee

Robin Mayberry

865.523.3338, Ext.113

Website Links

TN NRCS - www.tn.nrcs.usda.gov/index.html

NRCS - www.nrcs.usda.gov

TWRA - www.tnwildlife.org

Field Day Evaluation Form

University of Tennessee / USDA-NRCS
Early Successional Habitat Field Day
USDA-NRCS/MSU Bobwhite Restoration Project

As part of our continuing effort to improve dissemination of research results from USDA-funded studies to resource professionals and the general public, we request your assistance in evaluating the usefulness of this Field Day. Please take the time to fill out this questionnaire. Your input is greatly appreciated and will be used to improve future events. Thank you.

1. Your involvement in wildlife management is:

Farmer
Landowner/not a farmer
Resource management professional
Other (describe) _____

1a. If you are **resource management organization employee**, what agency do you work for (e.g., NRCS, FSA, State, Private, etc.)? _____
and what is your job title and primary responsibility(s)? _____

1b. If you are a **private landowner**, in what county and state do you manage your land for wildlife? _____

2. How did you learn of this field day? _____

3. How useful were each of the field day topics?	Not at all useful			Very useful	
Native grass management	1	2	3	4	5
Native grass establishment	1	2	3	4	5
Bobwhite biology	1	2	3	4	5
Prescribed fire management	1	2	3	4	5
Pine management	1	2	3	4	5
Managing for grassland songbirds	1	2	3	4	5
Native grass forage production	1	2	3	4	5
Farm Bill programs	1	2	3	4	5

4. Are there any other topics that you would like to have seen covered? _____

5. Please rank the overall value of this workshop in increasing your knowledge of the topics presented:

(low) 1 2 3 4 5 (high)

6. Did you learn information about early successional habitat management practices that you where previously unaware of by attending this field day?

Yes No

7. How many acres do you manage/own? _____

8. How many acres do you intend to manage using practices discussed in this field day? _____

9. By what other means would you like to receive information about the information covered in this field day (mark all that apply)?

Workshops

newsletters

Internet (email)

CDROM

Fact Sheets

Other:_____

10. Would you like the University of Tennessee and USDA-NRCS to hold more of these events?

Yes

No

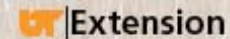
11. Do you have any suggestions on how we can improve this Field Day?

12. Do you have any other comments?

University of Tennessee / USDA-NRCS
Early Successional Habitat Field Day

Promotional Flier

UT/NRCS
Early Succession Habitat
Field Day – June 22, 2006



Mayfield Farm, McMinn County, Athens, TN
(Hwy 307, less than one mile north of Athens)

8:00 a.m. – 4 p.m.

Registration: \$15 Pre-registration is required by June 12.

Lunch and refreshments included.

Mail check to: Mirian Wright, 2431 Joe Johnson Drive, Room 274,
Knoxville, TN 37996-4563 (payable to The University of Tennessee)

For more information call: (865)974-7346, email: mwright@utk.edu,
or visit: fwf.ag.utk.edu

Topics

Establishing native warm-season grasses

- eradicating tall fescue and other perennial non-native grasses
- field preparation and herbicides for weed control
- planting techniques and using the seedbank
- seeding rates and mixtures
- calibrating no-till drills

Managing native warm-season grasses for bobwhites and other wildlife

- dormant- and growing-season fire, seasonal disking, herbicide strategies
- controlling unwanted woody species invasion

Managing firebreaks

- arrangement, fallow management, food plots, herbicide strategies

Native warm-season grasses for haying and grazing opportunities

- seeding rates, herbicide applications, timing of haying, rotational grazing
- considerations for grassland songbirds

Managing pine stands for bobwhites and other wildlife

- using thinning, prescribed fire and herbicide applications

Using NRCS/FSA/TWRA programs to implement habitat management

- WHIP, CRP, CP-33, EQIP, Farm Wildlife Habitat program

Who should attend?

Bobwhite quail enthusiasts, natural resources professionals, wildlife biologists and managers, foresters, landowners with an interest in wildlife and forage producers

- Learn how to establish and manage nwsg for wildlife and livestock
- Learn how to use prescribed fire to improve wildlife habitat
- Learn protocol and regulations concerning prescribed fire
- Learn the latest strategies for managing pine stands for wildlife
- Visit vendor booths from seed companies, herbicide companies, Quail Unlimited, TWRA, NRCS and others
- Receive TN pesticide recertification points (four hours in categories 1, 2, 10, 12)



THE UNIVERSITY OF TENNESSEE



Progress in agriculture and natural resources. All youth developments, family and consumer services and more on the digital@utk.edu. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments are operating UT Extension projects equal opportunities in programs and employment.

06-0259