nutsedge (*Cyperus esculentus*), and black nightshade (*Solanum ptycanthum*). Although weed control with sulfentrazone was highly favored, concerns developed over adverse tobacco response to sulfentrazone treatments. The phytotoxicity symptoms were necrotic lesions on leaf surfaces, chlorotic mottling, and/or crinkled leaf margins. The occurrence of these injury symptoms led to a series of experiments to better understand the behavior of sulfentrazone in soil.

Karnack silty clay, Crider silt loam, Lanton silt, Loring silt loam, which varied in organic matter and clay content, as well as a Maury silt loam that varied in pH, were selected for determination of sulfentrazone adsorption to soil. The batch equilibrium method was used to determine adsorption. Formulated and ^{14}C-sulfentrazone was added to one-gram of soil at: 0, 1, 2, 3, 4, and 5 x 10^{-6} M. Samples were brought to 10-ml total volume with 0.01 N $CaCl_2$ and placed on a horizontal shaker for 24 hours and then centrifuged at 10,000 rpm for 10 minutes. A one-milliliter aliquot was taken for quantification of radioactivity using liquid scintillation spectrometry. Adsorption isotherms were constructed for each soil using the Freundlich equation. Sulfentrazone adsorption increased as clay and organic matter increased and sulfentrazone adsorption increased as pH decreased. From these data it was hypothesized that higher soil pH, resulting in less soil adsorption, was partially responsible for phytotoxic responses of tobacco to sulfentrazone.

Sulfentrazone at 0, 0.19, 0.37, 0.56, 0.75 lbs./A, was thoroughly mixed with 400 g of Maury silt loam soil at a pH 4.8, 5.6, 7.2 and placed in 16 oz cups. TN90 tobacco seedlings, grown in float trays for 30 days, were transplanted into soil. The soil was weighed daily to determine water use and to bring the soil back to field capacity. Plants were harvested for fresh and dry weight determination after 21 days of growth. Tobacco grown at pH 7.2 had greater fresh and dry weight, as well as higher water consumption; however, statistical differences occurred only at the sulfentrazone rate of 0.75 lbs./A.

A hydroponics experiment was conducted to quantify tobacco root uptake of ^{14}C-sulfentrazone. KY14 tobacco transplants were grown for 24 hours in a water and buffer solution containing 1650 Bq of ^{14}C-sulfentrazone. PH was altered to 5.8, 6.5, and 7.2 using a 0.01 M potassium phosphate buffer. After 24 hours, the plants were removed from solution, sectioned into roots and shoots, weighed, then oxidized. ^{14}C-sulfentrazone absorption into roots, expressed as Bq per gram fresh root weight, was greater at pH 5.8 that at pH 6.5 or 7.2. The amount of ^{14}C-sulfentrazone in tobacco shoots was similar at each pH.

The sulfentrazone adsorption to soil was greatest at pH 4.8 and was attributed to the protonation of the amine nitrogen atom. The greatest absorption of sulfentrazone by tobacco roots also occurred at the acidic pH of 5.8. The greater uptake of the protonated sulfentrazone molecule suggests that much of the sulfentrazone injury noted to tobacco under field conditions could be attributed to acidic areas in tobacco fields.

VEGETATION COMPOSITION FIVE YEARS AFTER SILVICULTURAL TREATMENTS TO CONTROL COMPETITION IN A NATURAL STAND OF LOBLOLLY-SHORTLEAF PINES. M.D. Cain, USDA Forest Service, Southern Research Station, Monticello, AR 71656.

ABSTRACT

Woody nonpine vegetation, averaging over 6,000 rootstocks/ac, was controlled by chain-saw felling, chain-saw felling plus prescribed burning, or by a broadcast herbicide spray to release even-aged loblolly and shortleaf pine (*Pinus taeda* L. and *P. echinata* Mill.) saplings that became established from natural seedfall on a cutover area. Each method of competition control and an untreated check were replicated three times on 0.2-ac plots in a randomized, complete block design. Five years after release, vegetation composition and percent ground cover were found to be significantly (P<0.05) modified by the silvicultural treatments.

INTRODUCTION

Because of public concerns over the use of herbicides for vegetation management on public lands, some National Forests in the southeastern U.S. have proposed to increase the use of manual control techniques and fire while decreasing the use of herbicides (19). On National Forests in Arkansas, competing vegetation in pine stands is being operationally treated by hand-felling, but there is no documentation regarding the type of vegetation that reinvades these treated areas.

Growth of naturally established loblolly and shortleaf pine (*Pinus taeda* L. and *P. echinata* Mill.) regeneration can be substantially reduced during the first 11 years after establishment from seed in the absence of intensive release from woody and herbaceous competition on good sites (site index >85 ft for loblolly pine at 50 years) (6, 11). However, there is little published information regarding growth gains from release when applied only once to naturally established pines of sapling size (4, 5). Consequently, the original objective of this study was to determine if sapling-size (0.6 to 3.5 inches dbh) pines exhibit a measurable growth response to a one-time release treatment. The purpose of the present paper is to document the composition of woody and herbaceous vegetation that was present 5 years after release treatments were applied.

METHODS AND MATERIALS

The study is located on the Crossett Experimental Forest in southeastern Arkansas. Soil is Bude (Glossaquic Fragiudalf) silt loam and has a site index of 90 ft at 50 years for loblolly pine (18). Within an area of 5 ac, a mature stand of loblolly and shortleaf pines, averaging 9,000 fbm/ac (Doyle), was clearcut in August 1985 to control an infestation of southern pine beetles (*Dendroctonus frontalis* Zimm.). In April 1986, the clearcut was treated with hexazinone [1] (Velpar® L) at the rate of 3 lbs a.i./ac on a 3-ft by 3-ft grid using herbicide spotguns to control residual hardwoods. After that treatment, the area remained undisturbed. In summer 1992, the clearcut was occupied by a 7-year-old thicket of vines, brambles, woody shrubs, naturally seeded pines, and hardwood saplings that ranged up to 20 ft tall.

The 5-ac clearcut was subdivided into 12 treatment plots containing 0.2 ac (93.3 ft by 93.3 ft) each, with 0.1-ac interior subplots (66 ft by 66 ft). The 0.2-ac plots were delineated by mowing. Within each interior plot, 16 systematically spaced, permanent 1-milacre sample quadrats were established for assessing pretreatment density of competing vegetation and natural pine regeneration.

Based on a subjective assessment of competition, the clearcut area was scheduled to receive an operational application of a herbicide registered for releasing loblolly pine. A subsequent inventory indicated that the need for release was questionable because density of pine saplings was in accordance with published recommendations. Consequently, three release treatments were imposed along with untreated checks to determine if release was justified. Treatments included:
(*i*) Check - No pine release was done.
(*ii*) Chain-saw felling - Between April 18 and 20, 1994, all nonpine woody stems and woody vines were chain-saw felled near groundline. This treatment was imposed after hardwoods had completely refoliated following winter dormancy.
(*iii*) Herbicide spray - Since it was desirable to use herbicides that cause minimal damage to pines (4), Arsenal® Applicators Concentrate (imazapyr) was tank mixed with Escort® (metsulfuron methyl). In accordance with a recommendation by Edwards (12), the tank mix was Arsenal AC at 16 oz of product/ac (4 lbs a.e./gal) plus Escort at 1 oz of product/ac (60% a.i.) in a spray volume of 30 gal/ac, dispersed at 30 lbs/square inch using a Spraying Systems Co. adjustable Gunjet®. Cidekick® II was added as a surfactant at the rate of 0.5% of total solution. The addition of Escort was needed to control a broader spectrum of vegetation than can be achieved by Arsenal alone. On August 30, 1993, the herbicide tank mix was applied from atop a Genie® S-60 manlift boom at a height of about 20 ft above ground so as not to mechanically disturb any vegetation on plots being sprayed. This over-the-top broadcast technique was used to experimentally simulate aerial application of herbicide.
(*iv*) Fell & burn - Chain-saw felling was done using the same technique as in Treatment (*ii*) and was completed during the same time frame. Prescribed burning was accomplished on February 2, 1995. Nonpine woody vegetation was chain-saw felled to provide sufficient fuel to carry a fire because an earlier attempt to prescribe burn through patch clearcuts covered with uncut vegetation had failed (3). Burning was included in the present investigation to determine if fire would impede resprouting of severed hardwood rootstocks.

In autumn 1998, five growing seasons after treatments were applied, percent ground cover was ocularly estimated for various vegetative components within each of sixteen 1-milacre sample quadrats that had been systematically established on the 0.1-ac interior plots. Ground-cover estimates were made to the nearest 10% for pines, hardwoods, nonarborescent shrubs, and herbaceous vegetation. The dominant hardwood or shrub within seedling and sapling size classes was identified by genera on each sample quadrat. Seedlings were <0.6 inch dbh, and saplings ranged from 0.6 inch to 3.5 inches dbh. All seedling-sized rootstocks and sapling-sized stems were counted within each sample quadrat for calculation of density. A rootstock was comprised of either single or multiple stems (clump) of seedling size, which obviously arose from the same root system. Ground cover from herbaceous components was estimated separately for grasses, forbs, vines, and semi-woody plants. The herbaceous component having the greatest ground cover was identified by genera on each milacre quadrat.

The experiment was a randomized, complete block design with blocking based on the pretreatment density of pine saplings. Analysis of variance was used to evaluate treatment differences in woody-plant density and percent ground cover from the various vegetative components. Arcsine transformations were used in percent-cover analyses and square-root transformations were used in analysis of hardwood sapling density, but only nontransformed values are reported. Orthogonal contrasts were used to compare treatment differences. Statistical significance was accepted at the $\alpha=0.05$ probability level.

RESULTS AND DISCUSSION

Before the present investigation was initiated, three events resulted in an adequate stand of natural pine regeneration on this site. These events included site disturbance from clearcutting the beetle infested pines in summer 1985; application

[1]This publication reports research involving herbicides. It does not contain recommendations for their use, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

The use of trade or firm names in this publication is for reader information and does not imply endorsement by the U.S. Department of Agriculture of any product or service.

of a soil-active herbicide (Velpar® L) in spring 1986; and a better-than-average pine seed crop that exceeded 1,000,000 potentially viable seeds/ac during the winter of 1986-87 (7). In autumn 1992, pretreatment density of natural pine regeneration averaged over 790 saplings/ac with no differences (P=0.56) among plot means (10). When cutover areas contain 700 stems of well-distributed loblolly and shortleaf pines/ac 3 years after their establishment from seedfall, natural pine regeneration is considered successful (14). Given these facts, forest landowners have the option of allowing established pines to grow to merchantable size without further silvicultural intervention or to release the pines from competing vegetation with the expectation of increasing their growth rate. Before release, sapling-sized hardwoods averaged about 1,700 stems/ac, with no differences (P=0.85) among plot means (10); yet there were twice as many hardwood saplings as pine saplings.

To reduce sprouting of severed hardwood stems, seasonal timing of manual or mechanical cutting techniques can be critical. For example, hardwoods tend to sprout less vigorously when cut during the growing season than when cut during the dormant season (13, 16, 21). Consequently, chain-saw felling of woody competition in the present study was scheduled during the spring, just after hardwoods had foliated.

Five growing seasons after treatments were applied, density of seedling-sized hardwoods on chain-saw fell plots averaged 37% less (P=0.068) than on herbicide-spray plots and 47% less (P=0.015) than on fell & burn plots (Table 1). This unexpected result has two possible explanations. First, the herbicide controlled not only woody plants but also herbaceous vegetation during the first year after treatment. Therefore, when compared to chain-saw felling, reinvading vegetation had less competition on herbicide treated plots which may have stimulated germination of more woody plants from the soil seed bank. There is evidence to suggest that germination by seeds in the soil is enhanced when exposed to light but inhibited by darkness or leaf shade (17). Secondly, density of hardwood saplings on chain-saw felled plots exceeded the density on both herbicide-spray and fell & burn plots by more than 1,000 stems/ac. A high sapling density would tend to reduce the number of shade-intolerant woody plants in the seedling size classes. Density of hardwood saplings ranged from <600/ac on herbicide treated plots to >2,000/ac on chain-saw fell plots (Table 1); although these differences are important, they were statistically nonsignificant (P=0.074).

When this 5-year assessment was made, American beautyberry (*Callicarpa americana* L.) was the dominant nonpine woody plant of seedling size across all treatments. Quadrat stocking for this species ranged from 56% on chain-saw fell plots to 81% on herbicide-spray plots. Chain-saw fell plots, with twelve genera, had the highest richness for seedling-sized nonpine woody plants. Fell & burn plots ranked second with ten genera, and herbicide-spray plots had eight genera. Check plots had the least richness with only six genera of seedling-sized woody plants.

In the sapling size classes, flowering dogwood (*Cornus florida* L.), a shade-tolerant species, was dominant on check plots with 29% quadrat stocking. In contrast, sweetgum (*Liquidambar styraciflua* L.), a shade-intolerant species and prolific stump sprouter, was the dominant sapling-sized hardwood on both chain-saw fell and fell & burn plots, with 25% and 33% quadrat stocking, respectively. On herbicide-spray plots, red maple (*Acer rubrum* L.) was the dominant hardwood of sapling size, but quadrat stocking of red maple averaged only 6% because there were no sapling-sized hardwoods on 81% of sample quadrats within herbicide treated plots.

Since there were no silvicultural treatments applied on check plots, they had the highest richness for sapling-sized hardwoods at 5 years after treatment, with eleven genera recorded. Chain-saw fell plots ranked second in richness with ten hardwood genera of sapling size. On fell & burn plots, five hardwood genera attained sapling size, while herbicide-spray plots had the least richness with only four hardwood genera in sapling size classes.

Five years after release, pine ground cover ranged from 42% on check plots to 61% on herbicide-spray plots (Table 2), but treatment differences were nonsignificant (P=0.299). However, ground cover from competing hardwoods was significantly reduced (P=0.002) by release treatments (Table 2). Mean hardwood cover on chain-saw fell plots and herbicide-spray plots averaged 47 percentage points less (P=0.001) than on check plots. Herbicide-spray plots had 24 percentage points less (P=0.028) hardwood cover than chain-saw fell plots, but hardwood cover was not reduced (P=0.205) by the addition of a prescribed winter fire after chain-saw felling.

Ground cover from nonarborescent shrubs ranged from 40% on check plots to 68% on herbicide-spray plots (Table 2), with significant differences (P=0.047) among treatments. Because of a higher percent ground cover from hardwoods on check and chain-saw fell plots, shade-intolerant shrub cover averaged 22 percentage points less on those treatments as compared to the mean of herbicide-spray or fell & burn plots, and the 21-point difference between chain-saw felling and herbicide spraying was significant (P=0.048).

Competition from herbaceous vegetation has been shown to reduce the growth of naturally established pine regeneration until such time when herbaceous species are shaded out by canopy closure (11). In the present study, vines were the most prolific component of herbaceous vegetation averaging 70% ground cover across all plots (Table 3), and mean vine ground cover among treatments was statistically nonsignificant (P=0.578). The dominant vines, ranked in terms of ground cover, were Japanese honeysuckle (*Lonicera japonica* Thunb.), greenbrier (*Smilax* spp.), Alabama supplejack (*Berchemia scandens* [Hill] K. Koch), morning glory (*Ipomoea* spp.), and grape (*Vitis* spp.). Grass cover on chain-saw fell plots averaged 44 percentage points less (P=0.002) than on fell & burn plots (Table 3). Since grass cover on burned plots averaged higher (58%) when compared to other treatments, fire may have enhanced seed germination for those species (1, 2, 15). Forbs and semi-woody plants were minor herbaceous components, averaging <10% ground cover across all treatments. Yet, herbicide-spray plots had significantly more ($P<0.01$) ground cover from these plants than chain-saw fell plots (Table 3), probably because the latter treatment had greater coverage from hardwoods (Table 2) which kept these shade-intolerant herbaceous species in check.

There are advantages and disadvantages from the use of either herbicides or manual treatments for competition control in pine stands (20). In the present study, an important disadvantage of chain-saw felling was its cost, which averaged about $400/ac as compared to $120/ac for the herbicide treatment (10). Five-year results suggest that chain-saw felling tended to increase hardwood ground cover when compared to herbicide sprays. This may be the result of more numerous sprouts per rootstock from chain-saw felling (8) and more rapid height growth of those sprouts compared to herbicide treatment (9). The application of fire after chain-saw felling tended to result in fewer hardwood saplings and more ground cover from grasses and semi-woody plants 5 years later when compared to chain-saw felling only.

LITERATURE CITED

1. Blank, R.R. and J.A. Young. 1998. Heated substrate and smoke: influence on seed emergence and plant growth. J. Range Manage. 51(5): 577-583.
2. Brown, N.A.C. and J. van Staden. 1998. Plant-derived smoke: an effective seed pre-soaking treatment for wildflower species and with potential for horticultural and vegetable crops. Seed Sci. Tech. 26(3): 669-673.
3. Cain, M.D. 1987. Site-preparation techniques for establishing natural pine regeneration on small forest properties. South. J. Appl. For. 11:41-45.
4. Cain, M.D. 1991a. Evaluation of imazapyr for control of woody competitors in a plantation of submerchantable-size loblolly pine. USDA For. Serv. Res. Pap. SO-262. 11 p.
5. Cain, M.D. 1991b. Five-year response of natural loblolly and shortleaf pine regeneration to release treatments. USDA For. Serv. Res. Pap. SO-265. 13 p.
6. Cain, M.D. 1991c. The influence of woody and herbaceous competition on early growth of naturally regenerated loblolly and shortleaf pines. South. J. Appl. For. 15:179-185.
7. Cain, M.D. 1992. Japanese honeysuckle in uneven-aged pine stands: problems with natural pine regeneration. Proc. South. Weed Sci. Soc. 45:264-269.
8. Cain, M.D. 1993. First-year response of direct-seeded shortleaf pine and hardwood sprouts to three methods of hardwood control in the Arkansas Ozarks. p. 317-326. *In* Proc. 7th Bienn. South. Silvic. Res. Conf. USDA For. Serv. Gen. Tech. Rep. SO-93.
9. Cain, M.D. 1995. Third-year response of direct-seeded shortleaf pine and hardwood sprouts to three methods of hardwood control in the Arkansas Ozarks. p. 551-558. *In* Proc. 8th Bienn. South. Silvic. Res. Conf. USDA For. Serv. Gen. Tech. Rep. SRS-1.
10. Cain, M.D. 1997a. Cost comparison among chain-saw felling, prescribed fire, and herbicides for releasing natural loblolly and shortleaf pine saplings on a cutover site. Proc. South. Weed Sci. Soc. 50:201-206.
11. Cain, M.D. 1997b. Woody and herbaceous competition effects on the growth of naturally regenerated loblolly and shortleaf pines through 11 years. New Forests 14: 107-125.
12. Edwards, B. 1992. Herbicide tank mixes enhance vegetation management. Forest Farmer 51(7):10-12, 27.
13. Geisinger, D.R., T.A. Waldrop, J.L. Haymond, and D.H. Van Lear. 1989. Sprout growth following winter and spring felling with and without summer broadcast burning. p. 91-95. *In* Proc. Pine Hardwood Mixtures: a Symposium on Management and Ecology of the Type. USDA For. Serv. Gen. Tech. Rep. SE-58.
14. Grano, C.X. 1967. Growing loblolly and shortleaf pine in the midsouth. USDA Farmers' Bull. 2102. 27 p.
15. Herranz, J.M., P. Ferrandis, and J.J. Martinez-Sanchez. 1998. Influence of heat on seed germination of seven Mediterranean Leguminosae species. Plant Ecol. 136(1): 95-103.
16. McMinn, J.W. 1989. Influence of whole-tree harvesting on stand composition and structure in the oak-pine type. p. 96-99. *In* Proc. Pine Hardwood Mixtures: a Symposium on Management and Ecology of the Type. USDA For. Serv. Gen. Tech. Rep. SE-58.
17. Teketay, D. 1998. The role of light and temperature in the germination of twenty herbaceous species from highlands of Ethiopia. Flora 193(4): 411-423.
18. USDA. 1979. Soil Survey of Ashley County, Arkansas. USDA Soil Conserv. Serv. and For. Serv. in coop. with Ark. Agric. Exp. Sta. Washington, DC. 92 p. and maps.
19. USDA, FS. 1990. Final environmental impact statement for vegetation management in the Ozark/Ouachita Mountains. USDA For. Serv. Manage. Bull. R8-MB 45. Vol. 1. 352 p.
20. Walstad, J.D., M. Newton, and D.H. Gjerstad. 1987. Overview of vegetation management alternatives. p. 157-200. *In* Forest Vegetation Management for Conifer Production. J.D. Walstad and P.J. Kuch (eds), John Wiley & Sons, New York.
21. Zedaker, S.M., D.W. Smith, R.E. Kreh, and T.S. Fredericksen. 1989. The development of five-year-old mixed upland hardwood-pine stands. p. 100-106. *In* Proc. Pine Hardwood Mixtures: a Symposium on Management and Ecology of the Type. USDA For. Serv. Gen. Tech. Rep. SE-58.

Table 1. Hardwood density 5 years after silvicultural treatments were applied for competition control in a natural stand of loblolly-shortleaf pines.

Silviculture treatments and orthoganal contrasts	Hardwoods	
	Seedling-size[a]	Sapling-size[b]
	Rootstocks/ac	*Stems/ac*
1. Check	4,313	1,979
2. Chain-saw fell	4,625	2,021
3. Herbicide spray	7,333	563
4. Fell & Burn	8,708	812
Mean Square error	2,228,624	107
P>F[c]	0.03	0.119
Orthogonal contrasts	*Probability of a greater F*[c]	
1 vs 2 + 3	0.165	0.148
2 vs 3	0.068	0.074
2 vs 4	0.015	0.161

[a] Seedling-size rootstocks were >0.5 ft tall but <0.6 inch dbh.
[b] Sapling-size stems ranged from 0.6 inch dbh to 3.5 inches dbh.
[c] The probability of obtaining a larger F-ratio under the null hypothesis.

Table 2. Percent ground cover from woody vegetation 5 years after silvicultural treatments were applied for competition control in a natural stand of loblolly-shortleaf pines.

silvicultural treatments and orthogonal contrasts	Woody plant ground cover		
	Pines	Hardwoods	Shrubs
	------------------Percent------------------		
1. Check	42	80	40
2. Chain-saw fell	52	45	47
3. Herbicide spray	61	21	68
4. Fell & Burn	37	32	64
Mean square error	0.026	0.013	0.012
P>F[a]	0.299	0.002	0.047
Orthogonal contrasts	*Probability of a greater F*[a]		
1 vs 2 + 3	0.231	0.001	0.065
2 vs 3	0.441	0.028	0.048
2 vs 4	0.286	0.205	0.081

[a] The probability of obtaining a larger F-ratio under the null hypothesis

Table 3. Percent ground cover from herbaceous vegetation 5 years after silvicultural treatments were applied for competition control in a natural stand of loblolly-shortleaf pines.

silvicultural treatments and orthogonal contrasts	Woody plant ground cover				
	Grass	Forbs	Vines	Semi-woody	Total herbaceous
	Percent				
1. Check	26.8	0.1	64.6	0.2	76.5
2. Chain-saw fell	13.3	1.1	78.3	0.6	81.5
3. Herbicide spray	31.7	5.8	67.4	7.7	81.8
4. Fell & Burn	57.6	2.9	71.2	7.0	92.9
Mean square error	0.015	0.002	0.023	0.004	0.015
P>F[a]	0.013	0.006	0.578	0.006	0.208
Orthogonal contrasts	*Probability of a greater F*[a]				
1 vs 2 + 3	0.494	0.006	0.375	0.023	0.383
2 vs 3	0.052	0.007	0.311	0.009	0.950
2 vs 4	0.002	0.084	0.466	0.008	0.168

[a] The probability of obtaining a larger F-ratio under the null hypothesis

BIOLOGY OF PRICKLY NIGHTSHADES (*SOLANUM* spp.). C.T. Bryson, USDA-ARS, Southern Weed Science Research Unit, Stoneville, MS 38776.

ABSTRACT

Native and non-native prickly nightshades in the genus *Solanum* have long been troublesome weeds of pastures, feed lots, right-of-ways, and in vegetable, fruit, nut, and field crops. In addition to interfering with crop growth, quality, and yields, prickly nightshades interfere with manual and mechanical harvest efficiency. Prickly nightshades have received more interest since the introduction and rapid spread of tropical soda apple (*S. viarum* Dunal), initially into Florida in the early 1980s and then into Alabama, Georgia, Louisiana, Mississippi, North Carolina, Pennsylvania, South Carolina, Tennessee, and Puerto Rico. Currently, three non-native species of prickly nightshades, tropical soda apple, wetland nightshade (*Solanum tampicense* Dunal), and turkeyberry (*S. torvum* Sw.), are listed on the Federal Noxious Weed List. All three of these species are now present in the southeastern United States. Buffalobur (*S. rostratum* Dunal), horsenettle (*S. carolinense* L.), and robust horsenettle (*S. dimidiatum* Raf.) are prickly nightshade species that are native, at least in part, to the southeastern United States. Additional non-native invasive prickly nightshades that are established and possess weedy traits in the southeastern United States are Jamaican soda apple (*S. jamaicense* Miller), nipplefruit nightshade (*S. mammosum* L.), red soda apple (*S. capsicoides* All.), silverleaf nightshade (*S. elaeagnifolium* Cav.), and sticky nightshade (*S. sisymbriifolium* Lam.). Buffalobur is an annual. The other prickly nightshades are perennials in tropical, subtropical and/or temperate climates depending on the species. Only horsenettle, robust horsenettle, silverleaf nightshade, and sticky nightshade produce root systems deep enough to survive extended periods of time below 0 C. Because little is known about the comparative biology and ecology of the prickly nightshades, these species were grown in greenhouse at Stoneville, MS to determine growth parameters. Data on height and number of nodes and leaves were recorded weekly for 10 weeks following plant emergence with plant dry weights at the termination of experiments. Data on days to first bloom were taken in separate experiments. Plants were grown in 30 cm-diameter pots in a mixture of a Bosket sandy loam (Mollic Hapludalfs) soil and Jiffy Mix at 50/50 v/v, at temperatures of 30/20 ($\pm$ 2) C day/night, and 14 h daylight. Experiments were established in a randomized complete block design with seven replications and repeated. Data were subjected to analysis of variance and LSD values were calculated at 0.05 level of probability. At 10 wk after emergence, plant heights were 58, 24, 34, 90, 23, 79, 102, 69, 99, 45, and 49 cm; number of nodes/plant were 29, 14, 21, 38, 10, 20, 34, 35, 26, 12, and 22; number of leaves/plant were 30, 7, 25, 36, 18, 16, 34, 40, 26, 8, and 21; and plant dry weights were 15.3, 1.0, 8.2, 9.1, 8.6, 17.8, 14.4, 13.2, 11.4, 9.3, and 7.4 g/plant, for red soda apple, horsenettle, robust horsenettle, silverleaf nightshade, Jamaican soda apple, nipplefruit nightshade, sticky nightshade, buffalobur, wetland nightshade, turkeyberry, and tropical soda apple, respectively. The average number of days to first flower were least for buffalobur (36 days after emergence) and $\geq$ 48 days for perennial prickly nightshades species. Horsenettle, robust horsenettle, Jamaican soda apple, wetland nightshade, and tropical soda apple took the longest time