Geese, Grass, and Trees

Edward A. Hansen and Daniel A. Netzer
USDA Forest Service, North Central Forest Experiment Station, Forestry Sciences Laboratory, Rhinelander, Wis.

Hybrid Populus trees grew only half as tall when weeded by geese as did those in herbicide-treated plots. Although geese may be useful for controlling weeds in some hardwood plantations, soil type may limit their use in some situations. Geese did not eat the leaves of young hybrid Populus, but they did damage 6 percent of the small shoots by stepping on them.

Hardwood plantations are often established on cleared forest land, marginal farmland, or pasture. The latter two usually have fair soil, but unfortunately, often have dense stands of grass. Despite numerous attempts to control grass competition by good site preparation, cultivation, and herbicides, the problem still remains.

For generations, geese have been used by farmers for various weeding chores. Presently they are used to control grass and many weeds in a large variety of crops such as cotton, flowers, strawberries, and mint and among many species of trees and shrubs grown in nurseries. *(1, 2, 3)*.

Six-week-old goslings are the best weeders. Grazing should be started as soon as weeds appear, and water should be placed at the far ends of the rows to encourage geese to work the entire field. A limited amount of growing pellets should be fed in the evening to supplement their diet. Fencing, such as 0.6-meter-high poultry netting, is sufficient to contain the geese.

Geese have several advantages for weed control: (1) They are selective feeders and eat only grasses and weeds; (2) They leave behind well-distributed, nutrient-enriched fertilizer; and (3) No pesticide use approval is required. Consequently, we tried geese for weed control in an intensively cultured hybrid *Populus* plantation is Wisconsin.

Methods

A complete block design with four replications was used. Each replication contained two 6- by 30-meter plots, one fenced and weeded with geese, and the other with the herbicide linuron applied for weed control. The treatments were allocated systematically within each block so as to reduce the effects of the communal nature of the geese.

Site preparation consisted of spraying Roundup herbicide October 29 followed by plowing and disking. On May 21, the area was disked again and then harrowed. Linuron was applied at a rate of 1.6 kilograms active ingredients per hectare to four of the plots. The other four plots were fenced with 0.6-meter-high poultry fence.

The plots were planted on May 25 with 20-centimeter unrooted hardwood cuttings of clone NC-9922. The parentage of this clone is not known, but it appears morphologically identical to NC-5334 (NE-252) *Populus deltoides* var. *angulate P. trichocarpa.* The cuttings were planted at 1- by 1-meter spacing.

Day-old white ender goslings were purchased May 10 and raised on starter mash. On June 10, the geese were placed in the pens to graze. Initially, the geese were separated three to a pen and allowed to graze 3 days per week. Beginning in late July, all 12 geese were placed in each pen 1 day a week. Grazing was halted August 13.

On days the geese grazed in the pens, they were fed 1/8 kilogram of growing pellets per bird in the evening. On other days, they were allowed to forage elsewhere.

Tree height, survival, and damage from grazing were measured in October following the weeding test. All 30 trees in each of the interior four rows on each plot were measured.

Results

Trees in the plots weeded with geese were significantly shorter, averaging less than half the height of the trees in the plots treated with linuron (table 1).

Survival was also less in the goose-weeded plots, averaging 63 percent versus 85 percent in

Table 1—*Height of trees in plots with weed control by geese or herbicide.*

Replication	Height of trees	
	Geese plots	Linuron plots
	---M---	
1	0.50	1.13
2	.49	1.17
3	.48	1.20
4	.47	1.11
Average	.48	1.15

the plots treated with linuron (table 2).

Observations showed that the geese did not eat *Populus* leaves except for occasional, probably inadvertent, pieces while feeding near trees. Less than 2 percent of the trees were chewed on. Six percent of the trees were damaged by geese stepping on them. But only shoots less than 30 centimeters tall were so damaged.

Table 2—*Survival of trees in plots with weed control by geese or herbicide*

Replication	Survival	
	Geese plots	Linuron plots
	--- % ---	
1	50	88
2	65	84
3	72	82
4	64	85
Average	63	85

The geese did a thorough job of controlling grasses and some broad-leaved weeds. However, other broad-leaved weeds (predominantly white cockle and lambsquarters) were not controlled and created a low, but rather dense, groundcover.

We are not certain why the plots with geese had much poorer tree growth and survival. Possibilities are that: (1) The reinvading broad-leaved weeds were worse competitors than the grasses, or (2) The goose traffic produced soil sealing on the silt-loam soils. We believe the latter to be more likely. Areas of high mortality observed in nearby plantations may have been caused by soil sealing inasmuch as they occurred in areas with the highest irrigation and nitrate fertilization rates. Therefore, root aeration and soil sealing may be problems in some instances on these silt-loam soils.

Others have found geese to be very effective as weeders. A study comparing geese with hoeing and an herbicide (dalapon) for controlling weeds in cotton showed that cotton yields were highest with geese and lowest with the herbicide (2). Net returns were 35 percent greater with the geese than with the other methods. Although this did not include the cost of management and care of the geese, it also did not include salable value of the geese at the end of the season.

Geese have also proven successful as weeders in a forest nursery.[1] However, our experience indicates that using geese may not always work, and we speculate that soil type may be a factor.

Use of geese for controlling weeds in hardwood plantations warrants more investigation. Geese may bean alternative weed control method to expensive mechanical cultivation or to the use of increasingly restricted herbicides on some sites.

[1] Dave Dutton, Wind River Nursery, Carson, Wash. Personal communication. 1981.

Literature Cited

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3. Orr, H. L. Duck and goose raising. Pub. 532. Ottawa, ON: Canadian Ministry of Agriculture and Food; [no date]. 55 p.