

Pine Straw Mulch Increases Weeds in Forest Tree Nurseries

South, David. 1976. Pine straw mulch increases weeds in forest tree nurseries. Ala. Agr. Exp. Sta. Highlights Agr. Res. 23(4):15.

More than one-third of the state owned forest nurseries in the Southeast use pine straw as a mulch for seedbeds since it provides excellent protection against moisture loss, bed erosion, and extreme heat. A disadvantage of pine straw mulch is that weed populations may be increased due to introduction of weed seed.

Soil fumigation with methyl bromide is presently a common weed control practice in nurseries. After treatment, soil is relatively sterile and provides an excellent growing medium for any seed: tree or weed. At one nursery in North Carolina, over \$500 an acre was spent for methyl bromide fumigation. Experimental plots were then either mulched with pine straw or left unmulched (see figure). The pine straw introduced many weed seed, resulting in the necessity for handweeding that cost \$520 per acre. The unmulched plots required only \$40 per acre for handweeding. The value of soil fumigation for weed control was lost when the mulch infested with weed seed was used.

The Forest Nursery Weed Control Project, a cooperative of the Auburn University Agricultural Experiment Station, has directed research toward alternative methods of weed control. In 1976, experiments involving fumigated and unfumigated pine straw mulch on fumigated and unfumigated nursery soil were carried out at two Alabama nurseries. Methyl bromide was applied to plastic covered mulch piles at the rate of 1 lb. per 20 cu. ft. After 48 hours the plastic was removed and the mulch piles were allowed to air. Half the experimental plots were fumigated at the rate of 1 lb. of methyl bromide per 100 sq. ft. of soil surface.

At nursery B, fumigating mulch reduced weeding times by 58% (see table). Fumigating soil resulted in only a 28% reduction in weeding time. Therefore it appears that, at this location, the majority of weed seeds were not soil borne, but were introduced in the pine straw mulch. At nursery A, fumigating mulch was as effective in controlling weeds as soil fumigation, but soil fumigation costs approximately \$450 more per acre than mulch fumigation. When soil fumigation was used, weeding times were 38% greater for unfumigated mulched plots than they were on fumigated mulched plots at nursery A and more than 100% greater at nursery B. At these nurseries, mulch fumigation did as well or better than soil fumigation in controlling weeds.

These studies show that pine straw mulch can be a major source of introduced weeds in forest nurseries. Soil fumigation with methyl bromide is a common but expensive method of controlling weeds. The value obtained from soil fumigation can be lost if weed infested mulches are used. To prevent increased weeding, either straw mulches should be fumigated or weed-free mulches should be used.