AN OVERVIEW OF SEEDBED MULCHING

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ABSTRACT: Although burlap and cotton fabric were the mulches of choice during early years of forest nursery operation, they were priced out of the market during the 1940's. Availability and costs have dictated to a large extent which materials are useable mulches in forest nurseries. Pine straw and pine bark as well as sawdust have been favored amoung the numerous ones tested. It needs to be emphasized that seed and young seedlings don't care how much it costs or how much is available; they need a moist environment in which to germinate and become established!

A wide variety of materials have been used for seedbed mulches in forest tree nurseries. A mulch is any material that can be placed on the seedbed at a reasonable cost and provide a moist environment at or near the soil surface within which the seed germinate and the young seedlings become established. Mulches are usually organic but others have been tested. Mulches function to:
(1) keep seed and soil moist, (2) promote prompt germination, (3) prevent movement of seed, (4) stabilize bed surface and bed shoulders, (5) prevent sand splash, (6) lower temperatures at soil surface, (7) add organic matter to soil, (8) protect seedlings from wind and freeze injury during winter, and (9) reduce weed seed germination and reduce weed control costs.

Burlap and cotton fabrics were used extensively during early years of forest tree nursery operations but were priced out of the market during the 1940's.

Amoung the many mulch materials tested, the following list includes the major ones:

pine straw
pine/hardwood bark
grain straw
sawdust (veneer shavings)
burlap/cotton fabric
wood/paper fiber (hydromulch)
pine cones (shredded)

peanut hulls
pecan shells
sand
binding materials (latex, asphalt base)
live stubble cover
plastic sheeting

Hydromulch, pine straw, grain straw, sawdust, and pine bark are the most common in use during the past several years. A few nurseries (two in Virginia) manage to avoid use of any mulch by sowing at a deeper depth and irrigating at intervals needed to prevent surface drying during the critical germination and early establishment period. Almost any nursery could also do this if their soil is not too heavy and their irrigation system is capable of meeting the frequency demand. Most irrigation systems in southeastern nurseries can not meet this demand because of acreage in seedbeds and/or system capacity/time requirements. Live or stubble mulches have also been successfully used and some are currently being tested in southern nurseries. Their use has been primarily for wind erosion control in windy nurseries and for winter protection. The living cover is sown before the crop and either mowed or killed with herbicide just before or soon after seeding.

Some concerns that need be considered in selecting a suitable mulch include the following:

cost
availablility
distance from source to nursery (transport cost)
weed seed free
disease free
non toxic to seedlings
speed and cost of application
cost of removal if needed before lifting
speed and completeness of germination of seed
optimum depth of mulch needed
ease moved by wind and rain
water adsorption and absorption capacity
water pervious after wet/dry cycles (crusts)
interferes with fertilizer/pesticide effectiveness
stabilizes bed surfaces and shoulders
provides organic matter to soil
functions as a good mulch

The four panelists selected to discuss use of individual mulch materials in their nurseries have presented insight and details about mulches that I have omitted.