

PINE STRAW
A CONVERSION BACK TO NATURE'S MULCH

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Abstract -- Weather and soil conditions, along with growth characteristics of sand pine (Pinus clausa), brought about a change from a wood fiber mulching system to a pine straw mulch operation at this Southern nursery located in North Florida.

Due to substantial loss of seedlings under a wood fiber mulch over the past five years, a conversion to pine straw as a mulch was initiated in the face of the high cost and other problems associated with pine straw as a mulch.

INTRODUCTION

Starting in 1984 St. Joe Paper Company changed from a wood fiber hydro mulch system to a pine straw mulch operation. This change was due to weather and soil conditions along with growth characteristics of seedlings being raised at the nursery. A substantial loss of seedlings over the previous five years due to these conditions at the nursery site initiated the change even in the face of the high cost and other problems associated with pine straw.

CAUSE - RESULT

The transition was initiated by the growth characteristics of sand pine (Pinus clausa) being grown at the nursery. When the sand pine was mulched with wood fiber the clay in the soil, which is a loamy sand 10% clay, would combine with the small wood fibers and build up around the base of the small seedlings and choke or smother the seedling, causing reduced growth or mortality.

When pine straw was tried as a mulch the build up of soil around the seedlings was eliminated and increased germination was observed. After the first initial trial all sand pine grown at the nursery was mulched with pine straw. Due to the results on sand pine a comparison trial between straw and wood fiber was run on slash pine (Pinus elliottii var. elliottii) and loblolly pine (Pinus taeda).

Under ideal conditions results were similar between the two mulches, but when the beds were subjected to a heavy rain, 2" or more in less than a hour, the protection provided by the pine straw was substantially greater than the wood fiber. Germination under pine straw as high as 30% greater was observed when compared with companion beds under wood fiber.

Although some straw will float off the beds if flooded by rains, enough will remain to give good protection. A section of four day old seeded beds were completely flooded in the spring of 1983. The section contained beds mulched with both straw and wood fiber. The beds under wood fiber were heavily damaged. Germination later ranged from a low of 9% to a high of 45% of seeds sown on the beds. The beds under pine straw still maintained germination of 65% or greater. As a result of these tests wood fiber as a mulch was replaced by pine straw starting in 1984.

METHOD

Initially, the straw was supplied by a company crew raking and baling the straw. This operation was quickly terminated in favor of purchasing the straw from a commercial supplier due to the high cost of a company crew. The cost of the straw at the present time, has been reduced substantially due to a lease arrangement with a commercial straw dealer collecting on company lands.

Once at the nursery the straw is chopped and fumigated using a closed tarp method with methyl bromide at the rate of 1 pound gas per 25 cubic feet of straw. The tarp is left on the straw a minimum of 48 hours, longer is time permits. The straw is distributed on the beds using a manure spreader modified to spread the straw at the correct rate. A straw depth of 1/2 to 3/4" across the beds is desired. Depending on the density of the bale, a bale of straw will cover 8 to 10 running feet of a 4 foot wide bed.

The disadvantages of pine straw other than cost, are the chance of disease and weed seeds being introduced into the seed beds. At present, fumigation is used to prevent disease and control the weed seeds in the straw. Even with fumigation an increase in weeds is still observed, but the herbicide regimentation being used is able to control the weeds. The major problem during mulching with straw is high winds. Very high winds will stop mulching operation and uncover fresh mulched beds that are not kept wet by irrigation. After several days of irrigation the straw will form a mat, at this point high winds cease to be a problem.

CONCLUSION

At present, with the good results being obtained under pine straw and considering the problems associated with weather and soil at the nursery, it would take a substantial increase in the cost of pine straw for the company to look at an alternate to pine straw as a mulch for the nursery.