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The Effects of Eleven Inches of Rain on the Stuart Forest Nursery

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On the night of May 18, 4.46 inches of rain fell at the Stuart Forest Nursery near Alexandria, La. This was followed by 6.26 inches during the night of May 19, a total of 10.72 inches for the 36-hour period. The approximate duration of each rain was 6 hours. There was no intervening precipitation. High winds, accompanying the rain, blew down numerous trees nearby. The 8-million-gallon reservoir from which the water for the nursery is supplied was filled to capacity.

A reconnaissance on May 19 revealed no conspicuous damage. Slight washing of the beds, sedimentation of the paths, and cutting of the ditches were observed, but few seedlings were lost. A survey the morning of May 20, however, revealed a situation somewhat more serious. Bad erosion of the edges of the beds had occurred, entailing an estimated loss of one million seedlings. Many of these seedlings were completely uprooted, others were prostrate with two thirds of the roots exposed. This occurred in spite of a 4-inch shoulder left unsowed on each side of the beds as a safety factor.

Sedimentation of the paths between beds was common, and reached a point of complete filling in a few places. Ten days' work of one man with a plow was required to reopen these furrows. Besides this, some shovel work was necessary to build up the ends of beds and small eroded spots. It should be noted here that the amount of damage from silting was less important than the character of the damage. The soil at the Stuart Nursery is a very fine sandy loam with a heavy clay subsoil. The portion of the soil carried away was the darker, more friable part, leaving behind the sandier fractions. Besides losing the more desirable part, rebuilding the shoulders with the sandy elements leaves the beds in a weakened condition, subject to subsequent erosion.

The losses at the nursery may be attributed to causes largely beyond control. While the climate of the region is such that heavy rains are expected, two rains of such magnitude within so short a period are unusual. As the reconnaissance of May 19 showed, no material damage was done by the first rain, but the second, following immediately, while the soil was water-logged and soft, wrought havoc.

The period in the growing season at which the rain fell was intermediate in effect. Had this rain occurred later in the season when the seedlings would be hardier and the shoulders more firmly packed by weeding operations, much less damage probably would have resulted. However, had the rains occurred during the germination period, just after the burlap mulch was removed and before the beds were settled, the results might have been catastrophic. As it was, loose seed (mostly not viable) accumulated abundantly in drifts.

The topography of the nursery favors good drainage. Slope varies from 1 to 5 per cent; artificial ditches follow natural drainage features.

The 1935 capacity of the Stuart Nursery is 35 million seedlings. This means a loss of about 3 per cent in the number of seedlings. Assuming a conservative figure of 75 cents per thousand for their present value, \$750 were added to the debit side of the ledger in two day, besides the expense of repairs and the disorganization involved.

The above facts are presented to show that even in a nursery with an adequate drainage system, damaging rains can result in a critical situation. In addition to providing adequate main water outlets, all nursery personnel should be alert to the importance of proper bed preparation. This includes careful attention in making up shoulders, the avoidance of sinks and swells in the beds and water pockets in the paths, and the early checking of incipient gullies. Where there is the danger of recurrence of such rains, especially in the early part of the growing season, the nurseryman would do well to consider the use of wooden curbs for the protection of his beds.