INTERCEPTION OF PRECIPITATION BY THE MIXED-OAK FOREST TYPE IN RHODE ISLAND

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ABSTRACT

In a study of interception of precipitation by mixed-oak forest stands in Rhode Island, it was found that 10.1 per cent of all rainfall received during a leafless period from February 1, 1966 to May 22, 1966 and 12.8 per cent of the rainfall occurring during the subsequent leaf period was intercepted by tree crowns and was evaporated or lost to the atmosphere.

Of the rainfall reaching the ground under the forest stands, throughfall (the rainfall reaching the ground by falling through the tree crowns) amounted to 85.1 per cent of the rainfall received in the open during the leafless period, while stemflow (rainfall reaching the ground by running down tree stems) amounted to 4.8 per cent. In contrast, when leaves were present, lesser amounts reached the ground as throughfall and stemflow. Percentages were 83.3 and 3.9 for throughfall and stemflow, respectively.

It was found that the amount of rainfall reaching the forest floor during the period when trees were in leaf was not influenced by size class of mixed-oak forest, at least within the range of size classes studied which included oak stands averaging 30, 40, and 50 feet in height. The same could be said for the leafless period except that stemflow yields were different under the three different size classes.

Large differences in stemflow were observed between different oaks. Differences were attributed to bark characteristics and branching habits. Smooth barked red oaks which have side branches angled upwards yielded

quantities of stemflow amounting to approximately 3 times the yields from white oaks which have flaky absorbent bark and side branches oriented nearly parallel to the ground.