with other factors of environment of the locality of origin, it shall be the policy of the U. S. Department of Agriculture:

1. To use only seed of known locality of origin and nursery stock grown from such seed.

2. To require from the vendor adequate evidence verifying place and year of origin for all lots of seed or nursery stock purchased, such as bills of lading, receipts for payments to collectors, or other evidence indicating that the seed or stock offered is of the source represented. When purchases are made from farmers or other collectors known to operate only locally, a statement capable of verification will be required as needed for proof of origin.

3. To require an accurate record of the origin of all lots of seed and nursery stock used in forest, shelterbelt, and erosion-control planting, such records to include the following minimum standard requirements to be furnished with each shipment:

(1) Lot number.
(2) Year of seed crop.
(3) Species.
(4) Seed origin:
    State
    County
    Locality
    Range of elevation
(5) Proof of origin.

4. To use local seed from natural stands whenever available unless it has been demonstrated that seed from another specific source produces desirable plants for the locality and uses involved. Local seed means seed from an area subject to similar climatic influences and may usually be considered as that collected within 100 miles of the planting site and differing from it in elevation by less than 1,000 feet.

5. When local seed is not available, to use seed from a region having as nearly as possible the same length of growing season, the same mean temperature of the growing season, the same frequencies of summer droughts, with other similar environment so far as possible, and the same latitude.

6. To continue experimentation with indigenous and exotic species, races, and clones to determine their possible usefulness, and to delimit as early as practicable climatic zones within which seed or planting stock of species and their strains may be safely used for forest, shelterbelt, and erosion control.

7. To urge that states, counties, cities, corporations, other organizations, and individuals producing and planting trees for forest, shelterbelt, and erosion-control purposes, the expense of which is borne wholly or in part by the federal government, adhere to the policy herein outlined.

M. A. McCall,
Chairman, Seed Policy Committee.

Approved:

F. A. Silcox,
Chief, Forest Service.

May 29, 1939.

D. S. Myer,
Acting Chief, Soil Conservation Service.

June 8, 1939.

H. A. Wallace,
Secretary.

June 21, 1939.

Hardware Cloth Seed-Spot Screens Reduce High Surface Soil Temperatures

Screens made of hardware cloth are commonly used to protect seed-spots in forest plantations from the depredations of birds and rodents. It is important to know whether or not the screens influence germination and survival of seedlings in addition to furnishing protection against animals.

At the Stanislaus Branch of the California Forest and Range Experiment Station, near-surface soil temperatures were measured under a 4-mesh, 20-gauge hardware cloth screen made in the form of a cone 10 inches high and 10 inches across the base. The base of the screen was set about one-half inch into the soil during the described observations. (In plantations the screens usually are pressed into the soil about 2 inches.) The location was on a southerly aspect at 5,200 feet altitude, was cleared of vegetation, and was not covered by litter. Two mercurial thermometers, gooseneck type, were placed inside the cone and two more were placed just outside, unshaded by the cone. The bulbs were covered with one-quarter inch of soil.

The 1938 daily averages of the two maximum temperatures inside the cone and outside the cone were treated as a series of paired observations and analyzed by the familiar t test. The following figures summarize the data:

Average maximum temperature outside cone	134.3°F.
Average maximum temperature inside cone	122.1°F.
Mean difference	12.2°F.
Standard error of mean difference	0.326
t	37.4
Degrees of freedom	68

Since the value of t at the one percent level, with 68 degrees of freedom, is approximately 2.65, the differences between the temperatures inside and outside the cone are obviously very significant. Krauch,[1] studying regeneration, has suggested that screen cones not only protect seed-spots from rodents but also produce a favorable shade. It is conceivable that the use of cones also might reduce the mortality of seedlings caused by high surface soil temperatures.

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WATERSHED MANAGEMENT IS MORE THAN PRODUCTION OF WATER

Connaughton's article in the April JOURNAL OF FORESTRY is appropriate and timely. He is right in saying that watershed management is generally only a term in the vocabulary of foresters. However, he has overlooked the fact that in humid sections of our country flood control may be of great importance in watershed management. Perhaps his definition might read: Watershed management is the practice of handling the resources of a drainage basin for the proper control of water.

It is necessary that foresters responsible for land management accept the full measure of their responsibilities for watershed management, but it must be remembered that the cooperation of meteorologists, engineers, and agriculturists is needed in many cases to do a competent job. In upstream engineering foresters, engineers, and agriculturists all have definite parts and all are needed.

At present the great need of watershed management is research. Much work is needed on the interactions between water, vegetation, and soils before the most efficient watershed management practices can be developed. The field of hydrology belongs to no one profession. Water has a thousand contacts with other substances in its course from water vapor in the atmosphere to streams in the bowels of the earth. The efforts of meteorologists, biologists, geologists, soil scientists, engineers, agriculturists, and foresters will be needed before all the fundamental principles are determined. Then it may be still longer before these principles are used in formulating efficient methods of watershed management for all conditions to be effectuated by foresters, agriculturists, and engineers. However, in the meantime foresters should utilize all available data and take an active and aggressive part in watershed management.

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Tennessee Valley Authority.

COMMENTS ON "WHY FOREST PLANTATIONS FAIL"

Acting upon the suggestion that discussions of articles appearing in the JOURNAL OF FORESTRY are welcome, the writer wishes to comment on "Why Forest Plantations Fail," published in the May issue. Because the writer has spent 11 years in Michigan, most of which were devoted to promoting reforestation, he has more than ordinary interest in this article.

The writer seriously questions the sufficiency of the evidence presented in the article to warrant some of the conclusions, particularly those pertaining to the slit method of planting.

In the first place, the author states that the purpose of the study was to learn (1) the effect of root placement and development on mortality, (2) the effects of cover on mortality, and (3) the effects of certain soil factors. Inasmuch as the soil factors were constant, the study really involved only items (1) and (2).

The author states, "The study has shown rather conclusively that young red and jack pine trees which have their root systems predominantly cramped into a single plane suffer a significant decrease both in survival and height growth as compared to those trees which have more uniform root development. This fact seems to be somewhat of an indictment of the slit method of planting. . . . ." It may be inferred from the above quotation that the author refers to trees killed by drought, as he advocates planting trees

[1]Krauch, H. Does screening of seed-spots do more than protect the spots against rodents and birds? Southwestern Forest and Range Exp. Sta. Research Note 49, 1938.