USE AND FUNCTION OF PEAT IN FOREST NURSERIES

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THE beneficial influence of organic matter on soil fertility has been abundantly demonstrated by practical experience and scientific research. Among the manifold functions which organic matter fulfills in the soil, four are of particular importance. It improves the physical properties of the soil, provides nitrogen and other plant food, absorbs mineral salts, and increases the availability of nutrients through its exchange and catalytic effects.

I. IMPORTANCE OF ORGANIC MATTER IN FOREST NURSERY SOILS AND THE PROBLEM OF ITS MAINTENANCE

In no other branch of plant production is a deficiency of organic matter manifested with such sharpness as it is in forest nurseries. Forest trees, especially conifers, develop in their youth on a purely organic layer of forest debris, and thus acquire more or less pronounced saprophytic tendencies. As a rule, forest nurseries are located on sandy soils in order to avoid difficulties with heaving, cultivation, and control of parasites, and most of them have been started either on burned-over areas or on abandoned fields already deficient in organic matter. No crop residues are left in the soil of the nursery because even the root systems of the seedlings are removed. Continuous weeding and cultivation, artificial irrigation, additions of commercial fertilizers, and consequently high biological activity are other conditions promoting a rapid decrease of organic matter in nursery soils. It is evident that under these conditions an adequate supply of organic matter may be maintained only by regular additions to the soil of large quantities of organic materials.

The materials which are usually considered as possible supplements of soil organic matter are manure, commercial organic fertilizers, sawdust, green manuring crops, leaf litter, duff, and peat. However, some of these are very objectionable from the standpoint of nursery practice, and some are acceptable only with certain limitations. Manure of any kind is undesirable because of the danger of diseases. The same is true of commercial organic fertilizers which, in addition, are very expensive. Fresh sawdust exerts a harmful effect upon the seedlings and no safe way has yet been found to counteract its detrimental influence. The green manuring crops, even on a 3-year rotation basis, cannot add to a nursery soil more organic matter than is decomposed during the 3-year period. Thus, the green manuring