

TRANSFER OF PLANT PATHOGENS AND INSECT PESTS IN SEED AND POLLEN

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Contaminated plant parts often serve to transmit disease incitants, their vectors, and other insect pests across state and national boundaries. Many important forest tree diseases and insect pests already have been introduced into the United States on infected or infested plant parts. Tragic examples include chestnut blight, white pine blister rust, the Dutch elm disease, and one of its vectors, the European elm bark beetle. Since many foreign pathogens and insect pests attack forest tree genera which also grow in this country, concern has been expressed over seed and pollen as a medium for their introduction.

Recently forest tree improvement *has* received increasing attention. Certain dangers, however, accompany such programs. Progeny trials use seed from distant sources, Controlled pollinations between native and exotic trees necessitate the shipment of pollen over great distances. Modern transportation methods not only insure seed and pollen viability, but, unfortunately, at the same time, protect accompanying contaminants,

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At present we know of few pathogens or insect pests of forest trees which are seed- or pollen-borne. However, it is reported that bacteriosis of walnut, leaf blotch of horse chestnut, chestnut blight, and an elm mosaic can be transmitted by the nuts or seeds. A leaf blight of cedar may have been introduced into the British Isles through seed from America. Many other illustrations can be cited which involve field and vegetable crops. Bacterial canker of tomato, bean anthracnose, oat smut, and common mosaic, a virus disease of bean, are a few examples of other seed-borne diseases.

The movement of seed from many plants is regulated by various state and federal quarantines. In some states, including Wisconsin, all seeds are covered in the definition of nursery stock and come under plant quarantine regulations which require inspection. In other states only certain seeds are included. Federal regulations prohibit the entry of many foreign forest trees or permit their entry under postentry quarantine. By and large, forest tree seed can be imported by permit. A notable exception is the seed from elm and all other plants of the family Ulmaceae from European sources which are prohibited entry into the United States. This quarantine was adopted in relation to the Dutch elm disease.

So far, pollen has not come under quarantine acts. At present it is impossible to estimate the risk involved in shipping pollen. It would appear, however, that the inclusion of floral or other plant parts would constitute a hazard. At the University of Wisconsin we have observed the larvae of unidentified insects in unscreened poplar pollen which had been stored for several weeks.

In lieu of definite quarantine regulations, the responsibility for introducing plant pathogens and insect pests in seed and pollen must rest with both the shipper and the receiver. Seeds and pollen should be thoroughly examined and all extraneous matter removed. Any material which is questionable should be destroyed. We in forest tree improvement should be constantly alert to the possibility of introducing new pathogens and insect pests.