PARAMETERS INFLUENCING EFFICACY FOR QUARANTINE USE

Ken Vick
U.S. Department of Agriculture
Agriculture Research Service
National Program Staff
Beltsville, Maryland

Most commodities move in trade unincumbered by quarantine restrictions. However, there are many situations where movement of a commodity is prohibited or restricted because of a risk to the receiving state or country of introduction of a new pest with the commodity in question. Often an inspection of the commodity is sufficient to assure that the commodity does not contain pests of quarantine significance. Inspection is not practical in some cases--the pest lives inside the fruit or is too small to be easily seen, for example. In this case the only way to assure the receiving country that the commodity is safe to import is to apply some type of treatment which is known to kill the pest. The criterion for judging efficacy of a quarantine treatment has been mortality of the pest. For many years, the U.S. has accepted that probit 9 mortality (99.9968% kill) is sufficient to provide quarantine security for arthropod pests. Irradiation presents a problem for judging efficacy since radiation doses sufficient to provide immediate kill of pests are impractical for commodity treatments. The appropriateness of non-emergence of the adult stage of the pest or sterility of the pest as quarantine commodity treatment end-points will be discussed.