

TECHNOLOGY TRANSFER ISSUES FOR IRRADIATION QUARANTINE TREATMENTS

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Irradiation has been used as a quarantine treatment for over 3 and ½ years for several Hawaiian fruits shipped to the mainland USA. This project has shown that irradiation can be used as a quarantine treatment and has illuminated technology transfer issues and provided solutions to problems that have arisen. The quantities of fruits that have been shipped have been small: a total of about 300,000 pounds, and the price has been high: about US\$0.25/lb. But the number of irradiators involved, retail outlets buying irradiated fruits, species of fruits shipped, species of insects treated, and quantities of fruit shipped per month have all steadily risen, demonstrating the long standing viability of irradiation as a quarantine treatment and a replacement for methyl bromide fumigation in many cases. Nevertheless, there are a number of technology transfer issues that need to be resolved as irradiation becomes more widely applied. Many entities involved in irradiation have offered solutions to these problems, but others are vexing:

1. Consumer confidence, although gaining, continues to be a source of controversy.
2. The “wiggler” issue, or the fact that irradiation in the doses acceptable for quarantine treatment does not immediately kill insects has been surmounted in the Hawaiian project, but continues to worry phytosanitary regulators worldwide.
3. Ability to confidently, economically, and consistently identify irradiated produce or pests would assuage the wiggler problem, but has proven very difficult.
4. The economics of irradiation does not seem very attractive.
5. The logistics of irradiating large quantities of fruit is daunting.
6. Where to put irradiation facilities is a key issue to its success.
7. There is a need for treatment doses for many pests.
8. Dose uniformity, which is less favorable for irradiation than any other quarantine treatment, haunts attempts to make irradiation more economical and faster.
9. Commodity tolerance has been surprisingly less of a problem than predicted based on the Hawaiian experience. Nevertheless, it may prove difficult for those pests requiring an absorbed minimum dose of ≥ 0.3 kGy.

[Proc. 1998 Ann. Internat. Res. Conf. on Methyl Bromide Alternatives and Emissions Reductions, Orlando, FL, USA, Dec. 7-9]