drastic reductions in the fruit fly population in test areas. In experiments in Nicaragua the release of sterile flies in infested areas showed a 90.5% drop in infestation, and in areas of Spain where fly ravages have prevented profitable apricot and peach harvests the use of the sterile fruit fly has shown that commercial crop prospects can be reversed.

The sterile-male technique, supported by both the United Nations and the International Atomic Energy Agency, is also being used in efforts against the tsetse fly, olive fly, pine moth, rice stem borer, cherry fruit fly, and others. Preliminary work has been done by the AEC and Louisiana State University in using this technique to eliminate the sweet potato weevil.

Methods of rearing and sterilizing quantities of tsetse flies in captivity have not yet been perfected, but the IAEA laboratory near Vienna is making progress in this direction. The tsetse, which carries the dread sleeping sickness that infects both animals and humans, has made normal livestock production impossible in some areas of Africa. However, researchers are confident that if millions of vigorous radiation-sterilized flies could be released weekly over a long period of time, the fly population could be halved annually, and present cattle herds could be increased and crossed with dairy and beef breeds to increase the per capita protein diet of Africa.

Another area of pest control where isotopes have been helpful is in the use of herbicides to kill weeds. Organic chemicals have been developed which, when taken up through the soil by germinating seedlings, practice selective toxicity by killing off all but the desired plant.

Like the insecticides, the herbicides cause concern regarding environmental effects caused by residue. What happens when these chemicals are used in our food crops? Is there a chance of a buildup and concentration of the chemical in food chains which could be harmful to humans or wildlife? Tagging or labeling the pesticide or herbicide with a radioisotope helps researchers answer these questions by following the pattern of plant take-up, metabolism, and localization. Tagging also helps collect information on weather effects, soil moisture conditions, and the rate of disappearance of the chemical in the soil. Radiotracers enable the researcher to follow the insecticide throughout the environment. Since labeled insecticides have been available, much progress has been made in designing effective but less hazardous insecticides.