(*Sonchus oleraceus*) infestations occurred following the eradication of artichoke thistle and the bare soil left after removing dense boxthorn provides ideal conditions for the introduction of other weed species. In an effort to break this vicious cycle, native grasses (*Danthonia* and *Agrostis* species) are harvested from the nearby Tullamarine Airport while the seedheads are intact. The grass is spread as soon as possible following weed eradication to provide both a seed source and a mulch. Native tree and shrub seedlings raised from local seed are planted in the appropriate vegetation zone. The control of rabbits is essential to reduce grazing pressure on native plants.

The results of the revegetation and weed eradication programs are being recorded by systematically photographing the vegetation on 30 sample plots, each of 4 square metres. These photographs enable changes of the density and distribution of plant species to be monitored.

The survival rate of the planted native species is 20%. The reason for this low figure is not known but it may be related to herbicide residues in the soil. Soil nutrient levels and the use of artificial watering are also under investigation.

INTEGRATED CONTROL OF ELODEA

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Elodea canadensis, a native plant of North America and previously showing explosive colonization in N.W. Europe, is now widespread in the irrigation systems of southern New South Wales and northern Victoria. About 1500 km of channels in these districts require maintenance with herbicides. New infestations of *Elodea* appeared in the Coleambally and Murrumbidgee Irrigation Areas in 1973 and severe effects on the efficiency of water supply and drainage are anticipated.

Water Commissions achieve weed control in major channels with

herbicides which are unsafe or uneconomical for use by growers, who are responsible for maintaining their own farm channels. Control methods are required which are safe, economical and applicable on the farm scale.

Management methods might be devised by observing the response of the weed to herbicides applied at critical stages in the growth cycle. Changes in physical variables, exposure to frost or high temperatures, drying of sediment, turbidity of the water and physical disturbance may all play a part in controlling the growth of this plant, either independently or when it has been reduced to its most vulnerable state.

In preliminary trials the effect of channel draining at different temperatures has been simulated using controlled environment facilities. The viability of *Elodea* measured by the absorption of a vital dye (triphenyl tetrazolium chloride) and by subsequent regrowth suggests that worthwhile control may be achieved at high summer temperatures or during winter frosts. Perhaps these management techniques and/or judicious sprays with desiccant herbicides may partially replace the application of foliage sprays (e.g., xylene or anhydrous ammonia) and improve the efficiency of soil residual treatments (e.g. simazine or dichlobenil).

Dichlobenil appears to be a promising herbicide for long-term control, but the residual effects and hazards to local crops have been questioned.

Field trials have been made on two unlined irrigation channels to measure the extent of water contamination due to residues of dichlobenil which had been applied to empty channels the previous winter. About 4 months after application, with the aim of removing surplus residues, the first discharge of irrigation water was passed through the channels and wasted into drains. The maximum concentration in the water was 0.18 ppm and was judged to present no hazard to crops, even if the water had been used directly for irrigation. A major factor contributing to the safety of the procedure was the rapid dissipation of dichlobenil from the soil.

While hazards to irrigated crops are not anticipated it is suggested that the flushing procedure should be continued as a safety measure. However, prolonged channel flushing was extremely inefficient in removing surplus residues, the total losses in the first few hours of discharge being less than 0.1 per cent of the initial application. An alternative procedure in which the static water in the channel is displaced and followed by a period of ponding is suggested as a means of avoiding deleterious residues in irrigation water.

The rates of dichlobenil used in these trials were uneconomical