

that the best results flow from concentrated research on one or two species at a time rather than a 'recipe book' approach to a large number of species. The uncomfortable fact is that there are infinitely more troublesome species than there are workers to study them.

Extension could be improved but most extension workers are reasonably up to date with research findings and are doing the best they can. There is still some tendency towards writing prescriptions to deal with symptoms rather than training the landholder to think about the causes for his weed problems but much of this is due to lack of basic knowledge of the ecological factors involved.

Some rethinking of attitudes towards enforcement of weed control legislation is needed and there are welcome signs that such rethinking is gathering momentum. It has been recognized that plants may be noxious in some situations and either innocuous or even beneficial in others and the present practice of placing a legal obligation on landholders and public bodies simply to destroy declared noxious plants is recognized to be ecologically unsound in many cases.

A considerable amount of study has been directed toward the practicability of framing legislative and administrative procedures which will make it possible to enforce control where pressure is really needed and to withhold pressure when such action would be either ineffective or ecologically unwise. Any ideas as to how such legislation can be framed and administered would be very welcome at this Conference.

#### WEEDS OF AGRICULTURAL CROPS IN QUEENSLAND

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#### THE SIGNIFICANCE OF WEEDS IN AGRICULTURAL CROPS

Many exotic weeds grow in Queensland, and most troublesome species are introduced. Few native plants are serious weeds in crops.

The most varied populations occur in early settled districts. There may be few recognised weeds in recently developed areas such as the Central Highlands.

Most weeds are easily controlled by tillage or inexpensive herbicides. Comparatively few cause serious loss, or require costly control methods.

In terms of occupied area and resistance to control the most important weeds are wild oats, *Avena* spp., affecting one million acres of winter cereals, mostly on the Darling Downs. Other important weeds of this area are climbing buckwheat, *Polygonum convolvulus*, infesting 400,000 acres of winter cereals and bindweed, *Convolvulus arvensis*, established in 150,000 acres of cultivation.

The major annual weed of winter cereals in Central Queensland is Mexican poppy, *Argemone ochroleuca*, occupying about 100,000 acres. Black pigweed, *Trianthema portulacastrum* is a common annual weed of summer crops in the same area.

Native perennials are troublesome weeds of cultivation in Central Queensland. Two examples are *Polymeria longifolia*, locally known as 'Peak Downs curse' and raspweed, *Haloragis heterophylla*.

Nutgrass, *Cyperus* spp. occurs in all agricultural areas, affecting mainly cotton and tobacco. Although the area is small and the total loss not serious nutgrass causes landholders great concern.

Russian knapweed, *Centaurea repens* and hoary cress, *Cardaria draba* are firmly established, in small areas of the Darling Downs. Skeleton weed, *Chondrilla juncea* persists on a few properties in south east Queensland, but appears to spread little. Johnson grass, *Sorghum halepense* is common in old cultivation.

#### PRESENT PRACTICES OF WEED CONTROL

Agricultural crop production generally involves no weed control action other than routine tillage. In most areas rainfall is rarely excessive and crops are commonly grown with little trouble from weeds. It is however always possible for rain at a critical time to produce heavy weed growth.

The only residual herbicides used on a large scale are trifluralin (cotton and peanuts), benefin (tobacco) and triallate (winter cereals). The 50,000 acres of wheat treated with triallate is a surprisingly small proportion of the area infested with wild oats.

The major herbicide for emerged broad leaved weeds in grain crops is 2,4-D, half a million acres, or 20% of the total area being treated annually.

40,000 acres are sprayed with picloram as 'Tordon 50-D', mostly to control *Polygonum* spp. in wheat or *Datura* spp. in maize and sorghum.

THE EFFECTIVENESS OF RESEARCH, EXTENSION AND LEGISLATION  
IN ACTUALLY CONTROLLING WEEDS

Research and extension have together resulted in excellent weed control in high value crops, but the standard is lower in grain crops. Research is required to develop economical procedures for controlling 'difficult' weeds, but there could be a great improvement with wider acceptance of existing recommendations.

As few of the undesirable weeds of agriculture are officially 'noxious' legislation can contribute little to the control of established weed populations.

Seed regulations are intended to prevent the spread of weeds by crop seed but there are obvious difficulties in ensuring complete purity and landholders must be constantly alert to prevent the introduction of new weeds into clean areas.

Extension has an important function in improving the standard of weed control and preventing the spread of harmful species.

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