# WEED CONTROL IN THE TERRITORY OF PAPUA AND NEW GUINEA

## STATEMENT PREPARED BY THE DEPARTMENT OF TERRITORIES CANBERRA

Weed control in the Territory at the present time is confined mainly to cultural methods. While tentative recommendations are made for the use of hormone herbicides which should be effective in the control of many species, little experimental work has been done to confirm their effectiveness, owing to staff shortages.

The following methods of control are usually recommended.

(a) In plantation crops. (Rubber, Coconuts, Cacao and Coffee).
During the early stages of establishment weeds are controlled mainly by slashing which is usually performed by native labourers with sarifs (sharpened, heavy gauge hoop iron). The use of leguminous cover crops such as Pueraria phaseoloides, Centrosema pubescens, Calapogonium muconoides, Dolichos hosei etc., is recommended and is most effective provided that the covers themselves are not allowed to become too rampant. With rubber, coffee and cacao the shade of the trees themselves inhibits most weed growth when the canopy closes, the temporary shades (Crotalaria spp., Tephrosia candida etc.) and permanent shade (Leucaena glauca) used with coffee and cacao, having a similar effect. Coconuts do not shade the soil heavily and the permanent maintenance of a creeping cover is desirable. In areas where the shade tree Laucaena glauca has been inefficiently thinned in cacao and suckering has caused trouble hormone herbicides have been tried as an alternative to grubbing, but caution is necessary because the associated economic crop is also susceptible to these herbicides.

There is a wide variety of vines and secondary bush trees which cause trouble in plantations and especially when there has been a period of neglect as during the last war. These are usually checked by cutting out and slashing.

(b) In annual crops (Rice, Kenaf, Peanuts, vegetable crops etc.) Some of the more serious weeds and the recommended methods of control are :-

Imperata cylindrica - Kunai or Blady Grass. Controlled by deep ploughing, especially in dry weather.

Impomaea spp. Controlled by ploughing or the use of herbicides.

Cyperus rotundus - Nut Grass. This weed is spreading in the Territory and there is no effective means of control.

(Mimosa invisa - Giant sensitive plant.
(M. pudica - Sensitive plant.

Spraying with 2,4,5-T kills the top growth but there is rapid regeneration from seed and frequent sprayings are not economic. In the case of M. invisa fair control is given by rolling up the mat of herbage before seeding and burning it.

Eleusine indica - Crowsfoot Grass, Crabgrass. Particularly troublesome in rice growing areas. Controlled mainly by cultural methods.

(c) Miscellaneous weeds.

Paederia foetida has proved troublesome in the town area of Rabaul, New Britain. The use of hormone sprays has proved effective but failure to follow up the initial kill has resulted in the plant again coming into prominence.

Erectites quadridentata - Cotton weed, is thought to be the cause of stock losses in parts of the Territory and hand pulling has been the only control in many areas owing to the difficult nature of the terrain and the isolation of patches of the plant.

The use of vigorous sown pastures as a method of weed control is also being studied and is especially promising in pasture land covered with coarse grasses such as Kunai (Imperata cylindrica) Giant Kangaroo Grass (Themeda gigantea) and Sensitive plants (Mimosa spp.)

(d) Biological control.

The parasite Agromyza lantanae was introduced during the war years in an effort to control Lantana camara, but the staff position has not permitted any further investigation along these lines more recently.

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The Papua and New Guinea Administration has suggested that the following subjects with brief comments may be of interest to Conference delegates in informal discussions should time and circumstances permit:

(a) The use of cover crops and shading for weed control, which is very important in the Territory.

(b) The toxic properties of certain weed species. This includes several valuable members of the order Leguminosae. These are specially useful in fodders and in crop production, but may be detrimental in pastures where they may have toxic properties, e.g. Indigofera endecaphylla, which is a most useful cover crop in Coffee and Cocoa and yet causes "Walkabout" disease in stock. The seeds of Leucaena glauca, which is our main permanent shade crop, can cause loss of hair in horses, probably due to concentration of selenium.

Some of the Crotalaria and Desmodium species are also either suspect or proved poisons under certain conditions where they contain rotenone or cyanogenetic glucosides. The whole question of poisonous weeds generally, should be worth consideration at the conference.

(c) The residual effects of weedicides in causing poisoning of stock, which has occurred here recently, and on which data is required, particularly in relation to length of time such poisoning may occur after application of poisonous weedicides such as arsenic. This is especially important in grazing areas.

(d) A complete change of the whole flora has occurred in many properties here with continuous grazing of cattle by spread of seeds resistent to digestive juices, from such weeds as paddy's lucerne (Sida rhombifolia) and ragweed (Sida cordifolia). The fibrous nature of many such weeds makes them almost totally resistant to grazing and in addition some of the fibrous weeds are poisonous or may cause stock death because of impaction.

(e) The resistance of latex producing plants, due to their extreme powers of regeneration and also because many of them, particularly of the orders Apocynaceae and Asclepiadaceae are poisonous and are difficult to kill both mechanically and by selective weedicides.

(f) Many pests and diseases of weeds are transmissible to related crop plants. This particularly applies to such weeds as Red Rice in Ordinary Rice, Cordonia species, order Theaceae, in fields of Tea or Coffee, acting as hosts for pests such as Helapeltis species, also weeds of the order Solanaceae which carry and spread serious root rot diseases such as the fungus Rhizoctonia species, on to cultivated plants.

(g) There is the problem of many plants which are cultivated for fibres and drug plants and other purposes, which may spread and become serious weeds of cultivation.

It may be of interest to the Conference to know that the Papua and New Guinea Administration administers a Quarantine Ordinance, a section of which deals specifically with weed introduction and control, with special reference to plants not already present in the Territory and which could be introduced and plants indigenous to the Territory which are liable to introduction into Australia.

It would be appreciated if copies of papers on the following subjects which are to be presented to the Conference could be forwarded to this Department for transmission to Papua and NewGuinea :

(a) Nut Grass (Cyperus rotundus)
(b) Soursob (Oxalis cernua)
(c) False Caper (Euphorbia terracina)
(d) Lantana (Lantana camara)
(e) Control of Woody plants
(f) Selective control of annual and biennial weeds
(g) Weed spraying by aircraft
(h) Biological control of weeds
(i) Methods of applying chemicals - including machinery used
(j) Mechanical control of weeds
(k) Organisation of weed research and extension in Australia.