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WEED CONTROL

by

Michel Lambert
Tropical Agriculturist

The Third Asian Pacific Weed Science Society Conference was held at Kuala Lumpur (Malaysia) from the 7th to the 12th June 1971.

Over 200 participants from seventeen nations or territories attended, and during one week they heard contributions on and reports of research in crop weeding and the use of herbicides and scrub clearance products. The following were represented: Australia, Hong Kong, India, Indonesia, Japan, Malaysia, New Guinea, New Zealand, Pakistan, the Philippines, Singapore, Switzerland, Taiwan, Thailand, United Kingdom, the U.S.A. and Vietnam. The South Pacific Commission was represented by Michel Lambert, Tropical Agriculturist, and Edwin I. Hugh, Animal Production Agriculturist.

Many documents were presented by delegations. Delegations first gave an up-to-date report of research carried out in their countries; purely technical subjects were then studied, including:

a) Weeding of rice:
   - dry crop
   - irrigated crop.

b) Weeding of industrial plantations:
   - rubber
   - oil palms
   - coffee, tea
   - sugar cane
   - cotton.

c) Weeding of subsistence crops:
   - maize
   - taro
   - ground-nut
   - market gardening.

d) Presentation and use of new herbicides.

The proceedings of these discussions will be published about the end of 1971.

At the last working session, members of the Asian Pacific Weed Science Society elected the new Board members:

- Chairman: Mr L.J. Matthews (New Zealand)
- Vice-Chairman: Dr Kenji Noda (Japan)
- Secretary: Mr K.A. Watson (Australia)
- Treasurer: Mr R.C. Billman (Hong Kong).

It was decided that the Fourth Conference would be held at Rotorua, New Zealand, during the second week of March 1973.

Regional coordinators were elected to prepare and issue working documents:

- Dr Noda and Dr Matsunaka: Japan
- Mr M. Lambert: South Pacific
- Dr Plucknett: Hawaii
- Mr L.J. Latthews: New Zealand
- Mr K.A. Watson: Australia
- Dr D.E. Barnes and Mr A.H. Cates: Malaysia, Indonesia, Thailand
- Mr R.C. Billman: India, Pakistan, Ceylan, Vietnam
- Mr L.J. Matthews: Europe, Africa.

The Chairman of the outgoing Board, Dr C. Van der Schans, and Mr M.H. Lambert, were elected to represent the Society with the International Weed Science Society.

Since the next Asian Pacific Weed Science Society Conference in 1973 is to be held in New Zealand, it should enable South Pacific territories to be more fully represented, and that at least there will be as many delegates as at Honolulu in 1967.

A circular letter will soon be sent to heads of agricultural departments and cultural research bodies working in the Pacific. This will give early information regarding the Conference and guidance for the preparation of any working documents to be presented.

The South Pacific Commission Tropical Agriculturist is at the disposal of agriculturists and agricultural technicians for any further information.

We have pleasure in circulating herewith a report on chemical weeding which has been forwarded by the Territory of New Caledonia and Dependencies.

All English-speaking territories now have in their possession the "Directory of Agricultural Research and Agricultural Experimentation in the South Pacific". The French version will be published very soon.

Those in charge of agricultural experiments and research work are requested to forward results obtained which could be of economic and technical value at regional or sub-regional level. These will be circulated through information circulars.

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1. CHEMICAL WEEDING OF A POTATO CROP

Place: Agricultural Experimentation Centre,
Bourail-Nessadiou (New Caledonia).

Agricultural year: 1970.

Purpose of the experiment: The profitability of potato crops in New Caledonia depends on extensive mechanization. Soil preparation, planting, maintenance and harvesting are all mechanized; however, maintenance work and especially hoeing is sometimes neglected by the farmers. Pre-emergence weed spraying has been adopted by those who possess high pressure spraying gear.

Experimental procedure: Fisher blocks with 4 random repeats. The elementary plots have a surface of 57 m^2, with four 20 m rows 0.71 metre apart. Border rows separate the plots.

Herbicide used: Herbicides are used before emergence, at the rate of 700 litres/hectare of solution. The solution is applied the day following planting and contains the following products:

a) Dinoseb or D.N.B.P. 2 (1-methyl-n-propyl)-4-6 dinitro-phenol
b) Linuron (N-dichloro - 3.4 phenyl - N-methoxy - N-methyl urea)
c) Monolinuron (N-chloro - 4 phenyl - N-methoxy - N-methyl urea)
d) Triazine (gesapax)
e) Atrazine (gesaprim).

Results: They are shown in the following table.

Treatments	Dose of A.I./ha in grams	Block I	Block II	Block III	Block IV	Total per variety	Average per variety	Yield/ hectare	Classification
Dinoseb	1,600	59.4	50.0	51.2	50.0	210.6	52.65	18,473	1
Triazine	2,000	46.9	52.5	46.6	44.5	190.5	47.62	16,710	2
Linuron	1,200	33.8	45.5	46.1	53.1	178.5	44.62	15,657	3
Monolinuron	1,000	34.0	33.2	49.4	49.9	166.5	41.62	14,605	4
Control	-	35.5	38.7	43.6	42.8	160.6	40,15	14,087	5
Atrazine	2,000	12.5	12.5	20.2	9.1	54.3	13.57	4,763	6
Total		222.1	232.4	257.1	249.4	961.0			

Comments: Dinoseb gave the best results.

However, substitute ureas, linuron and monolinuron, are worth considering and would probably have given a better result if they had been applied some ten days after planting.

The use of herbicides in potato crops does not entirely do away with cultivation practices, especially earthing up, which prevents the tubers from turning green and facilitates mechanical harvest.

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2. CHEMICAL WEEDING OF CARROTS

Place: Agricultural Experimentation Centre,
Bourail-Nessadiou (New Caledonia).

Agricultural year: 1970.

Purpose of the experiment: To compare chemical weeding with hand weeding.

Herbicides used: Two pre-emergence trade brands were experimented with. They are based on linuron:

a) Quinozine 67
b) Afalon.

Spreading is done by spraying after sowing at the rate of 750 g of active matter to the hectare.

Results: The effect was spectacular; only a few grasses such as Eleusine indica and Sorghum halapense resisted.

The cost is of the order of 2,500 francs CFP per hectare; to this must be added the cost of spraying, estimated at 1,200 francs. This is far cheaper than hand weeding.

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3. CHEMICAL WEEDING OF MAIZE

Place: Agricultural Experimentation Centre,
Bourail-Nessadiou (New Caledonia).

Agricultural year: 1970.

Purpose of the experiment: The traditional cultivation of maize requires some 300 working hours per hectare, from sowing to harvesting. With mechanized cultivation, where work is not as hard and often better carried out, only about 25 hours are required.

For an average yield of 4,500 kg/hectare, work time is as follows:

Type of work	Hand cultivation Man hours	Mechanized cultivation Working hours	
		Tractor driver	Labour
Sowing	25	2	1
Maintenance			
1 Hoeing	80	1½	
1 Earthing up	96	1½	
Chemical treatment	-	1	
Harvest	80	9	9
Leaf cutting	65	-	-
	346	15	+ 10 = 25

The maintenance of the crop requires 176 hours with hand cultivation and 3 hours with mechanized cultivation. Furthermore weeds greatly affect yields; they must therefore be controlled from the very beginning of cultivation.

Experimental procedure: The test involves six treatments which are compared with a control plot. Sowing was done on the 20th May 1970 with the variety DS 606 A and with a density of 44,000 seedlings/hectare. Plots were separated by four rows of maize to avoid border effect. The maize was harvested on 19th October, i.e. 152 days after sowing. In that period the recorded rainfall was 340.2 mm. There were 45 days of rain. During the whole of this vegetation period no work was done on the soil.

Herbicides used:

- Dinoseb (D.N.B.P.)
- Triazine (gesapax)
- Linuron (afalon)
- Monolinuron (aresin)
- Atrasine (gesaprim)
- 2,4-D.

Results: They are shown in the following table.

Treatments	Dose of active matter per hectare	% as compared with the best treatment	Classification	Yield/ hectare
Atrazine	2.5 kg	100	1	5,680
Linuron	1.5 kg	77.2	2	4,385
Monolinuron	1.5 kg	76.8	3	4,365
Dinoseb	1.5 kg	74.8	4	4,250
2,4-D acid	0.8 kg	63.9	5	3,635
Triazine	2.0 kg	60.7	6	3,450
Control	-	53.9	7	3,065

Comments: Atrazine treatment gave the best results. No anomaly was noted with the 2,4-D treatment, but the low grading of triazine (gesapax) is somewhat astonishing; it could be due to the poor quality of the sample which was sent under very bad conditions.

The better performance of atrazine is due to the efficiency of this herbicide against weed grass and many dicotyledons.

During this trial the weeds were mostly grass (more than 80%), "Eleusine indica" or goosegrass, which explains inter alia the results obtained.

The increase in yields (over 2,500 kg/hectare) more than justifies the cost of the products which is less than 4,800 francs per hectare in the case of linuron, the most expensive herbicide. Atrazine only costs 3,600 francs per hectare. The cost of spraying is of the order of 1,200 fr/hectare, depreciation of equipment and labour included.

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The following references are available:

1. Proceedings of the First Asian Pacific Weed Control Interchange (June 1967 - University of Hawaii, Honolulu and the island of Kauai).
   Price: US$ 5.00 (?).

   Apply to: Dr Donald L. Plucknett, College of Tropical Agriculture, P.O. Box 154, Kauai Branch Station, Kapaa. Hawaii. 96746. U.S.A.

2. Proceedings of the Second Asian Pacific Weed Interchange.
   Price: US$ 3.00.
   Post: US$ 0.50.

   Apply to: Weed Science Society of the Philippines, c/o Miss S.N. Sierra, Department of Agric. Botany, College of Agriculture, U.P. College, Laguna E. 109 Philippines.

3. Some common weeds of the Philippines, by Pancho, S.V., M.R. Vega and D.L. Plucknett.
   Price: US$ 2.00.

   Apply to: Address above.

4. Proceedings of the First Indonesian Weed Science Conference (Bogor - January 29.31, 1971).
   Price: US$ 3.50.

   Apply to: Weed Science Society of Indonesia, Djl. Ir H. Djuanda 11, P.O. Box 17, Bogor, Indonesia.

5. Sixty weeds of Malaysian Plantations, by D.E. Barnes, M.M. Chandapillai, Kuala Lumpur, June 1971.
Price: US$ 3.50.

Apply to: Dr David E. Barnes,
8 Lorong Aru Pertama, 4th Mile off Jalan Ampang,
Kuala Lumpur. Malaysia.

6. Handbook of Hawaiian Weeds, by E.L. Haselwood and G.G. Motter. (Reprint).

ISSUED IN THIS SERIES

		Classification
1.	Annual Conference of O.I.E. held in Paris 13th - 18th May, 1968. Report of S.P.C. Observer. September 1968.	Livestock Production and Health
2.	South Pacific Commission Publications' Series. October 1968.	Publications
3.	Free Diving Without Breathing Apparatus - Its Accidents. March 1969.	Public Health
4.	"A" Level: Australia's Notification on Bovine Pleuropneumonia Regulations. March 1969.	Plant and Animal Quarantine
5.	Study Tour to Noumea, Brisbane, Territory of Papua and New Guinea and British Solomon Islands Protectorate. March 1969.	Tropical Crops
6.	"A" Level: Agricultural Education - Bulletin Nº 1. April 1969.	Agricultural Education
7.	Introduction and Spread of Culicoides and Other Insect Species by Aircraft. May 1969.	Public Health
8.	Diarrhoeal Diseases in Adults. May 1969.	Public Health
9.	"A" Level: Agricultural Education - Bulletin Nº 2. May 1969.	Agricultural Education and Extension
10.	"A" Level: Agricultural Education - Bulletin Nº 3. November 1969.	Agricultural Education and Extension
11.	Agricultural Extension Workshop - Western Samoa. November 1969.	Agricultural Education and Extension
12.	Asian-Pacific Weed Science Society. December 1969.	Tropical Crops