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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-fifth Meeting
Montreal, 29-31 July 1998

PROJECT PROPOSAL: BOTSWANA

This document includes the comments of the Fund Secretariat on the following project proposal:

Fumigant

- Demonstration project - three alternatives to the use of methyl bromide: non-soil cultivation techniques, bio-fumigation with solarization, and application of various mixtures of other chemicals in low doses in tomatoes and cucurbits

UNIDO

PROJECT EVALUATION SHEET **BOTSWANA**

SECTOR: FUMIGANT ODS use in sector (1997): 0.6 ODP tonnes

Sub-sector cost-effectiveness thresholds: N/A

Project Title:

Demonstration project - three alternatives to the use of methyl bromide: non-soil cultivation techniques, bio-fumigation with solarization, and application of various mixtures of other chemicals in low doses (horticultural tomatoes and cucurbits)

Project Data	Methyl Bromide
	Ministry of Agriculture, Department of Crops Production & Forestry
ODS phase-out (ODP tonnes)	-
Proposed project duration (months)	24
Total incremental costs (US \$)	209,000
- including contingency (%)	10
Total project cost (US \$)	209,000
Local ownership (%)	100
Export component (%)	-
Amount requested (US \$) {Original}	209,000
{Revised}	
Cost effectiveness (US \$/kg)	-
National Coordinating Agency	Ozone Unit, Department Meteorological Services, Ministry of Works, Transport and Communication
Implementing Agency	UNIDO
Technical review completed?	n/a

<i>Secretariat's Recommendations:</i>	
Amount recommended (US \$)	Pending decision of the Executive Committee
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing Agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

PROJECT DESCRIPTION

Demonstration project - three alternatives to the use of methyl bromide: non-soil cultivation techniques, bio-fumigation with solarization, and application of various mixtures of other chemicals in low doses (horticultural tomatoes and cucurbits)

1. The project is to demonstrate the technical and economic feasibility of three alternative methods to the use of methyl bromide in horticulture (tomatoes and cucurbits). These techniques include pasteurization, non-soil cultivation, bio-fumigation with solarization, and application of low doses of other pesticides and use of resistant varieties, all in combination with an Integrated Pest Management (IPM) programme.
2. Botswana falls into the category of countries that use little methyl bromide, with a consumption estimated at less than 0.6 tonnes in 1997, mainly for pre-planting soil fumigation (95% of total consumption) against soil-borne pests, nematodes, and weed control, often for high value cash crops such as tomatoes and cut flowers.
3. Integrated Pest Management (IPM) programme for crop protection utilizes a combination of cultural practices, including crop rotation, cover crops, fertilization and plant nutrition; physical methods, including steam, solarization, and heat, and use of chemical compounds. A combination of soil pasteurization and IPM has proven to be an effective approach for the control of pests and diseases in horticulture (annual losses of only 1-2% due to bacterial and fungal diseases, as compared to much higher losses when relying on soil fumigation with methyl bromide only).
4. This project intends to demonstrate the feasibility of using alternative technologies to methyl bromide in two different horticultural areas: Gaborone and Francistown. The country requires that special focus is immediately placed on raising awareness and transferring know-how to prevent an increase in the use and applications of methyl bromide. For this purpose, field demonstration projects and community awareness programmes on alternatives to methyl bromide will be undertaken simultaneously.
5. Soil preparation will be carried out applying the same methodology used by the farmers. Alternatives to methyl bromide will be applied simultaneously with methyl bromide applications in order to have a controlled field. Soil samples will be analysed before and after soil treatment and three days after planting has taken place. During the first cultivation season, alternative technologies will be tested in relatively small areas. The most promising technologies will be tested at a full commercial scale in the second year.
6. The Ozone Unit, Department of Meteorological Services, Ministry of Works, Transport and Communications will be the co-ordinating institution. It will be implemented by the Department of Crop Production and Forestry, (Horticulture Unit and the Plant Protection

- Division), Ministry of Agriculture. The Ozone Office will advise on suitable national candidates for participation in the implementation of the project.
7. The expected results from project implementation are: (i) a technical and economic analysis of utilization of proposed alternatives to methyl bromide, (ii) a number of local specialists and farmers fully trained in the alternative technologies used; and (iii) dissemination of the results of the demonstration project to all interested farmers in the country.
 8. A national project coordinator (NPC) will be recruited for managing and supervising the demonstration project, including designing the tests, collecting and analyzing the data, supervising field activities and coordinating the services of project personnel. The total costs for human resources is US \$133,000 including a subcontract for field work (US \$100,000), and the cost of the equipment is US \$36,000. A cost breakdown is attached to the project evaluation sheet.

SECRETARIAT'S COMMENTS

1. The project concept follows the Executive Committee's guidelines. Botswana ratified the Copenhagen Amendment on 13 May 1997.
2. The projects states that "as the current consumption of methyl bromide is very low, it is expected that at the end of the project, by demonstrating the effectiveness of the new techniques to the farmers, consumption of methyl bromide in Botswana will be nil or negligible".
3. UNIDO informed the Secretariat that, during project preparation, special emphasis has been put in working with the institutions, organizations, professionals and agro-industries which are transferring the technology to the farmers.
4. The Secretariat asked if UNIDO had contacted Article 2 countries with a view to recruiting government experts from those countries (as per Decision 24/18). In this regard, UNIDO indicated that "the use of external expertise is needed only when the local institutions require advice in using state of the art techniques of which there is only a theoretical knowledge in Article 5 countries".
5. Considering the low consumption level of methyl bromide in Botswana, the Secretariat suggested that activities aimed at facilitating a policy dialogue, creation of policy instruments, information exchange, rather than a demonstration project, would be a more cost-effective approach for ensuring that Botswana will not increase the use of methyl bromide. UNIDO indicated that education of stakeholders and dissemination of results on the alternative technologies (through two workshops) were important project components.

6. Notwithstanding the emphasis placed by UNIDO on working with local institutions and on seeking to reduce salary costs, cost structure of this project is similar to projects initially approved by the Executive Committee. Taking this into consideration, the Executive Committee may consider whether it wishes to approve the project with associated support costs at the funding level shown in the table below:

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Demonstration project - three alternatives to the use of methyl bromide: non-soil cultivation techniques, bio-fumigation with solarization, and application of various mixtures of other chemicals in low doses (horticultural tomatoes and cucurbits)	209,000	27,170	UNIDO

ANNEX I

PRELIMINARY EQUIPMENT SPECIFICATIONS

Preliminary equipment specifications and breakdown of costs are as follows:

	Line Description	US\$
41-01	Expendables consisting of different soilless media and chemicals	20,000
41-02	Trays, substrates, small irrigation systems, plastics, etc.	16,000
	TOTAL EQUIPMENT	36,000

ANNEX II

PRELIMINARY TERMS OF REFERENCE FOR THE SUBCONTRACT

The subcontractor is expected to:

1. Provide the service of National Project Coordinator (see Job Description page 19) who will liaise with the national and international experts.
2. Provide transportation for the international and national experts from the central premises to the demonstration fields.
3. In the first year, perform at least 10 demonstration trials with alternative technologies and one test using methyl bromide. For control purposes, each test will be done twice. The average size of the plots will be 0.2 ha. (minimum).
4. In the second year, perform at least 10 demonstration trials with alternative technologies and one test using methyl bromide. Each test will be done twice for control purposes. The average size of the plots will be 1 ha. (minimum).
5. At least 10 demonstration trials with alternative technologies and one test using methyl bromide. Each test will be done twice (for control purposes), on a plot of average commercial size.
6. Complete a maximum of 200 soil analyses.
7. Collect data and perform analyses for nematodes, fungi and viral and bacterial diseases using a maximum of 1,000 samples.
8. Prepare a paperback publication containing a description of the results obtained and provide 60 copies.
9. Organize and conduct two workshops of a 2-3 day duration, including visits to the field, for 20-25 individuals.

ANNEX III

PROJECT BUDGET

Budget Line	Description	w/m	US\$
11-51	Consultant in solarization	2 x 0.5	17,000
11-52	Consultant in soilless technology	2 x.05	17,000
17-01	National Expert agro-economist	2	5,000
21-00	Subcontract for the field work		100,000
35-00	Workshops		15,000
41-00	Expendable equipment		36,000
	SUBTOTAL		190,000
51-00	Contingencies (10%)		19,000
99-99	TOTAL PROJECT COSTS		209,000
	Overhead Costs (13%)		27,170
	TOTAL PROJECT BUDGET		236,170