

GUIDELINES FOR HERBICIDE REGISTRATION

TRIALS

OIL AND PROTEIN SEEDS

Issued by the Registrar: Act 36 of 1947 - Department of Agricultural Economics and Marketing. Compiled by the Department in consultation with the Agricultural and Veterinary Chemicals Association of South Africa.

April 1987

INDEX

	<u>PAGE</u>
1. Introduction	1
2. Trial Requirements	2
3. Efficacy trials	3
4. Phytotoxicity	4

GUIDELINES FOR HERBICIDE REGISTRATION TRIALS: OIL AND PROTEIN SEEDS

1. INTRODUCTION

- 1.1. The purpose of these guidelines is to obtain greater uniformity in registration trials on Oil and Protein Seeds. This exposition serves only as a guide to such trials.
- 1.2. These guidelines do not replace the requirements set out in Act 36/1947 and the regulations promulgated thereunder but are only complementary to the above.
- 1.3. Experimentation with a view to obtaining registration of an agricultural remedy must be discussed in advance with the Technical Advisor (Herbicides), Act 36/1947 of the Department of Agriculture and Water Supply as well as the Oil and Protein Seeds Centre of the Research Institute of Grain Crops. The Department should be provided with a plan of each trial and a proposed list of treatments prior to commencement of the trials.
- 1.4. It is recommended that the Department of Agriculture and Water Supply be kept informed of the progress of the experiments at all times prior to submission for registration. Trial sites must be available for inspection by officers of the Department.
- 1.5. Residue trials must be undertaken according to the requirements set out in the circular letter X17/A of the Registrar Act 36/1947, dated 8th January 1982.
- 1.6. Trial layout must comply with recognised biometrical designs. Results of at least four efficacy and four phytotoxicity trials submitted for registration of a herbicide should

be analysed statistically. It is recommended that the percentage system be used to rate weed control and phytotoxicity. Transformations should be applied to EWRC and percentage data.

- 1.7. Herbicide formulations, herbicide tank mixtures and the addition of adjuvants require registration.
- 1.8. If required by the Oil and Protein Centre, a sample of the candidate herbicide must be submitted to them for evaluation in their own phytotoxicity and efficacy studies. The sample must be submitted well in advance of the commencement of the planting season. These trials will serve merely to back up and not to replace the data produced by the applicant.

2. GENERAL TRIAL REQUIREMENTS

- 2.1. At least four replicated efficacy trials in the most important production areas will be required. Trials should be conducted over at least two seasons in different bioclimatic regions on a range of soil types. In cases where a specific weed for which control will be claimed is region-bound, trials should be carried out only in the region or regions where the weed occurs. The actual number of trials however shall be determined during initial discussions with the Department.
- 2.2. At least two of the efficacy trials should be conducted with the crop. In the case of phytotoxicity trials, all the cultivars which are the most widely planted in the region where the trials are to be conducted, should be included per trial.
- 2.3. Climatic and soil conditions during application must be recorded. Details of herbicide application, spray equipment and dosages must be furnished. For soil applied herbicides, details of soil properties must be submitted. It is strongly recommended that the form attached (Appendix 1) be completed when submitting trial information.

3. EFFICACY TRIALS

- 3.1. Trials should be established to cover as wide a range of weeds as possible for which control will be claimed. Trial sites having a low weed infestation should be avoided.
- 3.2. Treatments must be replicated at least four times.
- 3.3. The area of each plot must be at least 25 m².
- 3.4. Each plot must have an adjacent small untreated control area which can be used for weed control evaluation. Weed control must be evaluated at regular intervals. Each weed species should be evaluated individually.
- 3.5. At least one standard herbicide preferably having a weed control spectrum similar to the candidate herbicide should be included.
- 3.6. In the case of a post emergence treatment weed size or biomass or percentage ground cover of each weed species must be noted before application of the herbicide treatment. After application the site must be visited at regular intervals and the percentage weed kill or retardation as well as the spectrum controlled must be noted.
- 3.7. A range of application rates should be evaluated in order to determine the most suitable dosage rate.
- 3.8. Where applicable, different application techniques, e.g. aerial application, tractor application, etc., must be evaluated. In the case of pre-emergence herbicides which have to be incorporated into the soil, the various implements (discs, cultivator, harrow, etc) as well as planting methods must be evaluated in order to determine if these have any effect on the efficacy of the treatment.

- 3.9. If the clay percentage, soil moisture, organic material content, etc. are deemed to be of importance regarding dosage and residual effect, trials must be carried out to illustrate these characteristics of the herbicide.

4. PHYTOTOXICITY TRIALS

- 4.1. A minimum of four phytotoxicity trials must be carried out over a period of at least two years. Trials for soil applied herbicides must be conducted on sandy soils (less than 10% clay). At least one of the trial sites must be in the Northern OFS or Western Transvaal. Trial sites should be chosen such that, when rainfall is insufficient to activate the herbicide, plots can be irrigated.
- 4.2. The plot size must be at least 25m².
- 4.3. The herbicide must be evaluated at the proposed recommended application rate and twice the recommended application rate.
- 4.4. Where possible, at least one comparable standard herbicide should be included in each trial.
- 4.5. Treatments must be replicated at least four times.
- 4.6. Visible phytotoxicity, if any, must be evaluated at regular intervals, commencing two weeks after application throughout the growing period of the crop. Where phytotoxicity occurs, symptoms must be fully described at the various stages of observation. Photographic slides should be taken of symptoms and submitted with the application for herbicide registration. The degree of recovery, if any, should be recorded.
- 4.7. Yield in Kg/ha as well as moisture % must be calculated.
- 4.8. Phytotoxicity trials must be kept weed-free either by hand or by mechanical cultivation. In certain cases, a contact herbicide, e.g. paraquat may be used if prior permission has been obtained from the technical advisor.

APPENDIX
INFORMATION REQUIREMENTS FROM FIELD EXPERIMENTS

APPLICATION FORMATION

Locality: -----

Name of Farm: -----

Farmers Name: -----

Responsible Officer: -----

Institution/Firm Name: -----

History of previous usage of Herbicide on the site:

1 Year previous: -----

2 Years previous: -----

Compound and Formulation: -----

Rates (active ingredient/ha): -----

Crop and Cultivar*: -----

Date Planted/Transplanted: -----

() Direct Seeded () Flat Culture

() Transplant () Bedded Culture

Planter/Drill/Transplanter:

Type: -----

Seeding Rate: -----

Plant Population: -----

Planting Depth: -----

Row Width: -----

Experimental Design:

Randomized Block: -----

Complete Randomized -----

Other: -----

Plot size: -----

() Broadcast () Banded-Width

Number of Reps. (Circle one): 1 2 3 4 5 6 7 8 9 10

Soil Texture (Clay%): -----

Soil Texture:

() Sand 0-10% () Clay Loam 27-40% () Loamy Sand 10-15%

() Sandy Loam 15-20% () Sandy Clay 35-55% () Sandy Clay Loam 20-35%

() Clay 55%

***MUST APPEAR ON THE LABEL**

Clay: -----

Organic Content:-----pH: -----

Soil Temp. at 5 cm: -----()°C

Soil Conditions: -----

Clod Size:

() No Clods () Large 2,5 cm () Small 0,6 to 2,5 cm.

Surface Moisture: -----

() Dry 2,5 cm () Wet () Moist () Dry 1,3 cm

() Flooded

Soil Moisture:

() Dry () Intermediate () Field Capacity () Saturated

Weather Conditions:

Temperature: ()°C-----

Wind velocity and Direction: -----

() Gusting () Steady () Clear Sky () Partly Cloudy

() Light Rain () Heavy Clouds

Method of Application:

Preplant Surface -----

Preplant Incorporated -----

Pre-emergence -----

Post-emergence -----

Overtop -----

Directed -----

Size or stage of Crop growth: -----

Surfactant:------(Name and Concentration) -----

Date(s) of Application: -----

Number of Application: -----