

OBAFEMI AWOLowo UNIVERSITY, ILE-IFE, NIGERIA
M.SC./M.PHIL/PH.D. (PLANT SCIENCE)
FACULTY OF AGRICULTURE
RAIN SEMESTER EXAMINATION 1988/89
PSC 652 - METABOLISM AND ACTION OF HERBICIDES

AUGUST, 1989

TIME ALLOWED: 3 HOURS

Answer ALL Questions

- 1(a) Herbicides generally are known to affect one or the other of the many physiological and biochemical processes in plants either directly or indirectly in effecting their toxicity. As concisely as possible discuss with appropriate schematic diagram the effect of two named groups of herbicides on the photosynthetic system.
- (b) Discuss the effect of the two herbicides in relation to water uptake and transpiration in plants giving appropriate herbicide and plant examples.
- 2 Mr. Agbekoya is a successful farmer who believes in traditional method of cultivation. After much persuasion by a Chemical Sales Agent, he decided reluctantly to put 10 ha of land for maize cultivation using a herbicide to control weeds. The land was ploughed and harrowed thoroughly before a pre-emergence application of the recommended herbicide at 3.5 kg a.i/ha. The salesman has told him he did not have to worry about weeds once he did what he recommended. But 8 weeks after the herbicide application, weeds of all species began to emerge all over the field including areas that were once clean. This was in addition to the fact that several portions of the 10 ha were engulfed with weeds even before the 8th week. Mr. Agbekoya lost his temper. He had to break his overseas vacation which the Sales Agent has recommended since he did not have to come back to the field until harvest time.

Discuss the following with regard to Mr. Agbekoya's problem:

- (a) The name of the possible herbicide that might have been sprayed, and give its chemical structure.

- b) Expected and observed morphological responses to the herbicide.
 - c) Possible absorption and translocation characteristics of the herbicide.
 - d) The potential and actual molecular fate of the herbicide in the soil.
 - e) Mode of action of the herbicide.
 - f) Persistence of the herbicide in a tropical humid soil in relation to expected persistence.
 - g) Based on information on (a) - (f) and your knowledge of Weed Science give a summary of why Mr. Agbekoya's maize field did not look like what the Chemical Sales Agent expected.
 - h) Give a list of recommendations to Mr. Agbekoya that will eliminate most of his problems and justify your recommendations.
3. Give the basic chemical structure of the following groups of herbicides; give the name and the chemical structure of a representative member of each group.
- a) Amides
 - b) Carbamates
 - c) Dinitro anilines
 - d) Glyphosate
 - e) Phenoxys
 - f) Triazines
 - g) Ureas
4. Discuss symplastic and apoplastic path of herbicide translocation with appropriate herbicidal examples.

HEZEKIAH OLUWASANJI LIBRARY
RESERVED
UNIVERSITY OF IFE