

TABLE IV: UPTAKE AND BALANCE OF RADIOACTIVITY EQUIVALENT TO ϕ - ^{14}C -CGA-48988 IN ROTATION SOYBEANS

Interval (weeks)	6	10	20
Plant part	Whole plants	Whole plants	Leaves systems Beans
Total ppm	0.40	0.40	0.40
Balance			
Organic	0.22	0.22	0.22
Polar	0.18	0.18	0.18
Nonexchangeable	0.00	0.00	0.00
Total	0.40	0.40	0.40

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TABLE V: CHARACTERISTICS OF FIELD PLOT SOIL

Location: CIBA-GEIGY New York Research Farm,
 Livingston, New York

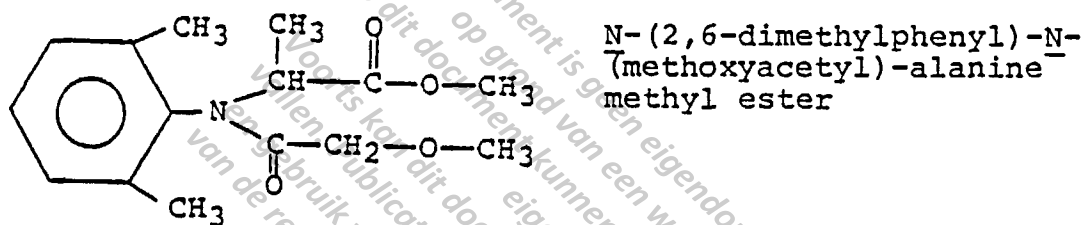
Texture	Silt	Loam
pH	5.5	
% Organic Matter	1.8	
% Sand	44.4	
% Silt	44.0	
% Clay	11.6	

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ABR-79003
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CGA-48988



Radioactive Compound

ϕ - ^{14}C -CGA-48988

[U-ring- ^{14}C] N-(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester

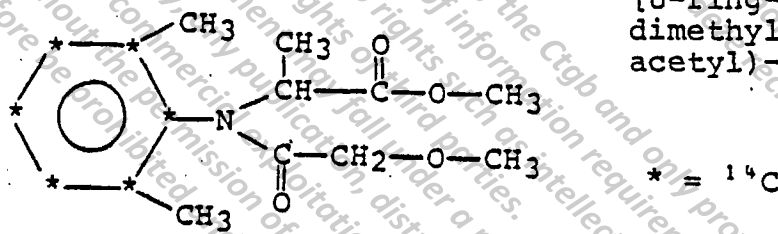
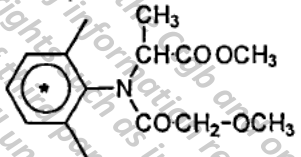


Figure 1: CHEMICAL NAMES AND STRUCTURES

Annex II - 6.2. /06 : Uptake and characterization of ϕ - ^{14}C -CGA 48988 and its soil metabolites in field rotation soybeans

General Information	
Title of the study:	Uptake and characterization of ϕ - ^{14}C -CGA 48988 and its soil metabolites in field rotation soybeans
Report and/or project number:	ABR-79003
Author:	W. J. Z. W. Co.
Ciba File Number (Desire):	48988/3567
Name and address of testing facility:	Ciba-Geigy Corp., Livingston, NY, USA (Biological phase) Ciba-Geigy Corp., Greensboro, N.C., USA (Analytical phase)
Study period:	5/78 - 10/78
Date of report:	February 12, 1979
Compliance with GLP:	Yes [] No, but complies with sound scientific principles [X]
Test guideline(s) used:	-
Deviations from the test guideline:	-
Test substance	
Test substance (code number):	CGA 48988
Batch:	-
^{14}C -labeled test substance :	Yes [X] No []
Specific activity of [U- ^{14}C -phenyl] label:	1.11 MBq/mg (= 30 μCi /mg)
Radiochemical purity of test substance:	not available
Structural formula: (Position of label)	[U- ^{14}C -phenyl]-CGA 48988 CH_3 CHCOOCH_3 $\text{COCH}_2\text{-OCH}_3$ 
Formulation used for study:	no
Test system	
Target crop:	field grown potatoes
Formulation (spray application): Formulation N° (spray application): Solvent for application (if used):	ethanol/water (1:1) solution
Application: Field experiment:	Spray applications with a miniature boom sprayer: 6 over-the-top sprays (starting 6 weeks after plant emergence) at 14 days intervals at a rate of 0.40 lb./A (= 292.3 mg ^{14}C -CGA 48988 / 3' X 19' plot/ treatment (= 8.77 mCi), i.e. 1755 mg ^{14}C -CGA 48988/ 6 treatments (= 52.65 mCi for all 6 applications)
Rotational crop (planting / harvest):	soybeans planting: 48 weeks after the first treatment of target potatoes harvest: 20 weeks after planting the soybeans or 68 weeks after the first treatment of target potatoes

Soil:	Soil from Livingston, NY, USA
	Texture: Silt Loam
	pH: 5.5
	% Organic Matter: 1.8
	% Sand: 44.4
	% Silt: 44.0
	% Clay: 11.6

Summary of findings

Soybeans were grown as a rotation crop to white potatoes in a field plot on the CIBA-GEIGY Research Farm at Livingston, New York. The plot was treated by spraying Φ -¹⁴C-CGA 48988 over-the-top six times at a rate of 0.40 lb. a.i./A and at fourteen-day intervals. The first spraying was 48 weeks prior to planting the soybeans.

The level of radioactivity in the 0 - 3" decreased from approximately 0.34 ppm at the time of planting to 0.22 ppm twenty weeks later. During the twenty week growing season for soybeans, the extraction and partition data show a decrease in organic soluble radioactivity from 49.8% to 11.3% and an increase in nonextractable radioactivity from 45.8% to 76.9%. Since very little accumulation of radioactivity occurred in the polar fraction (<13%), nonpolar compounds, possibly some parent Φ -¹⁴C-CGA 48988, are being adsorbed to soil particles. The level of radioactivity in lower soil layers were 0.19 ppm (3 - 6") and 0.16 ppm (6 - 9"), showing that Φ -¹⁴C-CGA 48988 and its soil metabolites do not leach. Therefore, Φ -¹⁴C-CGA 48988 and its soil metabolites are probably being degraded slowly to ¹⁴CO₂.

The uptake of soil radioactivity by rotation soybeans was 0.40 ppm equivalent to Φ -¹⁴C-CGA 48988 after six weeks of growth, but increased to 0.59 ppm (leaves and stems) and 0.17 ppm (beans) at maturity. There was little variation in the radioactive extraction and partition characteristics throughout the growing season, except for mature beans. In these, metabolism proceeded further based on nonextractable radioactivity, 47.1% in beans compared to 21.4% in stalks.

Tab 1 Uptake, distribution and balance of radioactivity equivalent to Φ -¹⁴C-CGA 48988 in rotation soybeans and soil (at harvest)

Plant part Soil Layer	Total Residues [ppm]	Organic Phase	Water Phase	Non extractable	Total
Leaves + Stems	0.59	21.4	64.2	21.4	107.0
Beans	0.17	7.1	36.3	47.1	90.5
0 - 3"	0.22	11.3	10.3	76.4	98.5
3 - 6"	0.24	8.5	9.2	85.0	102.7
6 - 9"	0.14	<*13.3	<*8.0	90.7	90.7

a <* indicates that the level of radioactivity is detectable but below the level of quantitation

PP 2.52/ JK, 10.3.94