

TABLE III: DISTRIBUTION AND BALANCE OF RADIOACTIVITY EQUIVALENT TO ϕ - ^{14}C -CGA-48988 IN FIELD SOIL

Interval (weeks)*	0 (45)			4 (49)			7 (52)			11 (56)			14 (59)		
	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9
<u>Depth (Inches)</u>	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9	0-3	3-6	6-9
<u>Total ppm</u>	0.33	0.36	0.16	0.29	0.28	0.18	0.32	0.31	0.20	0.21	0.32	0.28	0.20	0.25	0.24
<u>Balance</u>	<u>(% of Total ^{14}C in 0-3" layer)</u>														
Organic	36.9			35.3			28.8			19.5			12.1	9.5	<*3.0
Polar	6.8			2.3			10.1			5.8			<*3.2	3.5	2.7
Nonext.	<u>52.0</u>			<u>53.0</u>			<u>59.6</u>			<u>72.2</u>			<u>79.4</u>	<u>85.0</u>	<u>77.6</u>
Total	95.7			90.6			98.5			97.5			91.5	98.0	80.3

*Numbers in parentheses indicate the elapsed time (weeks) since the first treatment with ϕ - ^{14}C -CGA-48988 (7/1/77).

<*Indicates that the levels of radioactivity are detectable but are below the level of quantitation (6).

TABLE V: CHARACTERISTICS OF FIELD PLOT SOIL

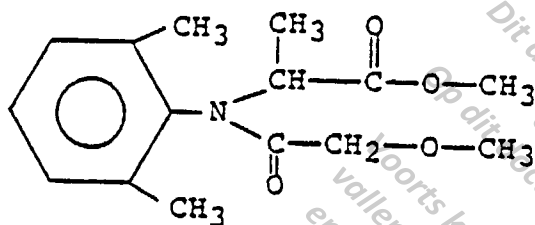
Location: CIBA-GEIGY New York Research Farm,
Livingston, New York

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

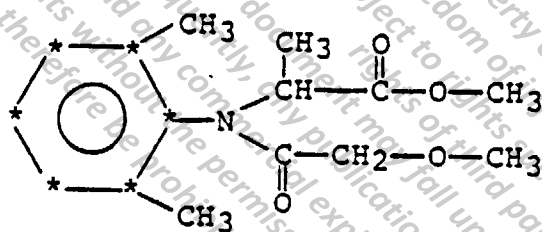
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CGA-48988

N-(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester

Radioactive Compound ϕ - ^{14}C -CGA-48988

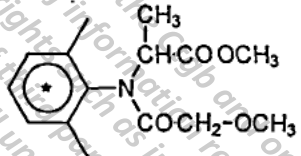
[U-ring- ^{14}C] N-(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester

* = ^{14}C

FIGURE 1: CHEMICAL NAMES AND STRUCTURES

Annex II - 6.2. /05 : Uptake and characterization of ϕ - ^{14}C -CGA 48988 and its soil metabolites in field rotation spring oats

General Information	
Title of the study:	Uptake and characterization of ϕ - ^{14}C -CGA 48988 and its soil metabolites in field rotation spring oats
Report and/or project number:	ABR-79002
Author:	5.1.2.3 Wc
Ciba File Number (Desire):	48988/3568
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 - 8/78
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 $\mu\text{Ci}/\text{mg}$)
Radiochemical purity of test substance:	not available
Structural formula: (Position of label)	[U- ^{14}C -phenyl]-CGA 48988 $\ast = ^{14}\text{C}$ 
Formulation used for study:	Yes [] No [X]

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):	spring oats planting: 45 weeks after the first treatment of target potatoes harvest: 14 weeks after planting the spring oats or 59 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

Spring oats 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 45 weeks prior to planting the oats.

The level of radioactivity equivalent to Φ -¹⁴C-CGA 48988 in the 0 - 3" and 3 - 6" soil layer decreased from 0.35 pm to 0.23 ppm in fourteen weeks. Radioactivity in the 6 - 9" layer increased slightly from 0.16 ppm to 0.24 ppm. However, this increase is not enough to account for the decrease in the 0 - 3" and 3 - 6" layers by leaching. Therefore, some of the Φ -¹⁴C-CGA 48988 in the soil was probably being degraded to ¹⁴CO₂.

The balance data show that the radioactivity in the organic fraction decreased from 36.9% to 12.1%, and the nonextractable radioactivity increased from 52.0% to 79.4% during the course of the study. There was no increase of radioactivity in the polar fraction which accounted for 10.1% or less of the total. These data indicate that nonpolar materials, possibly some parent Φ -¹⁴C-CGA 48988, are being adsorbed to soil particles.

The uptake of soil radioactivity was low, 0.09 ppm in mature grain and 0.19 ppm in mature straw. The balance data showed a decrease from 23.4% to 6.0% and in the polar fraction from 48.5% to 27.6% in ten weeks. This is accomplished by an increase of radioactivity in the nonextractable fraction from 23.4% to 57.3%. These data show that rotation spring oats could further metabolize the soil metabolites of Φ -¹⁴C-CGA 48988.

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

Plant part Soil Layer	Total Residues [ppm]	Organic Phase	Water Phase	Non extractable	Total
Grain	0.09				
Straw	0.19	6.0	27.6	57.3	90.9
0 - 3"	0.20	12.1	<*3.2	79.4	91.5
3 - 6"	0.25	9.5	3.5	85.0	98.0
6 - 9"	0.24	<*3.0	2.7	77.6	80.3

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

PP 2.52/ JK, 10.3.94