





















TABLE IV: UPTAKE AND BALANCE OF RADIOACTIVITY EQUIVALENT  
 TO  $\phi$ - $^{14}\text{C}$ -CGA-48988 IN ROTATION SUGAR BEETS

Interval (weeks)	6		9		15		20	
	Whole plants	Whole plants	Whole plants	Tops	Whole plants	Tops	Whole plants	Tops
Total ppm	0.16	0.07	0.06	0.03	0.02	0.02	0.02	0.02
Balance	(% of Total $^{14}\text{C}$ )							
Organic	33.8							
Polar	53.1							
Nonext.	11.4							
Total	98.3							

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TABLE V: CHARACTERISTICS OF FIELD PLOT SOIL

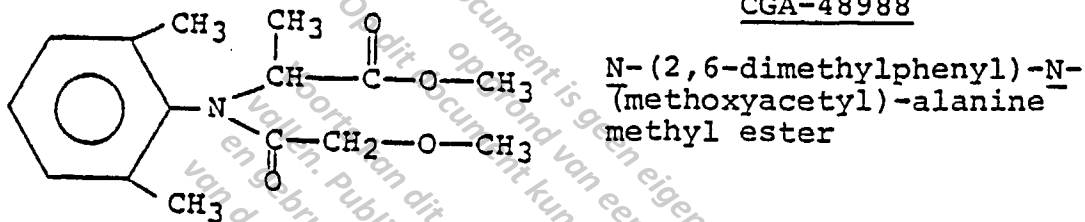
Location: CIBA-GEIGY New York Research Farm,  
Livingston, New York

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

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CGA-48988



Radioactive Compound

$\phi$ - $^{14}\text{C}$ -CGA-48988

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

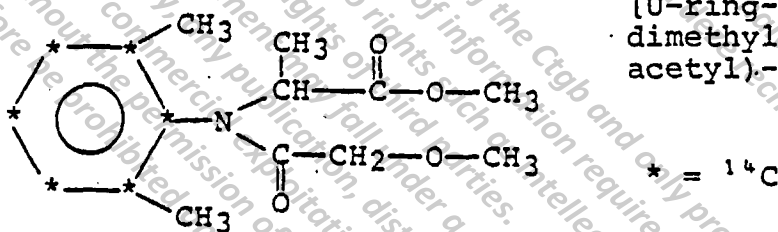
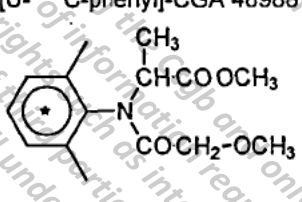


Figure 1: CHEMICAL NAMES AND STRUCTURES

**Annex II - 6.2. /08 : Uptake and characterization of  $\Phi$ - $^{14}\text{C}$ -CGA 48988 and its soil metabolites in field rotation sugar beets**

General Information	
Title of the study:	Uptake and characterization of $\Phi$ - $^{14}\text{C}$ -CGA 48988 and its soil metabolites in field rotation sugar beets
Report and/or project number:	ABR-79005
Author:	[REDACTED]
Ciba File Number (Desire):	48988/3565
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:	-
$^{14}\text{C}$ -labeled test substance :	Yes [X] No [ ]
Specific activity of [U- $^{14}\text{C}$ -phenyl] label:	1.11 MBq/mg (= 30 $\mu\text{Ci/mg}$ )
Radiochemical purity of test substance:	not available
Structural formula: (Position of label)	[U- $^{14}\text{C}$ -phenyl]-CGA 48988 
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 $^{14}\text{C}$ -CGA 48988 / 3' X 19' plot/ treatment = 8.77 mCi), i.e. 1755 mg $^{14}\text{C}$ -CGA 48988/ 6 treatments (= 52.65 mCi for all 6 applications)
Rotational crop (planting / harvest):	sugar beets: planting: 45 weeks after the first treatment of target potatoes harvest: 20 weeks after planting the soybeans or 65 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

Sugar beets 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  $\Phi$ -<sup>14</sup>C-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 sugar beets.

The level of radioactivity in the 0 - 3" soil layer decreased from approximately 0.33 ppm at the time of planting to 0.20 ppm twenty weeks later. During the twenty week growing season for sugar beets, the extraction and partition data show a decrease in organic soluble radioactivity from 36.5% to 11.1% and an increase in nonextractable radioactivity from 48.7% to 80.4%. Since no accumulation of radioactivity occurred in the polar fraction (<10%), nonpolar compounds, possibly parent  $\Phi$ -<sup>14</sup>C-CGA 48988, were being adsorbed to soil particles. The level of radioactivity remained constant at approximately 0.17 ppm (6 - 9"), showing that  $\Phi$ -<sup>14</sup>C-CGA 48988 and its soil metabolites do not leach. Therefore,  $\Phi$ -<sup>14</sup>C-CGA 48988 and its soil metabolites are probably being degraded to <sup>14</sup>CO<sub>2</sub> slowly.

The uptake of soil radioactivity by whole rotation sugar beets was 0.16 ppm equivalent to  $\Phi$ -<sup>14</sup>C-CGA 48988 after six weeks of growth. The radioactivity decreased to 0.06 ppm and 0.03 ppm for tops and roots after fifteen weeks and to 0.02 ppm for both tops and roots after twenty weeks (maturity). The extraction and partition data for the six week old sugar beets indicate that as much as half of the recovered radioactivity was in the polar fraction (53.1% of recovered <sup>14</sup>C). These data also show that metabolism is from nonpolar to nonextractable products.

Tab 1 Uptake, distribution and balance of radioactivity equivalent to  $\Phi$ -<sup>14</sup>C-CGA 48988 in rotation corn and soil (at harvest)

Plant part Soil Layer	Total Residues [ppm]	Organic Phase	Water Phase	Non extractable	Total
Roots	0.02				
Tops	0.02				
0 - 3"	0.20	11.1	5.7	80.4	97.2
3 - 6"	0.20	9.8	7.4	87.5	104.7
6 - 9"	0.18	<*6.7	<*5.3	95.8	95.8

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

PP 2.52/ JK, 11.3.94

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