



PROJECT REPORT No. 299

**ANALYSIS OF CHLORMEQUAT AND GLYPHOSATE
RESIDUE LEVELS IN WHEAT GRAIN**

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ANALYSIS OF CHLORMEQUAT AND GLYPHOSATE RESIDUE LEVELS IN WHEAT GRAIN

by

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ABSTRACT

Forty-eight wheat samples were analysed for chlormequat and glyphosate residues.

Residues of chlormequat were found in 44 of the 48 samples in the range 0.02 mg/kg to 0.5 mg/kg. None of the residues found exceeded the MRL set for chlormequat in wheat of 2.0 mg/kg.

Residues of glyphosate were found in 17 of the 48 samples in the range 0.1 mg/kg to 2.3 mg/kg. None of the residues found exceeded the MRL set for glyphosate in wheat of 5.0 mg/kg.

No residues of either pesticide were found in 3 of the 48 samples received, with residues of both pesticides found in 16 of the 48 samples received.

SUMMARY

Objectives

Recent reports of the Pesticide Residues Committee have indicated chlormequat and glyphosate residues in wheat products. These are published quarterly on Pesticides Safety Directorate website: http://www.pesticides.gov.uk/citizen/residues/residues_in_food.htm

This project, carried out at the request of the National Association of British and Irish Millers (nabim), involved the testing of 48 wheat samples provided by nabim. Samples were traceable to information on agronomic practices applied to the growing crop.

Analyses

Chlormequat analysis

A single sub-sample of each sample was extracted with methanol, filtered and analysed by HPLC-MS/MS with electrospray ionisation. Collisionally induced dissociation product ions at m/z 122>58 and 124>58 were monitored.

Glyphosate analysis

A sub-sample of each sample was extracted with an acidified aqueous solution. An aliquot of the extract was derivatised prior to analysis using a gas chromatograph connected to a mass selective detector (GC-MSD).

Discussion

1. Residues of chlormequat were found in 44 of the 48 samples in the range 0.02 mg/kg to 0.5 mg/kg. None of the residues found exceeded the MRL set for chlormequat in wheat of 2.0 mg/kg.
3. Residues of glyphosate were found in 17 of the 48 samples in the range 0.1 mg/kg to 2.3 mg/kg. None of the residues found exceeded the MRL set for glyphosate in wheat of 5.0 mg/kg.
3. No residues of either pesticide were found in 3 of the 48 samples received, with residues of both pesticides found in 16 of the 48 samples received.

TECHNICAL DETAILS

Sample No	Laboratory No	Chlormequat Residue (mg/kg)	Glyphosate Residue (mg/kg)
02 001	39631	0.2	0.3
02 004	39638	0.2	0.2
02 009	39645	0.4	0.5
02 011	39647	0.1	<0.1
02 012	39649	0.08	<0.1
02 013	39651	0.2	<0.1
02 017	39654	0.06	<0.1
02 022	39660, 40459	0.1	<0.1
02 024	39661, 40460	0.2	<0.1
02 027	39663, 40461	0.1	<0.1
02 028	39665, 40462	0.3	<0.1
02 042	39860	<0.01	<0.1
02 044	39861, 40463	0.3	0.7
02 045	39862, 40464	0.3	0.7
02 049	39863	0.2	<0.1
02 050	39667, 40465	0.2	<0.1
02 051	39668, 40466	0.2	0.3
02 052	39669, 40467	0.2	<0.1
02 053	39671, 40468	0.08	0.5
02 055	39672, 40469	0.3	<0.1
02 067	39673, 40470	<0.01	0.1
02 068	39674, 40471	0.4	<0.1
02 071	39675	<0.01	<0.1
02 073	39676	0.4	<0.1
02 074	39677	0.1	<0.1
02 075	39678	0.2	<0.1
02 080	39679	0.06	0.4
02 082	39680	0.1	0.3
02 085	39681	0.4	<0.1
02 089	39682, 40472	0.3	2.3
02 091	39683	0.1	<0.1
02 092	39684	0.2	<0.1
02 095	39686	0.2	<0.1
02 097	39688, 40473	0.2	0.6

Sample No	Laboratory No	Chlormequat Residue (mg/kg)	Glyphosate Residue (mg/kg)
02 098	39689	<0.01	<0.1
02 099	39690, 40474	0.3	0.9
02 100	39691, 40475	0.09	0.5
02 104	39692	0.09	<0.1
02 105	39693	0.09	<0.1
02 106	39694	0.03	<0.1
02 107	39695	0.5	<0.1
02 108	39696	0.2	0.6
02 109	39697	0.08	<0.1
02 110	39698	0.09	<0.1
02 124	39864	0.2	0.5
02 125	39865	0.03	0.2
02 127	39866	0.02	<0.1
02 128	39867	0.1	<0.1

Analytical Quality Control Recovery Data:

Pesticide	Recovery (%)	Spike Level (mg/kg)	Limit of detection (mg/kg)
chlormequat	89, 90, 102, 87, 81	0.1	0.01
glyphosate	81, 112, 109, 119, 48	0.1	0.1