

# Residues of Pesticides in Lentils – Glyphosate and What Else?

Diana Kolberg, Cristin Wildgrube, Marc Wieland, Anne Wolheim, Nadja Bauer and Ellen Scherbaum

E-Mail: Diana.Kolberg@cvuas.bwl.de

## Introduction

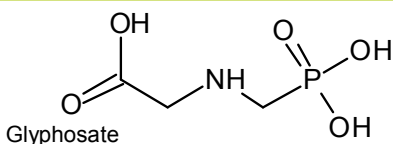
In February 2011 findings of glyphosate above the MRL in lentils were published via the RASFF by Austrian authorities. The results, revealed by the company's own check, were especially surprising in that the lentils were labelled as "organic growth". They came to Austria via Italy from Turkey. More RASFF notifications followed in March; therefore, we analyzed 33 lentil samples from the German market from March to May 2011, not only organic but also conventionally grown lentils, using the QuEChERS and QuPPE methods, covering more than 600 pesticides.



## Production of Lentils

With about 30% of their calories coming from protein, lentils have the third-highest level of protein, by weight, of any legume or nut, after soybeans and hemp. The FAO reported that the world production of lentils for the calendar year 2009 was 3.9 million metric tons, primarily coming from Canada, India, Turkey and the United States.

Weeds, insects like grasshoppers and some diseases like ascochyta blight, anthracnose or fusarium root rot make the use of pesticides necessary. Furthermore, lentils have an indeterminate growth pattern. Flowering and pod filling continue as long as the temperature and moisture level enable growth to occur. Moisture or nitrogen stress is required to encourage seed set and maturity, which is achieved using a chemical desiccant. Paraquat, diquat or glyphosate are used as desiccants.



## Results

### Lentils from organic growth

Three out of 8 samples contained residues of glyphosate above the MRL of 0.1 mg/kg:

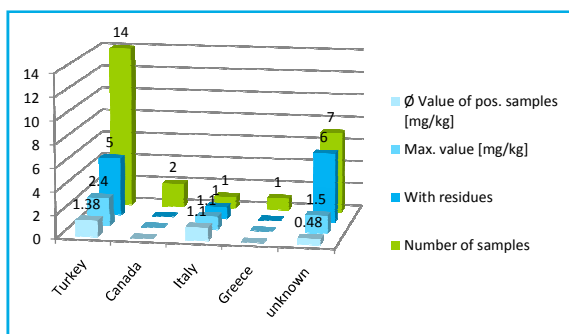
3.1 mg/kg from a country of origin unknown, and 3.4 mg/kg and 4.1 mg/kg from Turkey. The herbicides 2,4-D, imazethapyr and diquat were also found.

Sample origin	Number of samples	With residues	Ø Value of pos. samples [mg/kg]	Max. Value [mg/kg]
Turkey	2	2	3,75	4,1
Canada	3	0	-	-
Germany	1	0	-	-
unknown	2	1	-	3,1

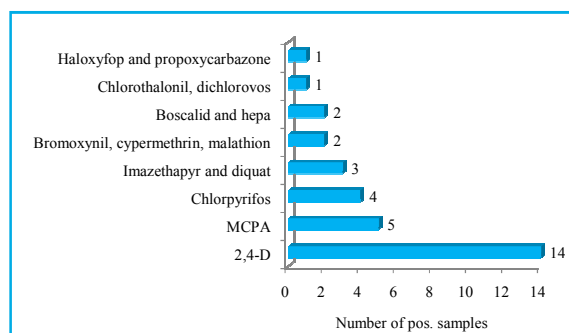
### Lentils from conventional growth

Nine out of 25 samples had residues of glyphosate above the MRL of 0.1 mg/kg. Four samples were from Turkey, one sample was from Italy and in four cases the country of origin was unknown.

Residues above the MRLs were also found for chlorpyrifos, diquat and malathion in samples from Turkey.



### Other findings



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## References

- [1] Crop Profile for Lentil in Canada, [http://publications.gc.ca/collections/collection\\_2009/agr/A118-10-2-2005E.pdf](http://publications.gc.ca/collections/collection_2009/agr/A118-10-2-2005E.pdf)  
[2] picture: ClipDealer Photograph: sil007