Survey about the practice of chemical crop protection (NEPTUN) in Germany

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Introduction

Information about the realistic use of crop protection chemicals in agriculture is little or not available in Germany and other European countries. However, for research and decision making in politics such data are of importance. Therefore, a project called "Network for the determination of the use of crop protection chemicals in different agricultural relevant natural habitats in Germany" (NEPTUN) was established. The aim of NEPTUN is to develop concepts of systematic collection and statistical analysis of realistic practice specific data about the use of crop protection chemicals in relevant crops in Germany.

Methodology

- A data collection through a survey related to the vegetation period 1999/2000 contained all chemical plant protection measures (except seed coating) and growth regulator applications in relevant crops, including sugar beet. In 2005 the survey was repeated for sugar beet only and included seed coating. The survey 2005 was prepared by the IfZ.
- The intensity and frequency of the use of crop protection chemicals in specific crops was documented.
- Furthermore, an Application Index as indicator for the intensity of crop protection chemicals was developed. The Application Index is calculated as the relation of the maximally registered rate to the applied rate of the crop protection chemicals per treated acreage.
- The data analyses of NEPTUN 2000 referred to the 34 formerly defined soil-climate-regions (SCR) or to entire Germany. In 2005, 20 SCRs were newly defined for Germany. For sugar beet 16 of the 20 have been relevant. Selected representative general farms (at least 30 per SCRs) were included in both surveys.
- Collected data was subjected to a comprehensive plausibility check at IfZ.

Results

- Results of the first survey in 1999/2000 showed that the Application Index varies considerably among field crops (Table 1).

Table 1: Calculated Application Index in selected crops in Germany (Roßberg et. al., 2002)*

crop	number of farms	all measures	fungicide	herbicide	insecticide	growth regulator
potatoes	130	8,57	6,08	1,55	0,94	0,00
rape	644	3,41	0,68	1,18	1,44	0,12
sugar beet	382	2,93	0,15	2,59	0,19	0,00
sweet corn	489	1,24	0,00	1,22	0,03	0,00
winter wheat	790	3,74	1,39	1,37	0,36	0,62

* Neptun 2000 – Survey into application of chemical pesticides in agricultural practice in Germany.

- In potatoes and rape dominated fungicides (6.08) and insecticides (1.44) respectively.
- Sugar beet had the highest index (2.59) of herbicide use among all crops.
- Potatoes, sugar beet, and sweet corn were not treated with growth regulators at all.
- Results of the survey 2005 are currently not yet available.

Outlook

- The accurate subdividing into SCRs is of importance in order to make specific recommendations for chemical use in the same crop under different environmental conditions. Some further work has been done in subdividing into SCRs.
- The survey will be repeated every 3 to 5 years.