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INTERACTIONS BETWEEN SOIL TILLAGE AND WEED CONTROL IN PRACTICE - DATA OF SURVEYS IN GERMANY

ABSTRACT

A reliable and representative database from farming reality is available for sugar beet cultivation from 2010 - 2014 by a nationwide survey. Amongst others the database includes details about soil tillage, occurrence of weeds and application of herbicides.

In the course of erosion control, the acreage of plough tillage systems decreased within the last two decades, while the acreage of mulch tillage systems increased. Corresponding, the use of non-selective herbicides increased over the years. Data of this study show that these trends seem to stabilize during the surveyed period. Both tillage systems were applied approximately in equal parts. Roughly 30% of all farms used non-selective herbicides. In 2014 plough tillage was used in 45.8% of surveyed farms, while mulch tillage was applied in 53.3%. 46% of ploughless working farms and 11% of ploughing farms applied a non-selective herbicide (mostly one application/field). Additionally, selective herbicides were applied with a higher intensity at farms using mulch tillage: In the mean, the treatment index for herbicides (TIH) is significantly lower if the field was ploughed. This indicates a modified occurrence of weeds. However, obviously the quantity of weeds is higher with mulch tillage but the spectrum of variety of weeds did not alter. An exception is the incidence of rapeseed which is referred to as “hardly treatable” more often after mulch tillage compared to plough tillage.

Generally, it is expected that the occurrence of weeds increases in abstinence of plough tillage making an adaption of the herbicide strategy indispensable. Our study confirms this expectation for increased TIH and more frequent glyphosate application. In contrast the farmers did not document changes in weed varieties. The conflict of erosion control vs. pesticide reduction illustrates importance of the adaption of the cultivation management to the location.
