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METHODOLOGY OF TESTING EFFICACY AND DURABILITY OF AN ALS-INHIBITOR HERBICIDE ON WEED SPECIES IN SUGAR BEET CULTIVATION

**Méthode afin de tester l'efficacité et la durabilité de l'application d'un herbicide
inhibiteur ALS contre des variétés d'adventices dans la culture de betteraves
sucrières / Methodik zur Prüfung von Effizienz und Dauerhaftigkeit eines
ALS-Inhibitor-Herbizids gegen Unkrautarten im Zuckerrübenanbau**

ABSTRACT

In sugar beet cultivation, the use of ALS-inhibitor herbicides is impossible due to the susceptibility of currently registered varieties. Varieties with an genetic tolerance to this herbicides allow its use in weed control. Currently, such a weed control system (new herbicide plus corresponding tolerance) is not available in practice. Thus, a detailed analysis of the properties of the ALS-herbicide is necessary. Therefore, durability and efficacy of ALS-herbicides on weeds in different growth stages are important. The most important weeds in sugar beet cultivation in Germany are CHEAL, MATCH, BRSNW, AMARE, POLCO, POLAV, AETCY, GALAP, ECHCG, ALOMY.

In 2013 and 2014, a series of field trials (without seeding sugar beet) was carried out at three sites (different soils) in northern Germany. First, the residual activity of a new ALS-herbicide on CHEAL, MATCH, BRSNW, AMARE, ECHCG, ALOMY was determined by a special trial design. The application of the herbicide was done on the bare soil. Five days after, the weed species were sown in four five-day intervals. Thus it was possible to evaluate the latest seeding date at which an adequate soil efficacy can be expected. Residual activity was assessed by comparing weed coverage of the treated and untreated plots.

Second, the maximum growth stage for a reasonable efficacy on CHEAL, MATCH, BRSNW, GALAP and three site specific weeds (POLAV, POLCO, AETCY), was determined. After sowing the weeds in the same plots, one time applications with different dosages were done at growth stages 12, 14, 16, 18, 20 of CHEAL, as it must be treated in earlier growth stages in relation to its robustness. The latest possible application date was identified by phytotoxicity of dead and surviving plants.
