

# Effect of irrigation on efficacy and selectivity of metazachlor

## Summary

The diploma thesis focuses on the assessment of the effect of irrigation intensity on the effectiveness and selectivity of the herbicide metazachlor.

The first part of the thesis evaluates the contemporary literature of domestic foreign authors focused on the topics of weeds and the possibilities of their regulation with the help of available agrotechnical procedures within the applicable standards. It deals with the distribution of herbicidal substances, especially the selective preparation AUTOR and their effects on target organisms and the environment. Factors influencing the effect of these substances on growing areas, such as temperature, humidity, sunlight, airflow, and wind speed, are also taken into account.

In its second part, the work aims to evaluate the experiment observed according to the given methodology.

Specifically, it deals with the evaluation of areas treated for plant protection with AUTOR in a specified dosage of 500 g / ha on areas with different irrigation intensities. The area on two hotbeds measuring 140x1290 cm filled with the horticultural substrate was sown with cultivated radish (*Raphanus sativus*), common poppy (*Papaver rhoeas*), scentless mayweed (*Tripleurospermum inodorum*), and cornflower (*Centaurea*). The efficacy of the herbicide metazachlor in two different moisture ratios was determined in these weeds. For this purpose, the area of the hotbed was divided with the help of wooden boards buried 40 cm into the soil profile of the hotbed and wrapped in foil for the best possible prevention of water penetration between the examined areas. 6 parts were created in this way. Of these, the intensity of irrigation was increased in three parts and moderate in the other three. These plots were then covered with glass to better maintain growing conditions. Irrigation of individual plots took place only at air temperatures above 3 ° C to prevent the freezing of crops and weeds. The second hotbed was used to compare crop growth without herbicide application at two irrigation intensities.

Efficacy evaluation was performed by an estimated percentage method (0% without plant damage, 100% weeds do not emerge at all). During one summer and two winter observations, I monitored the selectivity of the herbicide to groups of weeds: common poppy, scentless mayweed, cornflower, shaggy soldier, fat-hen, spiny sowthistle, chickweed, shepherd's-purse, creeping woodsorrel, field pennycress, and yellow foxtail. Furthermore, the intensity (pcs / m<sup>2</sup>) and the rate (g / m<sup>2</sup>) of weeds were calculated on all plots. The evaluation was also carried out on radish yield, both in intensively irrigated and moderately irrigated areas. These evaluated data were processed into tables and subsequent graphs. Humidity, temperature, and air pressure data from Meteoblue sources were used for measurement accuracy. Control measurements of temperature and humidity were performed every day with a thermometer, and hygrometer without a probe. The intensity of sunlight was measured with a luxmeter. Sensitivity to metazachlor has not been confirmed, especially in the shaggy soldier and the fat-hen. The plants of cornflowers, scentless mayweed, and poppies showed significant differences during the summer season on plots that were irrigated with an increased dose of irrigation compared to plots with a reduced watering dose. Intensively irrigated areas (A, C, E) showed on average a higher percentage of damage to the monitored weeds, both in comparison with slightly irrigated areas (B, D, F) and in comparison with control areas (G, H).

**Keywords:** weeds, selective herbicide, herbicide efficacy, irrigation, metazachlor

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