

## **EFFECT OF HERBICIDE AND COVER CROP ON CORN YIELD, WEED POPULATION, AND DRY MASS PRODUCTION IN A LONG-TERM ROTATION SYSTEM STUDY**

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**Destaque:** Cover crop and corn are efficient alternatives to provide soil coverage and the opportunity to use alternative herbicides to effectively weed manage

**Resumo:** Integrated weed management is a successful practice when implemented correctly and results in a positive impact on agricultural systems. In this sense, the use of single or multiple cover crops before the cash crop, and the use of rotation crop between soybean and corn are cost-effective alternatives and are increasingly adopted by Southern Brazilian farmers. However, seasonal weather conditions may vary between years, and consistent management systems are more reliable in revealing the results of rotation and cover crop usage. The objectives of this study were to evaluate the effect of the cover crop during winter season and the use of corn with different herbicide treatments and their interactions regardless corn yield, dry mass production, and weed population influence. The study was performed over 2014-2018 in randomized blocks with four replications, using six winter cover crops (fallow; wheat; rye; rye + turnip; rye + vetch; rye; and black oats). Post-emergence herbicide treatments were an untreated control; glyphosate (1.92 kg ha<sup>-1</sup>); and glyphosate (1.92 kg ha<sup>-1</sup>) + atrazine (1.625 kg ha<sup>-1</sup>). Corn was sown in the summer of 2015/2016 and 2017/2018 and soybeans were used in the other years for crop rotation. Increased corn yield was observed when growing after rye or rye + vetch, and both herbicides used had result increased corn yields. Rye + turnip or oats greatly decreased the number of weeds, and rye + turnip was more beneficial in the aboveground mass production. To sum up, the use of cover crop and post-emergence herbicide are important supplies to achieve high corn productivity and manage weeds in Southern Brazilian crop system.

**Palavras-chave:** Integrated weed management; Agricultural systems; Herbicide rotation

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