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Strategies for chemical control of Cyperus esculentus in maize

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The perennial sedge *Cyperus esculentus* is rapidly becoming one of the most troublesome weeds across Europe, due to its high adaptive plasticity, the invasive behaviour and the limited availability of effective control methods. The aim of the study was to compare different *C. esculentus* control strategies in maize based on herbicides currently authorized on this crop. The study was conducted in 2016 at Lodi, North-west of Italy on a field of about 1000 m^2, with 42 plots of 12.5 m^2 each. Treatments were arranged in completely randomized design with three replications. An untreated area of about 1.5 m^2 was left in each plot. Five weed control strategies were compared: pre-emergence (PRE), pre- f.b. early-post-emergence (PRE f.b. E-POST) pre- f.b. late post-emergence (PRE f.b. L-POST), early post-emergence (E-POST), late post-emergence (L-POST). In particular, 2 different mixtures of herbicides were applied in PRE, 1 mixture in PRE f.b. E-POST, 4 in PRE f.b. L-POST, 1 in E-POST and 6 in L-POST. The effects on weed infestation were assessed on *C. esculentus* and on the other weeds by measuring plant density (plants/m^2), ground coverage (%) and by visually evaluating overall efficacy on a percentage base. *C. esculentus* infestation was quite uniform on the field, with an average density of 41.7 stems/m^2.

C. esculentus was controlled by more than 80% in all PRE and PRE f.b. E-POST strategies, where the active substance S-metolachlor was applied. In general, POST strategies did not control satisfactorily the *C. esculentus* infestation, with the only exception of the mixture containing the active substance isoxaflutole, tiencarbazone-methyl and halosulfuron-methyl, applied in E-POST (efficacy 92%) and the mixture based on halosulfuron-methyl, applied in L-POST (efficacy 95%).