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Employing the correct duration of stale seedbed in rice

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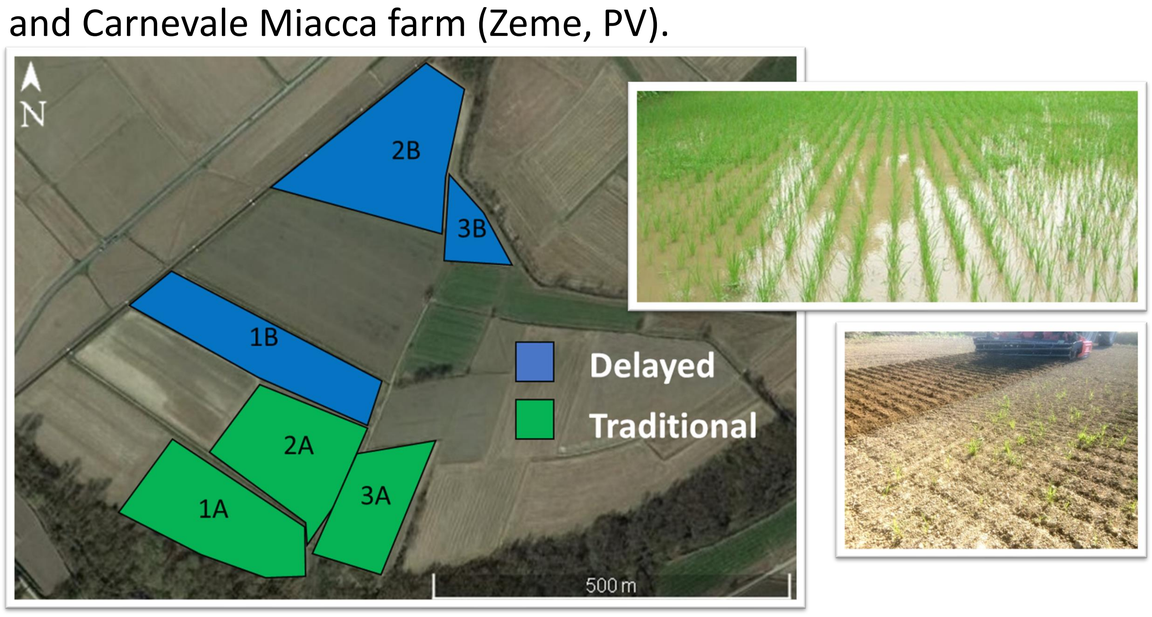
Introduction

Stale seedbed consists in preparing the soil for sowing, allowing weeds to grow and then controlling them by chemical or mechanical methods before crop sowing. Correct timing is crucial for the efficiency of stale seedbed, and innovative solutions, such as weed emergence predictive models, could be useful to determine the optimal stale seedbed duration.

Objectives: The main goal of this project is to develop a weed emergence predictive model for selecting the proper duration of stale seedbed, reducing the need for subsequent weed control treatments.

Materials and Methods

The experiment was carried out in 2021 and 2022 at the Braggio and Carnevale Miacca farm (Zeme, PV).



Emergence dynamics monitoring of weed species

Oryza sativa (L.) var. sylvatica

Echinochloa crus-galli (L.) Beauv.

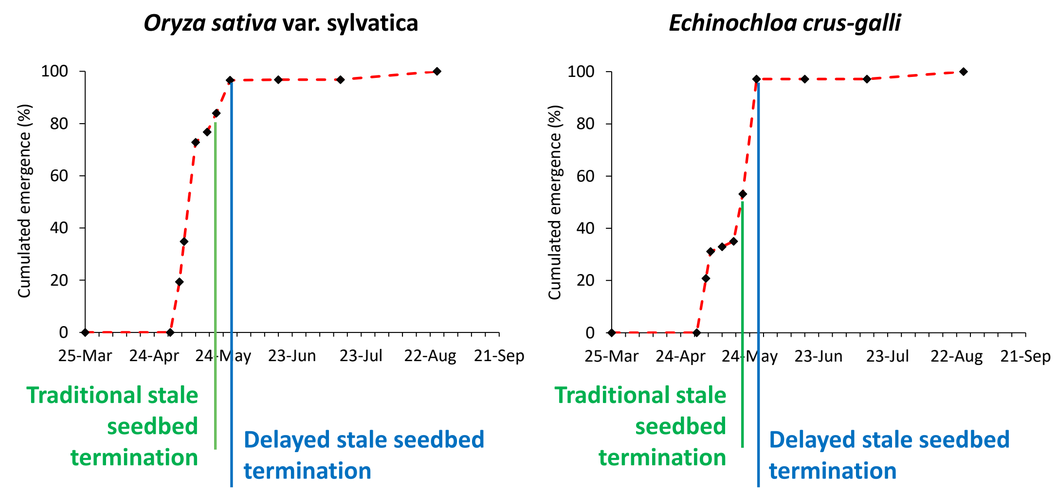
Weed emergence was monitored every 3-4 days in each plot by throwing 30×30 cm squares 10 times and noting the seedling number for each species. After the termination of stale seedbed, the infestation dynamic was monitored to assess the efficacy of the weed control strategy.

Soil temperature data were recorded during the experiment using sensors placed at a depth of 5 cm in the fields.

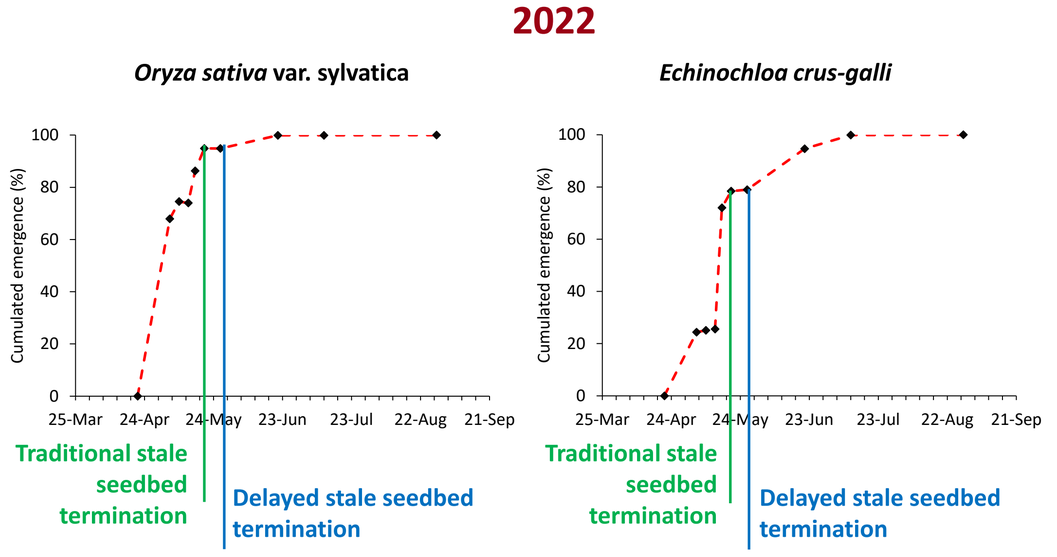
Results

Emergence dynamics and stale seedbed treatments for the two studied species observed.

2021



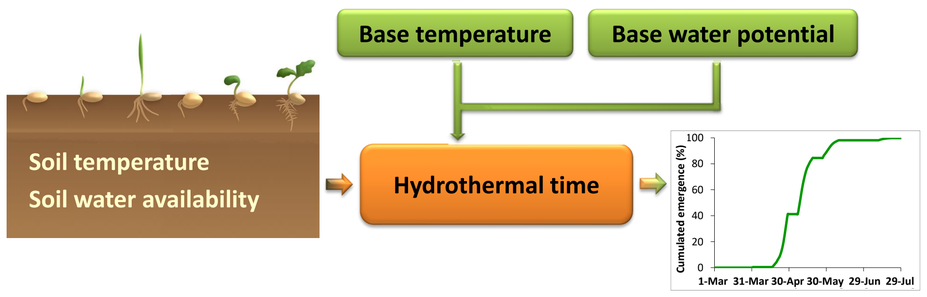
2022



The termination of stale seedbed in traditional date would have had a much less efficacy than the delayed termination, especially for *E. crus-galli*. These results confirm that the second date would be the best one. Using an emergence predictive model for the two weed species would allow to know the percentage of emergence in advance and choose the correct date of intervention.

Conclusions

The comparison of the emergence of the two weed species showed that they have different dynamics. Predicting their emergence patterns with a model could guide the farmers in identifying the best timing (established when high emergence percentages are achieved for both) and further improve the efficacy of stale seedbed technique.



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