



16-17 November 2023

WEED MAPPING AND INFLUENCE OF THE WEED INFESTATION ON THE SUNFLOWER PRODUCTIVITY

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Abstract: The aim of the present study is to determine the weed infestation in different growth stages of sunflower and to determine their influence on the productivity of the crop. A comparison of the weed infestation was determined between untreated plot and plot with application of the tank mixture of the herbicidal products Pulsar Plus (25 g/l imazamox) – 1.60 l/ha + Stratos Ultra (100 g/l cycloxydim) – 2.00 l/ ha. During the two years of the study, and during the two survey periods (Ist – in growth stage 8th - 10th true leaf stage of sunflower, and IInd - during the flowering of the crop) the predominant weed species were ragweed (*Ambrosia artemisifolia* L.) and wild hemp (*Cannabis ruderalis* Janisch.), followed by the weed Rough cocklebur (*Xanthium strumarium* L.).

• Introduction

Bulgaria and Romania are the largest sunflower producers in the EU (Hristov et al., 2019). In Bulgaria, three sunflower systems are grown: Clearfield or Clearfield Plus, ExpressSUN, and conventional.

To achieve high yields is necessary to control the weeds effectively. The weed control methods have to be performed in the optimal crop stage, before the critical period for decreasing the morphological parameters is reached (Simic et al., 2011). In agriculture, weed management is based mainly on the chemical method. Many researchers are working on the chemical weed control in sunflowers (Tonev et al., 2009; Tonev et al., 2010; Simic et al., 2011; Kostadinova et al., 2016; Mitkov et al., 2016, Jursík et al., 2017; Neshev et al., 2020).

• Material and method

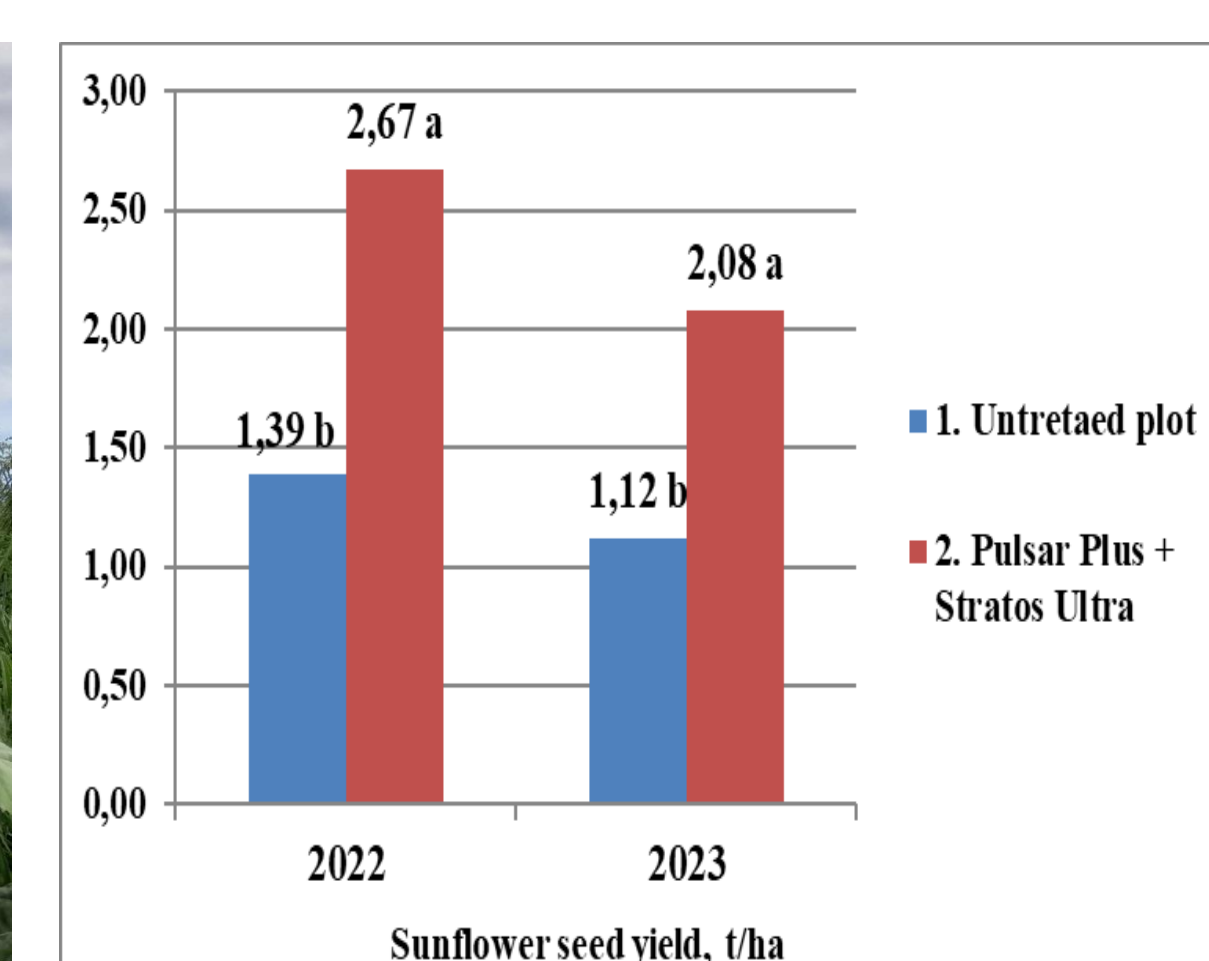
The study was conducted during two sunflower growing season with the sunflower hybrid „Coloris“ CL in 2022 and 2023. The experiment was carried out on the agricultural land of Novoseltsi village, in the region of Vidin city, Bulgaria.

The weed mapping was determined by the Π -method for weed survey in spring field crops. In the two experimental years the sunflower was grown after preceding crop winter wheat.

The following sunflower indicators were reported: Seed yield (kg/ha); Seed moisture, %; Absolute seed mass (g); Hectoliter seed mass (kg).

• Results and discussions

Weed species during the vegetation in 2023			
I. Annual – grass weed species		First reporting – 8 th – 10 th leaf pair of sunflower	Second reporting – in full flowering of sunflower
English	Latin		
1. Johnson grass	<i>Sorghum halapense</i>	5	11
II. Annual – broadleaf weed species			
2. Rough cocklebur	<i>Xanthium strumarium</i>	7	21
3. Cleavers	<i>Galium anarine</i>	1	0
4. Ragweed	<i>Ambrosia artemisifolia</i>	26	44
5. Common knotgrass	<i>Poligonum aviculare</i>	3	5
6. Wild hemp	<i>Canabis sativa</i>	15	31
III. Perennial – grass weed species			
7. Johnson grass	<i>Sorghum halapense</i>	7	16
IV. Perennial – broadleaf weed species			
8. Creeping thistle	<i>Cirsium arvense</i>	2	5



• Conclusions

During the two years of the study, and during the two survey periods (Ist in the 8th - 10th pair of sunflower leaves and IInd - during the flowering of the crop) the predominant weed species were ragweed and wild hemp, followed by the weed Rough cocklebur. Sunflower seed moisture content was higher for the plants from the untreated plot. Proved higher results for the studied indicators, such as seed yield, absolute and hectoliter mass of the seeds after the application of Pulsar Plus + Stratos Ultra in a tank mixture were recorded .