

Monitoring of spreading of invasive plant *Erigeron annuus* (L.) Pers. (daisy fleabane) in cereals crops in southeast Romania



INTRODUCTION

- *Erigeron annuus* (L) belonging to the Asteraceae family is the most frequent invasive plant which is found both in semi-natural and artificial habitats in Romania.
- Due to unendingly expansion, eastern daisy fleabane is now one of the most harmful weed in crops and it reduces biodiversity by dominating fields and eliminating the native species.
- *E. annuus* likely has a competitive and aggressive potential, because of the increased survival of its seeds, fast seedling and rosette stages or allelopathic activity.
- Because in recent years more farmers have reported the massive presence of this species in cereal crops, during this study, the authors have developed measures in order to eradicate and limit the spread of the invasive species *E. annuus* by integrating agrotechnical measures with products for plant protection, in cereals crops in the southeastern region of Romania

RESULTS

At Agigea the dominant weed was the *E. annuus* which at 30 days after the treatment, had a percentage of ground coverage >80% in the untreated control.

At this density, the wheat crop was completely compromised

At Dâlga, the dominant weed was the *E. annuus* which at 30 days after the treatment, had a percentage of ground coverage >30% in the untreated control..

At Fântânele the dominant weed was the *E. annuus* which at 30 days after the treatment, had a percentage of ground coverage >50% in the untreated control



The herbicide Thifensulfuron-methyl 75% WG provided a good efficacy on daisy fleabane. Best results were achieved at the higher dose and when it was applied together with Trend 90 EC to young, actively growing weeds.

The irrigation had the effect of increasing the activity of the Thifensulfuron-methyl herbicide, performing very good results.

At a density > 50 plants/m² the wheat crop is completely compromised.

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MATERIALS AND METHODS

- 2020-2021, 3 different locations, on 3 different types of chernozem soils and under irrigation conditions at Agigea, Constanța.
- Four experimental fields, one in Agigea (Constanța county), one in Dâlga (Călărași) and two in Fântânele (Teleorman).
- Randomized blocks, in 4 repetitions with a plot area of 100 m².
- Thifensulfuron-methyl 75% WG with adjuvant and without applied at the doses of 20, 30 and 40 g/ha. Trend 90 EC (ethoxylated isodecyl alcohol) applied at 250 ml/ha.
- Weeds density assessed as percentage of soil coverage and in number of plants per one square meter using a metric frame.
- Efficacy recorded on the 10, 20 and 30 days after treatments according EWRS (European Weed Research Society).
- Statistical data - processing of the assessments - ARM-9 software (P= .05, Student-Newman-Keuls)

Agronomic practices in the field experiments

Location	Constanța	Călărași	Teleorman	Teleorman
GPS for experimental field	N: 44°564'102" E: 28°3348'28"	N: 44°29003" E: 27°02948"	N: 43°411528" E: 25°121521"	N: 43°421'18" E: 25°15183"
Soil	Vermi - calcic chernozem	Cambic chernozem	Argic chernozem	Argic chernozem
Preceding crop	Maize	Rapeseed	Sunflower	Soybean
Cultivar	PG 101	Glosa	Rubisko	Genius
Sowing date	01.10.2020	12.10.2020	10.10.2020	10.10.2020
Density (plants m ²)	400	650	350	700
Emergence date	11.10.2020	23.10.2020	22.10.2020	22.10.2020
Insecticides	Faster Delta 0.3 l/ha - 28.04.22	Sumi Alpha 5 EC 0.2 l/ha - 30.04.2021	Faster Gold 50 EC 0.10 l/ha - 05.04.2021 Lamdex Extra WG 0.3 Kg/ha - 21.04.2021	-
Fungicides	Priaxor EC 0.75 l/ha - 07.04.22 Delaro 325 SC 1.0 l/ha - 28.04.22	Mystic Top 0.5 l/ha-25.04.2022 Mirage 45 EC 1.0 l/ha - 21.04.2021	Leander 750 EC 0.75 l/ha - 05.04.2021 Mirage 45 EC 1.0 l/ha - 21.04.2021	-
Water Irrigation	16.10.2020 - 600 m ³ /ha	-	-	-
Treatments herbicide	28.03.2021	6.04.2021	10.04.2021	30.03.2021
Stage Majority (BBCH)	23*	23*	34 - 35*	34 - 35*
Stage Minimum (BBCH)	21*	21*	33*	33*
Stage Maximum (BBCH)	24*	24*	36*	36*

Legend - The BBCH-scale is used to identify the phenological development stages of plants:
*21 - beginning of tillering; first tiller detectable; *23 - 3 tillers detectable; *24 - 4 tillers detectable;
*33 - node 3 at least 2 cm above node 2; *34 - node 4 at least 2 cm above node 3; *35 - node 5 at least 2 cm above node 4;
*36 - node 6 at least 2 cm above node 5.