

Control of *Senecio vulgaris* L. in carrot seed crop with pyridate tank-mixes – it’s potential, efficacy and selectivity

Darko Jovanović, Biljana Šević, Jelena Stojiljković, Ivan Tupajić, Vladimir Miladinović

Email: djovanovic@institut-palanka.rs

Institute of Vegetable Crops Smederevska Palanka, Smederevska Palanka, Serbia

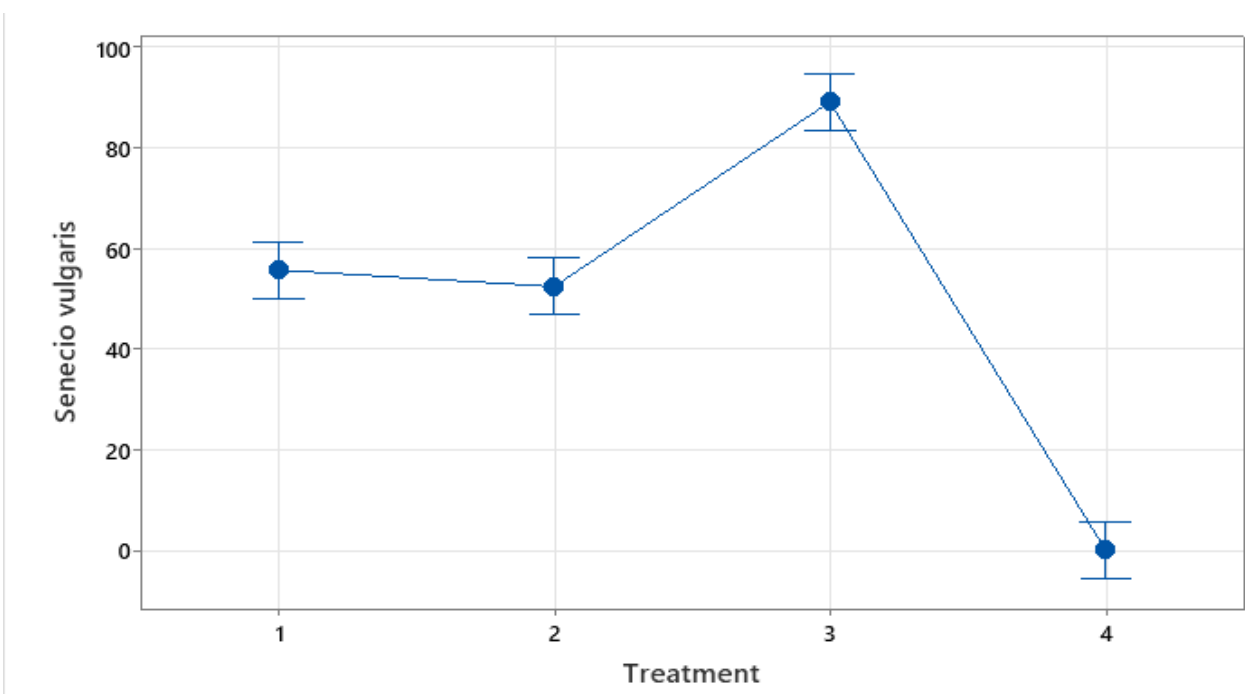
Introduction

-Carrots are among the most important vegetable crops in the world;
-For weed control in carrot crops, farmers have used pendimethalin and metribuzin for decades;
-Due to Regulation (EC) No. 1107/2009, metribuzin is banned and pendimethalin is on the Candidate for substitution list, so there is a need to discover and develop new options for weed control;
-Pyridate as a PSII inhibitor, has been on the market for 45 years, but has never been fully implemented in IWM strategies;
-The aim of this study was to evaluate the efficacy and selectivity of 3 different tank-mix combinations of herbicides for control of *Senecio vulgaris* L. in carrot seed crop.

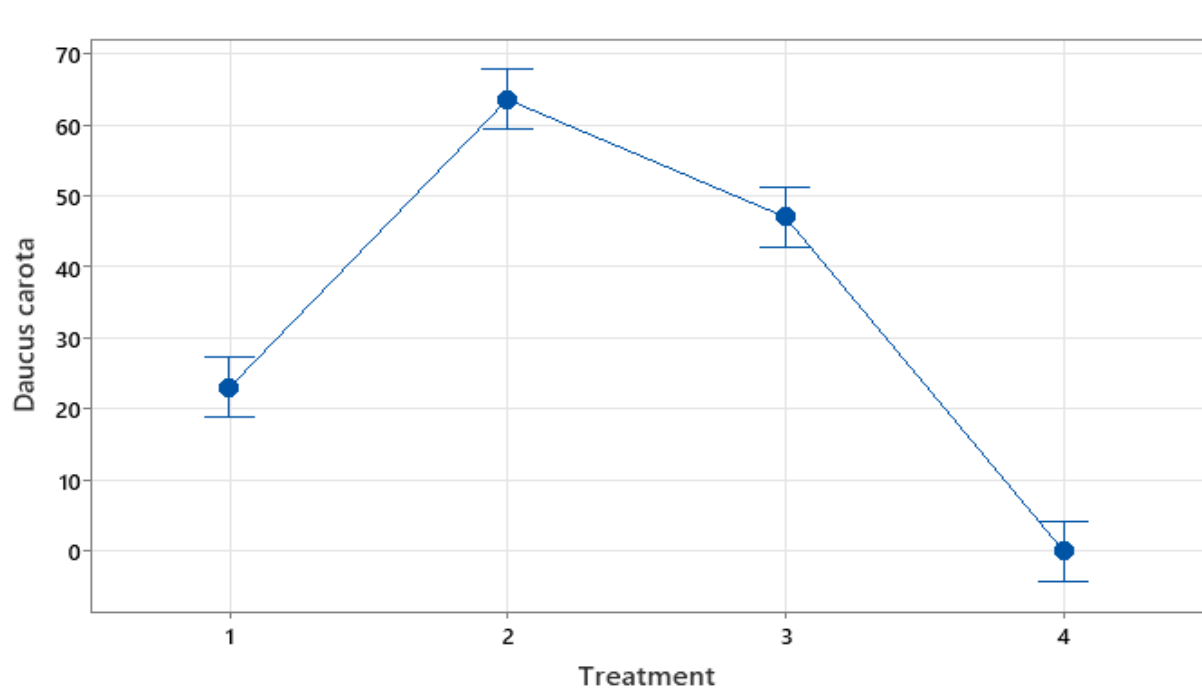
Material and methods

-Carrot variety Nantes SP-80 was sown on October 2nd, 2024, at the sowing spacing of 50 x 5cm;
-As a PRE-EM herbicide, pednimethalin at the rate of 1137.5 g a.i. ha⁻¹ was applied on October 3rd;
-For herbicide application, Lechler IDK 12002 nozzles were used, with a pressure of 200 kPa, a ground speed of 4.56 km h⁻¹, delivering 200 L ha⁻¹ of spray solution;
-The following 3 herbicide combination were tested:
1) pyridate 900 g a.i. ha⁻¹ + clopyralid 100 g a.i. ha⁻¹;
2) pyridate 900 g a.i. ha⁻¹ + flumioxazin 30.6 g a.i. ha⁻¹;
3) pyridate 900 g a.i. ha⁻¹ + clomazon 96 g a.i. ha⁻¹;
-21 DAT visual efficacy, crop injury and biomass were sampled and over dried at 75°C.

Results



Graph 1. *S. vulgaris* biomass reduction across treatments.



Graph 2. Carrot biomass reduction across treatments.



Picture 1. Pyridate + clopyralid.



Picture 2. Pyridate + flumioxazin.



Picture 3. Pyridate + clomazon.

Conclusion and discussion

-Pyridate might be used as a new herbicide for weed control in carrots, including seed crop;
-*Senecio vulgaris* was at begin flowering stage by the time of herbicide application;
-Pyridate mixed with all 3 other herbicides caused significant injuries and biomass reduction;
-The best efficacy in *Senecio vulgaris* control provided treatment 3) pyridate + clomazon, but this treatment also caused statistically significant differences in dry biomass reduction as well as treatment 2) pyridate + flumioxazin;
-Further research needs to be investigated with lower herbicide rates and split application, for treatments 2) and 3) which could be considered as promising alternatives.

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