Triazol content to control *Phomposis helianthi* in two sunflower cultivars in Uruguay

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INTRODUCTION

Sunflower (*Helianthus annuus* L.) canker, induced by *Phomopsis helianthi/Diaporthe helanthi* is one of the main fungal diseases in Uruguay. Lamarque and Perny (1985) found yield losses as high as 40% in sunflowers crops in France**.**

Initial infections of leaf tips are induced by ascospores during the vegetative growth stage. Mycelium might spread along the petiole to the stem. The fungus invades the vascular tissue and under extreme conditions, lodging may occur happend (Viguié, 2000). Genetic and chemical control methods developed in the last 12 years have been quite efficient in limiting the disease attacks (Viguié, 1999). In Uruguay, cultivars and fungicides are the most common practices used to reduce yield and quality losses. However, little is known on fungicide efficiency, its residual effect and its relationship with cultivars. The objective of this work was to study the performance of two cultivars to tebunconazole sprayed with different technologies and to evaluate its content in two moments. Tebuconazole recovery was also determined.

MATERIALS AND METHODS

Cultivars MG 52 and DK 3810 were sprayed at flowering growth stage with triazol (tebuconazole) using two application technologies and water volumes: ground (60 y 120 L/h) and aerial application (15 and 30 L/h), a control without fungicide was also included. Disease severity was registered periodically and samples of plant tissue were taken right after the fungicide application and 15 days later. Tebuconazole was extracted according to Luke et al. (1981), and its content was analyzed by HPLC with a photodiode array detector. The separation of tebuconazole was done, using a C18 column as stationary phase and 0.1 M ammonium acetate:acetonitrile (40:60) as mobile phase at a flow of 1 mL/min. Peak of tebuconazole were identified comparing retention times. The experimental design were complete randomized blocks with four replicates. Tebuconazole recovery (%), was measured with the same protocol as before using filter paper.

RESULTS

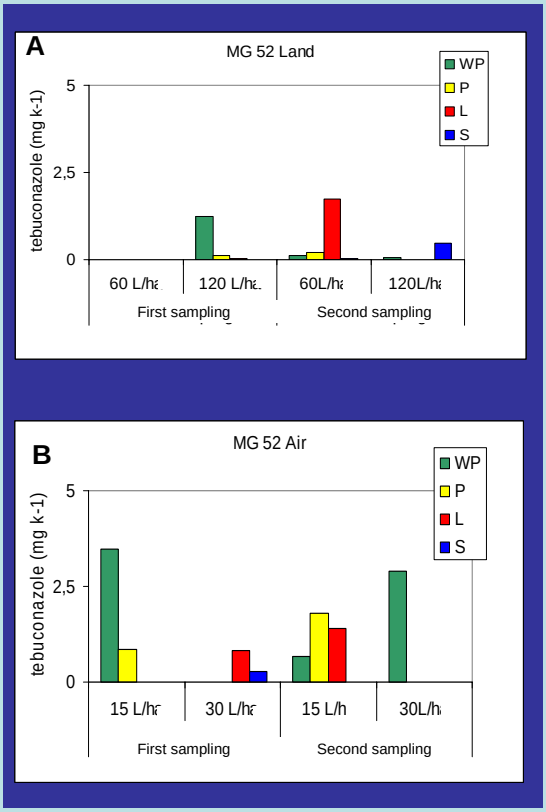

Figure1. Tebuconazole content in cultivar MG 52 with ground and aerial application (A and B). WP-whole plant (green), P-petiole (yellow), L-leaves (red) and S-stem (blue).

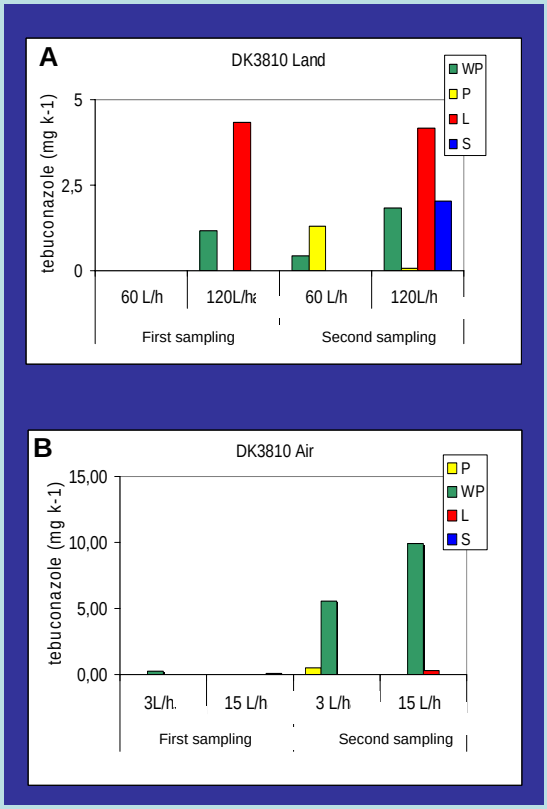

Figure 2. Tebuconazole content in cultivar MG 52 with ground and aerial application (A and B). Treatment were explain in Fig. 1.

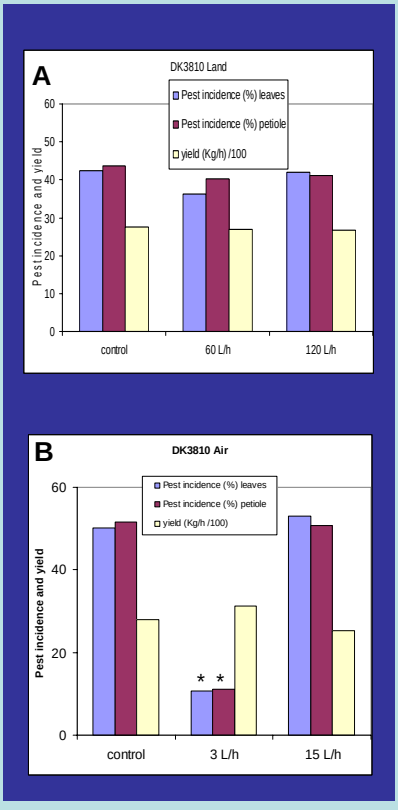

Figure 3. Disease Pest incidence on leaves, petiole and yield. * significative differece between control and treatment at 5%.

FINAL COMMENTS

- This is the first Uruguayan study on tebuconazole content.
- Tebuconazole content was higher in cultivar DK3810 than cultivar MG52.
- Aerial applications showed higher tebuconazole content than ground strategies.
- Cultivar DK3810 with aerial spray (3 L/ha) showed a higher tebuconazole recovery that could be explained by the lowest disease incidence and higher yield.
- Tebuconazole recovery was 89.8 %.
- Future research carried out under more controlled conditions would contribute to a better knowledge on fungicide-cultivar-application technologies relationships.

Bibliography

- Lamarque and Perny (1985). Cultivar, 179: 57–59.
- Viguié et al., (2000). Euphytica 116:167-179.
- Viguié et al., (1999). Europ. J. Plant Path. 105:693-702.
- Luke et al., (1981). J. Off. Anal. Chem. 64,1187-1195.

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