

Short Communication

Seed treatment influence with Carboxin + Thiram to initial development of crambe (*Crambe abyssinica* Hoechst) in two crop years

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Crambe abyssinica Hoechst, from *Brassicaceae* family, is a promising plant for the biofuel production field. However for being a worldwide successful culture, it is necessary to be able to yield optimize, so it is interesting to be guaranteed of a good quality seeds and technologies use such as seed treatment, to achieved a good crop establishment in the early phase plant development. The objective of this experiment was to evaluate the initial development of the crambe, treated seed with fungicide Carboxin + Thiram (Vitavax, Du Pont) in two growing seasons. The experiment was conducted in a protected environment, at Maringá State University, Umuarama campus, at Paraná State, Brazil. Delineation was completely randomized with two treatments and ten repetitions. It can be concluded that, the treatment can disrupt the initial plant development, in both years.

Key words: *Crambe abyssinica*, seed treatment, fungicide.

INTRODUCTION

Seed treatment with fungicides is a cultural treat used worldwide by farmers from low to high technology. However some products may negatively influence the development of certain plant species. Crambe (*Crambe abyssinica* Hoechst.) is a winter season plant that has relatively short cycle, which ranges from 90 to 100 days as well as being very resistant to drought according Silva et al. (2011). In addition, this plant is considered more tolerant to cold, and has good potential for biofuels production, due to the high lubricity of oil, which is found in concentrations of 30 to 45% in its seeds (Toebe et al., 2010).

For the cultivation success of this oleaginous on world

is need to achieve satisfactory yield levels, which can be secured by the use of higher quality seeds (Neves et al., 2007; Faria (2010) and it can be achieved by means of an adequate seeds drying. However, the seed treatment, with the use of insecticides, fungicides and bactericides may provide greater health and plants vigor an early crop stage that protecting the establishment phase, which can be observed in several studies conducted in various vegetables species (Goulart, 2002; Mehta et al., 2005; Barros, 2007).

Crambe case, there are few studies about the use of seed treatment. Thus, it is unknown if this causes some phytotoxicity to plants, which would possible cause

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Table 1. Plant height (cm) and dry matter (mg) in aerial part of crambe plants depending on the seed treatment with Carboxin + Thiram. Umuarama (PR) - 2010 and 2011.

Treatment	Plants height (cm)				Dry matter (mg)	
	14 DAE		21 DAE		2010	2011
	2010	2011	2010	2011		
Seed treated	2.3 ^b	2.7 ^b	3.0 ^b	3.2 ^b	39.2 ^b	41.6 ^b
Control	3.8 ^a	3.7 ^a	4.5 ^a	4.2 ^a	52.4 ^a	51.9 ^a
V.C.%	14.3	12.5	17.2	15.2	19.5	15.6

DAE = Days after emergence; means followed by same letter in column do not differ by Tukey test at 5% level of probability, v.c. = Variation coefficient.

growth retardation or even death of seedlings. In a study by Bittencourt et al. (2000), using insecticide seed treatment for corn, coupled with carbofuran and thiodicarb, with the addition of boron and molybdenum resulted in the reduction of physiological quality of treated seeds, a fact which certainly reduces plant vigor, and yield also.

Considering the aforementioned, the aim of this study was to evaluate the seed treatment influence with carboxin + thiram in the crambe initial development.

MATERIALS AND METHODS

The experiment was conducted under greenhouse conditions at farm in Umuarama Municipal District, Paraná State, Brazil, at 53°18'48" west longitude and 23°47'55" south latitude and 430 m of altitude over the sea level. The climate is mesothermal subtropical with average annual temperatures around 22.1°C. The local soil is an Oxisol Udic Dystrophic (USA, 1998).

Experiment installation was performed on October 2010 and 2011, using a completely randomized design with two treatments and ten replicates, totaling 20 plots. Crambe seed, cultivar FMS Brillhante, was sown directly into soil in plastic bags for seedlings of 30 cm in height, with a capacity of 3 L of soil, which was taken to the upper side of the greenhouse where the experiment was conducted. The treatment composed of untreated seeds and seeds treated with fungicide (carboxin + thiram) at a rate of 120 ml of active ingredient (ai) per 100 kg of seed.

Sowing took place on October 2010 and 2011, with 10 seeds per bag, packed in plastic greenhouse, where they remained throughout the plant development and evaluation. At 7 days after emergence (DAE) the thinning of seedlings was performed, leaving only two per bag.

Assessments were respectively 14 and 21 DAE of the crop. The plant heights were evaluated using a millimeter ruler considering how basic the ground plane is and making the measurement until to the plants apex. At 21 DAE was also preceded, the withdrawal of the tops of the bags and these were packaged in paper bags and labeled, and taken to a greenhouse with forced air circulation, maintained at a temperature of 65°C for 48 h, until maintaining constant mass, to evaluate the dry matter of shoots in precision scales with chapel. Statistical analysis was performed on the model analysis of variance with means compared by Tukey test at 5% level of probability.

RESULTS AND DISCUSSION

As can be seen in Table 1, the seed treatment promoted

growth retardation that could influenced the seeds production and the plant development, and these were noticeably lower in height measurements both at 14 and 21 DAE, on both crop years, when compared with the indices submitted by tall plants, formed seeds that did not receive treatment with carboxin + thiram. Amaral and Ribeiro (1982) observed irregularities and heterogeneity in the emergence and seedling height in evaluating aspects of the rice seedlings emergence with this same fungicide.

Similarly, the response in the accumulation of dry mass was also lower in the grown plants with treated seed, compared to the control. Faria et al. (2003) had obtained similar results with the use of fungicides for cotton, with a reduction both in the area as the seedlings dry mass. Tropaldi et al. (2010), used castor beans and cotton, but showed differences between the treatments using seeds treated with fungicides to shoot dry mass.

Conclusion

The crambe seed treatment with fungicide carboxin + thiram base, have negative influence on the growth and accumulation of dry matter in the initial development of that vegetable specie.

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