

Evaluation of Post Emergence Applications of Mustard Seed Meal in Chile Pepper.

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Mustard seed meal (MSM) — meal by-products from Brassicaceae seed oil extraction — control some weeds and soil-borne pathogens when applied before crop emergence. MSM applications after crop emergence might be components of pest management programs, but these applications could be inappropriate because MSM-derived volatiles potentially injure the crop. The objectives of this research were 1) to identify post-emergence application technique that causes minimal MSM induced injury on chile pepper (*Capsicum annuum*) under greenhouse conditions, and 2) assess post-emergence applications of MSM for weed control and phytotoxicity on chile pepper under field conditions. For the greenhouse study, chile pepper was seeded in field soil and treatments were applied after 8wk of emergence. Treatments were factorial combinations of two rates (4400 kg MSM ha⁻¹ [high] and 2200 kg MSM ha⁻¹ [low]) and two application methods (soil surface and incorporation) and a nontreated control. For the field study, treatments were evaluated in four chile pepper fields across southern New Mexico. Field treatments were high and low rate of MSM treatment, each incorporated and compared against a non-treated control. Greenhouse study results indicated that post-emergence MSM reduced chile pepper photosynthetic rates within two days of application. These reductions lasted for high rate-surface treatment; but, for incorporated treatments, photosynthesis recovered to rates comparable to the control. At 14 d after application, non-treated controls and incorporated treatments were similar in chile plant height, biomass, and leaf area. A generalized linear mixed model conducted on field data indicated that MSM at high rate suppressed weeds but not reduce chile yield compared to control. Because these applications provide weed control without injury to the crop, post-emergence MSM can be a component of integrated pest management strategies for chile pepper production.