

RESPONSE OF PIGWEED AND FOXTAIL SPECIES TO BROADCAST FLAMING. Stevan Z. Knezevic*, Avishek Datta, and Santiago M. Ulloa. Associate Professor, Post Doctoral Fellow and Graduate Student, Haskell Agricultural Laboratory, University of Nebraska, Concord, NE, 68728.

Propane flaming could be an effective tool for weed control in organic cropping systems. However, susceptibility of major weeds to broadcast flaming must be determined in order to optimize its proper use. Therefore, field experiments were conducted during summer of 2008 at the Haskell Agricultural Laboratory, Concord, NE utilizing six rates of propane and four weed species, including green foxtail (*Setaria viridis*), yellow foxtail (*Setaria glauca*), waterhemp (*Amaranthus rudis*), and redroot pigweed (*Amaranthus retroflexus*) with the objective to collect some base-line information on their tolerance to broadcast flaming. Propane flaming response was evaluated at three growth stages for each weed species. The propane rates applied were 0, 12, 31, 50, 68 and 87 kg ha⁻¹ corresponding to 0, 2.5, 6.5, 10.5, 14.4 and 18.4 gal acre⁻¹. Flaming treatments were applied utilizing an ATV mounted flamer moving at a constant speed of 6.5 km h⁻¹ (4 m h⁻¹). The response of the weed species to propane rates was based on visual injury rating and percent biomass loss recorded at 14 days after treatment (DAT) and described by log-logistic model. Overall response of the weed species to propane flaming varied among species, growth stages, and propane rates. In general, foxtail species were more tolerant than pigweed species. Waterhemp and redroot pigweed did not differ in their response to broadcast flaming and were easily controlled (90% control) with propane rate of about 60 kg ha⁻¹ when flamed at early growth stages (3-5 leaf stage), however they needed higher propane rate of about 90 kg ha⁻¹ at later growth stages (9 leaf stage to flowering). Foxtail species differed in their response to broadcast flaming. Green foxtail was more tolerant than yellow foxtail regardless of the growth stage. Propane rate of 110 kg ha⁻¹ was needed to provide 90% control of green foxtail irrespective of the growth stage. In contrast, 90% control of yellow foxtail was achieved with propane rate of 80 kg ha⁻¹ for any growth stage. It is important to point out that foxtail species started re-growing at about 14 DAT regardless of the growth stage flamed, whereas pigweed species did not re-grow, especially when flamed with rates above 60 kg ha⁻¹.