

CROP TOLERANCE TO FLAMING. Stevan Z. Knezevic*, and Santiago Ulloa. Associate Professor and Graduate Student Haskell Ag. Lab., University of Nebraska, Concord, NE, 68728-2828.

Flaming can be an additional tool for weed control in organic cropping systems. However, tolerance of major crops must be determined in order to optimize proper use of flame. Therefore, objective of this study was to collect a baseline information on crop tolerance to broadcast flaming. Field experiments were conducted during summer of 2007 utilizing six rates of propane and six crops including: field corn (*Zea mays*), sorghum (*Sorghum halepense*), soybean (*Glycine max*), sunflower (*Helianthus annuus*), alfalfa (*Medicago sativa*) and red clover (*Trifolium pratense*). The propane rates applied were 0, 12.1, 30.9, 49.7, 68.5 and 87.22 kg/ha (0, 2.5, 6.5, 10.5, 14.4 and 18.4 gal/a). Flaming treatments were applied using a constant speed of 6.5 km/hour (4MPH). Species response to propane rates were described by log-logistic models based on visual estimates of crop injury. Overall response to flame varied depending on the species, growth stage and propane rate. Corn and sorghum were more tolerant than the broadleaf crops. Soybean and sunflower were severely injured when flamed at early growth stages (VE-VC), however they could tolerate more heat at later stages (V9-R1). Alfalfa and red clover were the most susceptible to flaming regardless of the growth stage. Perennial crops such as alfalfa and clover may show more tolerance to flaming in their 2nd or 3rd year of growth. Of all crops tested, broadcast flaming has the most potential for use in field corn and sorghum. More research is needed to evaluate flaming procedures (eg. positioning of the flame) in other grass-type crops, and various broadleaf crops (sknezevic2@unl.edu).