

EFFECT OF LACTOFEN APPLICATION TIMING ON YIELD AND ISOFLAVONE CONCENTRATION IN SOYBEAN SEED. Kelly A. Nelson, George E. Rottinghaus, and Teak E. Nelson, Research Assistant Professor, Division of Plant Sciences, University of Missouri, Novelty, MO 63460, Clinical Associate Professor, Veterinary Medicine Diagnostic Laboratory, University of Missouri, Columbia, MO 65211, and Instructor, Department of Nursing, Truman State University, Kirksville, MO 63501

A postemergence application of the herbicide lactofen has increased phenolic compounds such as isoflavones in soybean plants. We hypothesized that lactofen increases isoflavone levels in seed when treated at the early R1 and R5 stages of development. Field research in 2002 and 2004 evaluated the effect of lactofen application timing and cultivar (Garst 3712, glyphosate-resistant; Big Bubba, high-protein; and Envy, edamame) on crop response and seed isoflavone concentration. Injury from lactofen at 70 g a.i. ha⁻¹ was 7 to 15% seven d after treatment. Lactofen applied to Big Bubba in the R5 stage of development increased concentration of genistein 78 µg g⁻¹, daidzein 82 µg g⁻¹, and total isoflavones 169 µg g⁻¹ compared to the non-treated control. Lactofen applied at the R5 stage of development increased Garst 3712 daidzein concentration 52 µg g⁻¹. Lactofen did not affect seed isoflavone concentration when applied at the R1 stage of development or when applied to Envy or Garst 3712 at the R5 development stage, but total isoflavone concentration increased 10% in Big Bubba when lactofen was applied at the R5 stage of development. Seed yield averaged over three cultivars was reduced 290 and 330 kg ha⁻¹ when lactofen was applied in 2002 at R1 and 2004 at R5 stages of development, respectively.