WEED CONTROL IN FOOD GRADE SOYBEAN WITH INTER-SEEDED RYE. Bradley E. Fronning, Kurt D. Thelen, Dale R. Mutch, and Todd Martin, Graduate Research Assistant, Assistant Professor, District Extension Agent, and Technician, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824.

Studies were conducted over three years (2000-02) at Kellogg Biological Station near Hickory Corners, MI to determine the effect of inter-seeded rye on weed and soybean biomass and soybean yield. Two experiments (drilled system, conventional system) were conducted which investigated soybean population, cultivation and inter-seeded rye. The drilled system had soybean planted in 19 cm rows at three populations with or without inter-seeded rye. Conventional system included soybean planted in 76 cm rows with or without inter-seeded rye and with or without cultivation.

Soybean biomass in the drilled system generally increased as soybean population increased and decreased in the presence of rye, as expected. Late season weed biomass decreased from 170 to 3 kg/ha^{-1} as soybean population increased from 446,000 to 1,333,600 $plants/ha^{-1}$ in 2000. Late-season weed biomass decreased from 774 kg/ha^{-1} when no rye was present to 77 kg/ha^{-1} when rye was present in 2001. Soybean yield generally increased as soybean population increased, however, soybean yield was usually lower when rye was present than when rye was not.

Soybean biomass was lower when rye was present than when there was no rye in the conventional system. Late-season soybean biomass was higher when cultivated than when not cultivated. Rye alone, rye plus cultivation, and cultivation alone resulted in large reductions of late-season weed biomass compared to no rye plus no cultivation in 2001. When yield was averaged across main affects cultivation yielded more than no cultivation and no rye yielded more than with rye.

Spring planted inter-seeded rye may be a useful weed control tool for organic production agriculture. It has shown the ability to reduce weed biomass through out the growing season with out causing too much soybean yield reduction. When combined with cultivation inter-seeded rye may be more beneficial than when used alone.

2002 North Central Weed Science Society Abstracts 57:68.