VARIETY-SPECIFIC WEED MANAGEMENT IN POTATOES. Jed B. Colquhoun and Richard A. Rittmeyer, Associate Professor and Research Associate, Department of Horticulture, University of Wisconsin, Madison, WI 53706.

Potato varieties differ greatly in plant emergence, early season growth, and canopy closure rates. In previous research, differences among varieties in the ability to tolerate or suppress weeds were observed and attributed to differences in early season growth characteristics. With this in mind, the objective of this study was to develop variety-specific weed management strategies based on early-season competitive ability, with the overall goal of reducing the reliance on herbicides as the primary means of weed control. The study was arranged in a split-plot design with potato variety (Bannock Russet or Russet Burbank) as the main plot factor and weed control program as the sub-plot factor. Weed control programs included a conventional broadcast preemergence application of s-metolachlor and metribuzin at potato hilling, the same program applied in a band over the potato row combined with inter-row cultivation, rimsulfuron and metribuzin broadcast postemergence, rimsulfuron and metribuzin banded postemergence over the potato row combined with cultivation, glyphosate banded postemergence between the potato row, and cultivation alone. Russet Burbank emerged earlier and established a full crop canopy prior to Bannock Russet. In both varieties, in-row weed control was greater where herbicides were applied compared to cultivation alone. In-row weed biomass in Russet Burbank was similar when herbicides were broadcast, banded, or applied only postemergence. In Bannock Russet, banding herbicides or using exclusively postemergence herbicides resulted in poor in-row weed control. Between-row weed biomass was minimal in Russet Burbank and no differences were observed among weed control programs. In Bannock Russet, between-row weed biomass was greatest where preemergence herbicides were applied broadcast or banded. Marketable potato yield was similar between programs involving herbicides and cultivation alone in Russet Burbank. Yield was greater when herbicides were broadcast preemergence compared to when they were banded at a similar timing. In Bannock Russet, yield was reduced when cultivation was used alone compared to programs including herbicides. Potato yield was greatest in the conventional preemergence broadcast s-metolachlor and metribuzin program. Bannock Russet yield was lowest where postemergence herbicides were banded or cultivation was used alone.

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