

NEW DESICCATION OPTIONS FOR POTATO. Harlene M. Hatterman-Valenti and Paul G. Mayland, Assistant Professor and Research Specialist, Plant Sciences Department, North Dakota State University, Fargo, ND 58105.

Field trials were conducted during 2003 and 2004 at the Northern Plains Potato Growers Association Irrigated Research site near Tappen, ND and at a NDSU Agriculture Experiment Station dryland site near Prosper, ND to compare potato vine desiccation and yield from recently registered desiccants and desiccant combinations to standard practices. Herbicides were applied to the middle two of four row plots with a CO₂ pressurized sprayer equipped with 8002 flat fan nozzles with a spray volume of 20 GPA and a pressure of 30 psi. on August 21 and 29 at Prosper and September 4 and 12 at Tappen during 2003 and September 1, and 10, or just September 17 at Prosper during 2004. Percent leaf and stem necrosis for cultivars Russet Burbank at Tappen and Red Norland at Prosper were recorded 7, 15, and 21 days after treatment (DAT) in 2003 and 16 and 27 DAT during 2004.

Results indicated that in 2003, leaf and stem necrosis at 7 DAT for Russet Burbank was less with a single application of carfentrazone or pyraflufen compared to diquat. At 15 DAT, leaf and stem necrosis was less with repeat applications of carfentrazone or pyraflufen compared to diquat or diquat followed by carfentrazone. However, by 21 DAT leaf and stem necrosis was similar for all desiccants except the low rate of pyraflufen. Russet Burbank yield comparisons indicated that the slower vine death with carfentrazone allowed bulking to continue. Total marketable yield and 6 to 12 oz. tubers were greater when carfentrazone was applied compared to diquat. French fries and chips made 6 to 8 wk following harvest and again 3 mo. after initial frying showed that the desiccants did not affect fry or chip color. Analysis of the reducing sugars on the stem and bud ends of the tubers did however show higher glucose levels on the stem end of tubers within the diquat treatment compared to untreated tubers shortly after harvest but that by 3 mo. of storage glucose levels in the stem end of tubers were similar.

Results from the dryland site during 2003 indicated that leaf necrosis at 7 DAT for Red Norland was less with a single application carfentrazone or diquat compared to glufosinate plus AMS. Stem necrosis at 7 DAT was less with a single application of carfentrazone, diquat, or glufosinate compared to glufosinate plus AMS. By 14 DAT, almost total leaf and stem necrosis occurred with all desiccants. Total marketable yield and 12 to 16 oz tubers were greater when carfentrazone, carfentrazone plus diquat, or diquat alone was applied compared to glufosinate plus AMS or glufosinate plus AMS followed by carfentrazone. Yield of 6 to 12 oz tubers was greater when carfentrazone, carfentrazone plus diquat, or diquat alone was applied compared to glufosinate plus AMS followed by carfentrazone.

Results in 2004 indicated that leaf and stem desiccation 16 DAT was less with pyraflufen than carfentrazone or diquat. At 27 DAT, leaf necrosis was greater with carfentrazone or pyraflufen than diquat. A delayed application (16 d interval) of the middle and high rate of carfentrazone provided greater leaf necrosis as a single delayed application or repeat applications of diquat. Stem necrosis at 27 DAT was greater with a repeat application of carfentrazone (middle rate) compared to diquat.