

Date Submitted May 25, 2003

NCARS/NCCES Code 2002-0571

   Extension X Research  
   INTERIM X FINAL

NC-9 #50  
2002  
FINAL

FINAL REPORT  
To  
NORTH CAROLINA PEANUT GROWERS ASSOCIATION

TITLE: Weed and Tomato Spotted Wilt Virus Control, Physiological Behavior,  
and Peanut Tolerance with Valor and Strongarm Herbicides

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REPORT: Studies were conducted at Rocky Mount and Lewiston in 2002 to evaluate peanut response and weed and TSWV control with Valor herbicide as influenced by method of application. Weed control with Valor was what we had observed in previous years. Valor preemergence (PRE) provided excellent control (greater than 90%) of pigweed species including Palmer amaranth and common lambsquarters. It provided fair to good control (60-80%) of prickly sida and morningglories. Shallow incorporation reduced control of prickly sida and morningglories but did not influence control of pigweed species or common lambsquarters. TSWV control was not influenced by Valor or by method of application, which is different than results seen in 2001. It may be that the dry planting season contributed to less peanut injury and this somehow influenced TSWV control. It may be that herbicide-injured peanut is less attractive to thrips than uninjured peanut.

*Strongarm Postemergence Weed Control.*

Strongarm applied in a POST tank mixture with Select or 3 days before or after Select treatment will antagonize control of goosegrass and large crabgrass. Control of Texas panicum, fall panicum, and broadleaf signalgrass was antagonized only when Strongarm was applied in a POST tank mixture with Select. Thus peanut growers should apply Select first to control annual grasses and come back a week later for Strongarm to control common ragweed and or morningglories.

*Peanut Tolerance to Strongarm Postemergence and Laboratory Physiology Research:*

In a weed free study at Lewiston and Rocky Mount, a rate of Strongarm by application timing experiment was conducted. Strongarm was applied at 0.008, 0.012, 0.024, and 0.048 lb/ac in all combinations with application timings of June 1, June 15, July 1, and July 15. Peanut injury was characterized by yellowing and some stunting that was rate dependent. Injury was transitory and was generally not apparent by 3 weeks after treatment. As in the case of the aforementioned rate study, peanut yield was not different among Strongarm-treated peanuts and the untreated weed free check. Peanuts yielded similarly with no differences among treatments. Weed free studies were conducted at Lewiston and Rocky Mount to evaluate the response of NCV-11, Gregory, and Perry

peanuts to Strongarm applied at 0.008, 0.016, 0.024, 0.031, 0.046, and 0.063 lb ai/ac postemergence with 0.025% nonionic surfactant. Crop injury was minimal with all treatments, however yellowing of peanuts increased and persisted longer with the higher rates of Strongarm application. Peanut tolerance to Strongarm at rates that will be used in North Carolina (0.008-0.016 lb/ac) was excellent and yellowing was apparent for less than 2 weeks. Peanut yields were not influenced by Strongarm application rate. Peanut injury was worse when Strongarm was applied with a crop oil concentrate (COC) (approximately 40% yellowing of peanut foliage that lasts 2-3 weeks) than with a nonionic surfactant (approximately 10% yellowing that lasts 1-2 weeks). Laboratory research with radioactive <sup>14</sup>C-Strongarm showed that the use of crop oil concentrate increased the amount of Strongarm absorption compared to a nonionic surfactant and likely contributes to the increased injury with Strongarm plus COC.

*Valor Physiology/Laboratory Research:* Previous research has shown that Valor has the potential to cause unacceptable peanut injury in certain growing conditions. In response to this concern, laboratory experiments were conducted to investigate the response of temperature on Valor-treated peanut seed germination. Also greenhouse experiments investigated the influence of six different irrigation intervals after soil-applied Valor PRE applications on peanut emergence and injury. Laboratory experiments utilizing <sup>14</sup>C-Valor were also conducted to investigate differential tolerances exhibited by peanut (tolerant plant), ivyleaf morningglory (sensitive plant), and sicklepod (tolerant plant) to Valor. Valor treatments consisted of either a water dispersible granular (WDG) or wettable powder (WP) formulation at a rate equivalent to field applications. Peanut tolerance to these formulations was similar and was not influenced by temperature. Peanut treated with either Valor formulation and receiving irrigation (simulating rainfall) at emergence, 2, or 4 days after emergence, were injured between 40 and 60%, respectively, while peanut treated with Valor and receiving irrigation at 8 and 12 days after emergence were injured between 25 and 15%, respectively. Injury is likely if Valor treated peanut fields don't receive rainfall until emergence or within 4 days of emergence. Peanut tolerance to Valor is due to rapid metabolism and breakdown into less active molecules. Sensitive weeds like ivyleaf morningglory metabolize Valor much more slowly.

**Impact Statement:** This research has shown that Strongarm rates of application can be reduced when used postemergence and still control common ragweed. Strongarm applied in a tank mixture with Select can lead to reduced control of goosegrass and large crabgrass. The economic savings to North Carolina growers is in excess of \$10.00/acre. Peanut tolerance to Strongarm POST is excellent if a nonionic surfactant is used, the use of a crop oil concentrate will cause more injury. Peanut tolerance to Valor PRE is excellent unless rainfall is not received after Valor treatment till peanut emergence or soon after emergence.