

Factors Influencing Response of Virginia Market Type Peanut (*Arachis hypogaea*) to Paraquat under Weed-Free Conditions

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Experiments were conducted during 2003 and 2004 to determine if peanut yield and market grade characteristics differed when paraquat was applied 24 to 28 days after emergence to peanut seeded in early, mid-, and late May and early June. Peanut pod yield and percentages of extra large kernels, total sound mature kernels, and farmer stock fancy pods were affected by planting date and paraquat independently. Paraquat did not affect yield compared with non-treated peanut regardless of planting date. In other experiments from 2003–2005, peanut was planted with or without aldicarb in the seed furrow and followed either paraquat applied 24 to 28 days after emergence or 2,4-DB applied in mid-August during 2003 and 2004. In 2005, experiments included a no-paraquat control rather than 2,4-DB. Pod yield was reduced at 3 of 9 sites due to damage from tobacco thrips, *Franklinella fusca* Hinds, feeding when aldicarb was not applied. Paraquat reduced yield in 4 experiments during 2005 but not in 5 experiments during 2003–2004. Aldicarb and paraquat affected peanut independently. Experiments were also conducted during 2005 and 2006 to compare interactions of paraquat formulations alone or with co-applied herbicides. Paraquat formulation (Gramoxone INTEON versus Gramoxone MAX or Firestorm) did not affect peanut response to paraquat, and interactions of paraquat formulation (Gramoxone MAX or Gramoxone INTEON) with bentazon, bentazon plus diclosulam, bentazon plus dimethenamid, bentazon plus imazethapyr, and bentazon plus S-metolachlor was similar to paraquat alone. Peanut injury and pod yield was the same when paraquat (Gramoxone INTEON) was applied alone or with carfentrazone and was similar to carfentrazone alone.

Keywords: Aldicarb, crop injury, herbicide formulation, herbicide interaction, paraquat, peanut maturity, tobacco thrips

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