

Peanut Response to Diclosulam in the Southwest

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Diclosulam (Strongarm®) is a WSSA Group 2 herbicide used for the control of broadleaf and nutsedge weeds in peanut (*Arachis hypogaea* L.) when applied preplant incorporated, preplant surface, preemergence, or after planting through ground-crack. In the launch year for diclosulam 20 years ago, severe instances of peanut stunt and yield loss were observed in West Texas. This injury was hypothesized to be a result of FlavorRunner 458 sensitivity, which was introduced during this period. Per the current Strongarm® label, applications of diclosulam are prohibited in New Mexico, Oklahoma, and Texas. Studies were conducted across three growing seasons from 2018 through 2020 in South Texas and Texas High Plains area, and in 2020 in Oklahoma to evaluate the response of modern peanut cultivars to diclosulam. Diclosulam at 0.026 (1X) and 0.052 (2X) kg ai/ha was applied at-planting (preemergence, PRE) or at-ground crack (CRACK). In South Texas, Georgia-13M was planted in 2018 and Georgia 09B was planted in 2019 and 2020. Georgia 09B was planted all three years in the Texas High Plains locations while Ole' was planted in Oklahoma. Irrigation systems differed between locations. No stunting was observed at 30 and 90 days after planting (DAP) across each trial year in South Texas, and in 2018 in the High Plains. Conversely, a diclosulam rate by application timing interaction was observed in 2019 in the High Plains (30 DAP). Stunting increased with increasing diclosulam rates and diclosulam applied PRE resulted in greater injury than the CRACK application. Diclosulam applied PRE caused 14% stunting, whereas diclosulam applied at CRACK caused no visible injury at Oklahoma in 2020. All treatments in the High Plains caused $\leq 5\%$ peanut stunt (90 DAP) except diclosulam at 0.052 kg ai/ha applied PRE. No injury was detected 90 DAP in Oklahoma. In South Texas, peanut yield was unaffected by any diclosulam rate or application timing. Peanut yield in 2018 and 2020 in the High Plains were not affected by diclosulam; however, peanut yield in 2019 decreased with increasing rates of diclosulam regardless of application timing. In Oklahoma, peanut yield reductions were greatest with diclosulam at 0.052 kg ai/ha applied PRE. No difference in peanut grade was observed across each trial location except in 2019 in South Texas, where grade was reduced by increasing rates of diclosulam. Despite the different cultivars tested, peanut stunt and yield loss was still observed when using diclosulam in Texas and Oklahoma. Even so, diclosulam applications at CRACK appeared to allow for a better peanut establishment over diclosulam applied PRE. Based on these results, diclosulam applied at CRACK will result in minimal peanut injury with no reduction in yields when using modern peanut cultivars in the southwest peanut growing region.