

Compatibility of Kudos OD with Fungicides Applied to Peanut in North Carolina

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Introduction

Prohexadione calcium is used to minimize excessive vine growth of peanut in order to facilitate efficient digging and vine inversion. Historically, dry formulations of prohexadione calcium (Apogee, Kudos, Cryova) have been used in peanut for this purpose. A new formulation, Kudos OD, is now registered for use in peanut. This formulation is composed of a liquid carrier. Preliminary research in 2022 indicated that injury observed when Kudos OD was applied with Provost Silver would likely be excessive based on grower perceptions (Figure 1). Prior to widespread use, it will be important to document any compatibility issues with respect to performance of plant growth regulation and injury.

Materials and Methods

Small-plot trials were conducted in North Carolina during 2022 and 2023 to determine if peanut injury and row definition were altered when the liquid formulation of Kudos was applied with commercially-available fungicides used in peanut. Kudos OD was applied at 7.2 oz/acre in 15 gallons of water when 50% of lateral vines from adjacent rows were touching. A non-treated control was included. Specific fungicides applied at the manufacturer's suggested use rate are provided data tables. The treatments were applied one time with a full complement of bi-weekly fungicides applied during the season to suppress leaf spot and stem rot disease.

Visual estimates of percent injury were recorded two weeks after application using a scale of 0 to 100 where 0 = no injury and 100 = plant death. Foliar chlorosis and necrosis were considered when making the visual estimates. Peanut yield was determined. Data for these variables were subjected to ANOVA with means separated using Fisher's Protected LSD test at $p < 0.05$.

Results

Peanut injury ranged from 0 to 40% in 2022 and 1 to 25% in 2023 when Kudos OD was applied with fungicides (Tables 1 and 2). Considerable variation was noted when comparing treatments across years. For example, in 2022, the greatest injury was noted when Kudos OD was applied with Provost Silver or Miravis plus Elatus. In 2023, the greatest injury followed application of Kudos OD plus Bravo Weather Stik plus Alto or Tebuconazole. Bravo Weather Stik alone, Revytek, and Lucento did not cause more injury from Kudos OD compared with Kudos OD alone in either year. Peanut yield was not affected by any of the treatments relative to either the non-treated control or Kudos OD applied without fungicide.

Implications of Research

These results indicate that when Kudos OD is applied with some of the fungicides used in peanut, injury might occur when the application is made with crop oil concentrate and ammonium sulfate. Adequate suppression of peanut growth by prohexadione calcium requires inclusion of ammonium sulfate. However, performance of Apogee, a dry formulation of prohexadione calcium, was adequate in many cases when applied with only ammonium sulfate.

Additional research is needed to further define interactions of Kudos OD with these fungicides when applied with ammonium sulfate only and with other crop protection products including herbicides and insecticides. Defining the impact of foliar fertilizers and other PGR-type products on performance and possible injury is also needed.

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Figure 1. Injury symptoms observed when Kudos OD was applied with Provost Silver, crop oil, and ammonium sulfate.



Table 1. Peanut response to combinations of Kudos OD and Fungicides in 2022.^a

Prohexadione calcium ^a	Fungicide	Injury	Yield
		Percent	lb/acre
Kudos OD	-	0 d	4477 a
Kudos OD	Bravo Weather Stik	4 cd	4259 a
Kudos OD	Bravo Weather Stik plus Alto	10 c	4298 a
Kudos OD	Provost Silver	28 b	4269 a
Kudos OD	Revytek	6 cd	4002 a
Kudos OD	Lucento	0 d	4167 a
Kudos OD	Miravis plus Elatus	40 a	4608 a
Kudos OD	Bravo Weather Stik plus Tebuconazole	10 c	4085 a
-	-	0 d	4456 a

^aTreatments included crop oil concentrate and ammonium sulfate

Table 2. Peanut response to combinations of Kudos OD and Fungicides in 2023.^a

Prohexadione calcium ^a	Fungicide	Injury	Yield
		Percent	lb/acre
Kudos OD	-	1 de	4966 a
Kudos OD	Bravo Weather Stik	11 bcd	4661 a
Kudos OD	Bravo Weather Stik plus Alto	25 a	4980 a
Kudos OD	Provost Silver	15 abc	4763 a
Kudos OD	Revytek	6 cde	4883 a
Kudos OD	Lucento	5 cde	4631 a
Kudos OD	Miravis plus Elatus	4 de	4661 a
Kudos OD	Bravo Weather Stik plus Tebuconazole	18 ab	4492 a
Non-treated	-	0 e	4341 a

^aTreatments included crop oil concentrate and ammonium sulfate