Influence of Application Variables on Peanut (*Arachis hypogaea* L.) Response to Prohexadione Calcium

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ABSTRACT

Prohexadione calcium retards peanut vegetative vine growth, improves row visibility, and potentially reduces pod shed, thus increasing pod yield compared with non-treated peanut. Although prohexadione calcium has been registered for use in peanut for the past decade, practitioners continue to express a range of questions about use including banded application, compatibility with other agrichemcials, and interactions of application rate and timing. In experiments over multiple years, applying prohexadione calcium to lateral branches only of peanut increased row visibility compared with banded applications over main stems or broadcast applications over the entire peanut canopy. Similarly, when using different spray nozzle configurations, greater row visibility was noted when the highest rate of prohexadione calcium was applied over lateral branches compared with broadcast applications of a uniform rate across all spray nozzles or when the highest rate was delivered to main stems. Delaying the first of two sequential applications of prohexadione calcium 1 wk after 50% row closure resulted in reduced row visibility regardless of application rate when compared with sequential applications initiated at 50% row closure. Applying prohexadione calcium within 2 to 3 wks prior to digging and vine inversion resulted in minor increases in improved row visibility and did not affect pod yield. Efficacy of prohexadione calcium was not affected by tank mixing with pyraclostrobin or 2,4-DB.

Key Words: Plant growth regulator, prohexadione calcium, pyraclostrobin, row visibility, 2,4-DB.

Excessive vine growth of peanut (*Arachis hypogaea* L.) reduces digging and inverting efficiency often attributed to poor row visibility. Additionally, pods often shed from plants in the digging process and can lead to substantial yield loss, especially when soil conditions are not conducive for separation of pods from soil. Prohexadione calcium (Apogee®, calcium salt of 3,5-dioxo-4 propionylcyclohexanecarboxylic acid, BASF Corp., 26 Davis Dr., Research Triangle Park, NC 27709) is registered for management of vegetative growth of peanut and other crops (Anonymous, 2003; Byers and Yoder, 1999; Grossman *et al.*, 1994; Lee *et al.*, 1998; Nakayama *et al.*, 1992; Yamaji *et al.*, 1991). Culpepper *et al.* (1997) and Mitchem *et al.* (1996) reported that prohexadione calcium improved row visibility of peanut and increased pod yield. Beam *et al.* (2002b) reported that increased pod yield of peanut by prohexadione calcium was attributed in part to increased pod retention and less pod loss during digging and inversion of vines.

Although the benefits of prohexadione calcium have been established in the literature, the current price of prohexadione calcium is cost prohibitive in many circumstances, especially in light of changes in 2002 Federal farm legislation that reduced value of peanut at the farm level (Bullen and Jordan, 2006). Developing alternative application methods of prohexadione calcium might allow growers to control vine growth more economically. One alternative to broadcast applications is banding prohexadione calcium. Savings might also be realized if the actual rate of prohexadione calcium was reduced in certain parts of the canopy by using spray nozzles delivering different spray volumes and subsequently lower rates. Both of these approaches could allow efficient digging and vine inversion with lower expense for broadcast applications. However, these approaches to applying prohexadioine calcium have not been evaluated.

Field conditions can prevent timely applications of crop protection chemicals, and this is also the case with prohexadione calcium. Growers often pose the question of how effective is prohexadione calcium when applied after the label recommendation of 50% row closure (Anonymous, 2003). Determining if prohexadione calcium applications made later than recommended improve row visibility or increase yield would help growers make this decision. Benefits of applying prohexadione calcium closer to digging and inversion timing have not been extensively evaluated.

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Defining interactions of agrichemicals is important when developing production and pest management strategies. In peanut, timing of application of numerous agrichemicals often coincide, and growers would prefer to apply products simultaneously to increase efficacy and/or efficiency and reduce application costs. However, some combinations of agrichemicals are not compatible (Lancaster *et al*., 2005). Although prohexadione calcium is compatible with the majority of agrichemicals applied to peanut (Beam *et al*., 2002a), efficacy of sequential applications of prohexadione calcium alone or with other products has not been evaluated.

Growers often apply sequential applications of 2,4-DB to control sicklepod (Jordan, 2006). Sequential applications of 2,4-DB within a 2 to 3 wk period are possible (Jordan, 2006). Pyraclostrobin is a relatively new fungicide that controls several important pathogens in peanut (Shew, 2006). Although compatibility of prohexadione calcium with several fungicides applied to peanut has been documented (Beam *et al*., 2002a), efficacy of prohexadione calcium with pyraclostrobin has not been documented. Determining if pyraclostrobin and/or 2,4-DB are compatible with prohexadione calcium is important in developing strategies for late season weed and disease control and managing peanut vine growth.

Beam *et al*. (2002b) reported when prohexadione calcium was applied based on the manufacturer's suggested use rate and timing, increased yield following application of prohexadione calcium was partially attributed to reduced pod shed. Benefits of applying prohexadione calcium later in the season at rates exceeding those recommended by the manufacturer have not been determined.

A considerable amount of literature exists documenting peanut response to prohexadione calcium when applied according to the manufacturer's recommendation (Beam *et al*., 2002b; Culpepper *et al*., 1997; Mitchem *et al*., 1996). However, efficacy of prohexadione calcium applied in unique ways to reduce cost has not been reported. Additionally, efficacy of prohexadione applied later than recommended by the manufacturer, or in combination with pyraclostrobin or 2,4-DB has not been published. Therefore, research was conducted from 2000–2007 to determine peanut response to prohexadione calcium either banded or applied at different rates over the peanut canopy, applied at various rates and timings later in crop development than currently recommended by the manufacturer, and applied alone or with pyraclostrobin or 2,4-DB.

Materials and Methods

Methods common to all experiments. Experiments were conducted from 2000 through 2007 in the Coastal Plain of North Carolina and during 2006 in Georgia in conventionally-tilled raised seedbeds. Experiments were conducted on sandy loam or loamy sand soils with pH from 5.7 to 6.1 and 1.5 to 2.1% organic matter. Plot size was 4 rows (91-cm spacing) by 9 to 12.5 m. Peanut was seeded in early to mid May of each year at rates designed to achieve a final in-row plant population of 13–15 plants/m in a single row planting pattern in North Carolina and in a twin row planting pattern in Georgia. Cultivars are specified in the description of individual experiments.

Crop oil concentrate (Agri-Dex, 83% paraffin-based petroleum oil and 17% surfactant, Helena Chemical Co., 5100 Poplar Ave., Memphis, TN 38137) and 28% urea ammonium nitrate, each at 1.2 L/ha, were applied with prohexadione calcium. The rate of prohexadione calcium varied in the experiments. Prohexadione calcium was applied in 140 L/ha aqueous solution using a CO_2-pressurized backpack sprayer equipped with 8002 regular flat fan nozzles (Teejet nozzles, Spraying Systems Co., Wheaton, IL 60187) in all experiments in North Carolina and Georgia unless otherwise specified. A non-treated control was included in all experiments. Production and pest management practices, other than plant growth regulator applications, were held constant over the entire test based on Cooperative Extension Service recommendations for the region.

Visual estimates of row visibility were recorded in mid September using a scale developed by Mitchem *et al*. (1996). This scale has been used to discuss efficacy of prohexadione calcium on peanut in various articles published in the scientific literature (Beam *et al*., 2002b; Culpepper *et al*., 1997; Faircloth *et al*., 2005). In this scale of 1 to 10, 1 = a flat peanut canopy with an indistinguishable main stem where row definition is unclear and 10 = a peanut canopy with triangular-shaped plants on each row due to a clearly visible main stem. Peanut was dug and vines inverted based on pod mesocarp color for the non-treated control (Williams and Drexler, 1981). Final pod yield was adjusted to 7% moisture. Data for all parameters were subjected to analysis of variance with partitioning appropriate for treatment factor structures. The experimental design was a randomized complete block with treatments replicated four times. Means of significant main effects and interactions were separated using Fisher's Protected LSD test at $p \leq 0.05$.

Comparison of broadcast and banded applications of prohexadione calcium. This experiment was conducted in North Carolina near Edenton during 2000, and in 2001 and 2002 at both Lewiston-Woodville and Rocky Mount. The cultivar NC-V11 (Wynne *et al.*, 1991) was planted at Edenton and Rocky Mount; NC 12C (Isleib, *et al.*, 1997) was planted at Lewiston-Woodville. Treatments included a broadcast application of prohexadione calcium at 140 g/ha over the entire canopy as well as banded applications either over the main stems or lateral branches which resulted in a total application amount of 70 g/ha of prohexadione calcium. Prohexadione calcium applications were repeated in like methods 2 wks after the initial application to each treatment. To achieve the banded applications, prohexadione calcium was applied at a broadcast rate of 140 g/ha on a 45-cm band on the 91-cm rows. In addition to row visibility and pod yield, height of main stems from ground level to the uppermost free standing point of three randomly selected plants from each plot were recorded in late September. The average of the three plants was used as the experimental unit.

Comparison of broadcast applications of prohexadione calcium using variations in spray nozzle arrangement. Experiments were conducted in North Carolina from 2001 and 2002 at Lewiston-Woodville with the cultivar NC 12C. Treatments included a broadcast application of prohexadione calcium at 140 g/ha, prohexadione calcium applied over the main stems at 70 g/ha and over the lateral branches at 20 g/ha, and prohexadione calcium applied over lateral branches at 70 g/ha and over main stems at 20 g/ha. Prohexadione calcium application was repeated in like methods 2 wks after the initial application to each treatment. Broadcast applications were obtained by applying prohexadione calcium in 375 L/ha using 8004 flat fan nozzles (Spraying Systems Co., Wheaton, IL). Specific rates were achieved over main stems and lateral branches by alternating spray nozzle orifice size across a spray boom with 45-cm spacing between spray nozzles. The 20 and 70 g/ha-rates were achieved by using 8002 and 8004 flat fan nozzles delivering 95 and 375 L/ha, respectively. In addition to row visibility and pod yield, height of main stems was determined as described previously.

Influence of application rate and timing on peanut response to prohexadione calcium. The experiment was conducted in North Carolina during 2002 and 2003 at Lewiston-Woodville and during 2002 at Rocky Mount with the cultivar NC-V11. Treatments included broadcast applications of prohexadione calcium at 140 g/ha applied at 50% row closure or prohexadione calcium at 140, 210, and 280 g/ha applied 1 wk after 50% row closure. Prohexadione calcium applied at these rates was also repeated 2 wks after the initial application.

Peanut response to a single application of prohexadione calcium within 2 to 3 wks prior to digging. The experiment was conducted at six sites during 2005 in North Carolina and at one site in Georgia during 2006. In North Carolina, the cultivars Gregory (Isleib *et al.*, 1999) and Perry (Isleib *et al.*, 2003) were evaluated at one site each, and the cultivar NC-V11 was planted at the other sites. In Georgia, the cultivar Georgia Green (Branch, 1996) was evaluated. Treatments consisted of prohexadione calcium at 140 g/ha applied in early September, 2 to 3 wks prior to digging and inverting vines. Application of prohexadione calcium in these experiments was 4 to 6 weeks later in the season than recommended by the manufacturer.

Influence of pyraclostrobin and 2,4-DB on peanut response to prohexadione calcium. In one set of experiments, efficacy of sequential application of prohexadione calcium (140 g/ha) or pyraclostrobin plus pyraclostrobin (175 g ai/ha) followed by prohexadione calcium 2 wks later was compared. The experiment was conducted during 2007 in North Carolina near Faison, Lewiston-Woodville, and Rocky Mount. The cultivars Perry, Gregory, and Phillips (Isleib *et al.*, 2006) were included at these respective locations.

In a separate set of experiments conducted during 2005 and 2006 at 8 sites in North Carolina and at 2 sites in Georgia in 2006, efficacy of prohexadione calcium at 140 g/ha alone or with 2,4-DB at 0.14 or 0.28 kg ai/ha was compared. The experiment was conducted at one site at Rocky Mount, North Carolina during 2005 with the cultivar Wilson (Mozingo *et al.*, 2004) and at two sites at this location during 2006 with the cultivars Phillips and NC-V11. The experiment was also conducted near Clinton, North Carolina with the cultivar NC-V11 during 2005 and 2006 and at Lewiston-Woodville, North Carolina in separate fields with the cultivars Gregory, Perry, and Wilson. The experiments in Georgia were at 2 locations near Dawson with the cultivar Georgia Green in 2006.

Results and Discussion

Comparison of broadcast and banded applications of prohexadione calcium. The interaction of site by treatment was not significant for row visibility, main stem height, or pod yield. Although the main effect of prohexadione calcium treatment was not significant for pod yield, it was significant for row

Table 1. Peanut response following banded and broadcast application of prohexadione calcium.[a]

Application method	Total prohexadione calcium[b]	Row visibility[c]	Main stem height	Pod yield
	g/ha		cm	kg/ha
Non-treated control	-	2.5 d	41 a	4490 a
Broadcast	280	8.2 b	30 c	4510 a
Banded over main stem	140	5.4 c	30 c	4550 a
Banded over lateral branches	140	8.8 a	37 b	4610 a

[a]Means for row visibility, main stem height, and pod yield followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over one location in 2000 and two locations in 2001 and 2002 in North Carolina.

[b]Broadcast application of prohexadione calcium at 140 g/ha at 50% row closure followed by 140 g/ha 2 weeks later for a total of 280 g/ha during the season. Banded applications of prohexadione calcium included 140 g/ha applied on a 45-cm band on rows spaced 91-cm apart and repeated 2 weeks later for a total of 140 g/ha of covered ha. Prohexadione calcium was applied with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha.

[c]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as defined by Mitchem *et al*. (1996).

visibility and main stem height. Row visibility was the highest when prohexadione calcium was broadcast over the entire peanut canopy or when prohexadione calcium was banded over lateral branches (Table 1). When banded over main stems, row visibility was higher than that of non-treated peanut but lower than broadcast application or banded application of prohexadione calcium over lateral branches. Peanut main stem height was higher for non-treated peanut or peanut treated with prohexadione calcium on a band over lateral branches than when prohexadione calcium was banded or broadcast over main stems (Table 1). These data indicate that prohexadione calcium does not translocate significantly from the contacted area to other portions of the peanut plant. Decreased internode elongation was noted only on lateral branches or on main stems when prohexadione calcium was applied to that region of the plant. These data are consistent with those of Beam (2004) reporting rapid metabolism and little translocation from treated tissue when prohexadione calcium was applied to annual bluegrass (*Poa annua* L), creeping bentgrass (*Agrostis stolonifera*), Kentucky bluegrass (*Poa pratensis* L.), and perennial ryegrass (*Lolium perenna* L.).

No difference in yield was noted when comparing prohexadione calcium-treated peanut with non-treated peanut (Table 1). Previous research (Beam *et al*., 2002b; Culpepper *et al*., 1997; Jordan *et al*., 2000) indicated that a consistent increase in row visibility does not always translate into increased yield.

Comparison of broadcast application of prohexadione calcium using variations in spray nozzle arrangement. Main effect of prohexadione calcium was significant for row visibility and main stem height but not for pod yield. Additionally, the interaction of year by prohexadione calcium treatment was not significant for these measurements. Row visibility was higher when prohexadione calcium was broadcast at a total rate of 280 g/ha or when the nozzle arrangement provided the highest rate of prohexadione calcium applied over lateral branches (Table 2). There was no difference in row visibility when the highest rate of prohexadione calcium was applied over main stems compared with non-treated peanut. Peanut main stems were shorter when prohexadione calcium was applied at the highest rate over main stems of peanut (Table 2). Main stem height was similar when prohexadione calcium was broadcast over the entire canopy, when the highest rate of prohexadione calcium was applied to lateral branches, and for non-treated peanut.

Influence of application rate and timing on peanut response to prohexadione calcium. The site by prohexadione calcium treatment was not significant for row visibility or pod yield; however, the main effect of prohexadione calcium treatment was significant for row visibility and pod yield. Row visibility was greatest when prohexadione calcium was applied at the recommended rate at 50% row closure (Table 3). Delaying applications of prohexadione calcium past the optimum timing of 50% row closure resulted in lower row visibility irrespective of prohexadione rate (Table 3). These results were not surprising because prohexadione reduces internode elongation through inhibiting gibberellin biosynthesis by blocking the 3β-hydroxylation of GA_{20} (Nakayama *et al*., 1992). Applications later in the season most likely will reduce internode elongation of fewer components of the peanut canopy than applications earlier in the season. These data also indicate that rates of

Table 2. Row visibility, main stem height, and peanut pod yield following broadcast application of prohexadione calcium using different spray nozzle arrangements.[a]

Spray nozzle output		Total prohexadione calcium[b]	Row visibility[c]	Main stem height	Pod yield
Main stem	Lateral branches				
L/ha		g/ha		cm	kg/ha
Non-treated		-	3.3 b	41 a	4340 a
375	375	280	7.4 a	38 a	4630 a
375	95	180	3.9 b	33 b	4500 a
95	375	180	8.2 a	38 a	4460 a

[a]Means for row visibility, main stem height, and pod yield followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over 2001 and 2002 in North Carolina.

[b]Broadcast application of prohexadione calcium at 140 g/ha at 50% row closure followed by 140 g/ha 2 weeks later for a total of 280 g/ha during the season achieved by using spray nozzles delivering a total spray volume of 375 L/ha. The lower spray volume of 180 L/ha was achieved by alternating nozzles that delivered 95 or 375 L/ha with a nozzle spacing of 45-cm on rows spaced 91-cm apart and repeated 2 weeks later. Prohexadione calcium was applied with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha.

[c]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as defined by Mitchem *et al.* (1996).

prohexadione calcium higher than those recommended by the manufacturer will not compensate for applications made after the optimum timing. There was no difference in pod yield when comparing yield of non-treated peanut and prohexadione calcium at 140 g/ha applied at 50% row closure or when this rate was applied 1 wk after 50% row closure (Table 3). Pod yield following application of prohexadione calcium at 210 or 280 kg/ha one week after 50% row closure was lower than pod yield following application of prohexadione calcium at 140 g/ha applied at 50% row closure. The decrease in pod yield suggests that rates that exceed the manufacturer's suggested use rate applied later in the season may have a negative impact on peanut pod yield. However, lack of treatments including prohexadione calcium applied at higher rates at 50% row closure limits conclusions relative to this research.

Peanut response to a single application of prohexadione calcium within 2 to 3 wks prior to digging. The interaction of site by prohexadione calcium treatment was significant for row visibility in North Carolina. Prohexadione calcium did not affect row visibility in the Georgia trial. Prohexadione calcium increased row visibility when applied within 2 to 3 wks prior to digging at 5 of 6 sites in North Carolina (Table 4). However, the magnitude of improvement in row visibility was much lower with these applications than with applications of prohexadione calcium at 50% row closure (Tables 1–3). This is not surprising because prohexadione calcium prevents internode elongation, and by the time prohexadione calcium was applied in September, the peanut canopy was well developed, and therefore benefits of prohexadione calcium with respect to row visibility were minimized. In addition to improving row visibility,

Table 3. Row visibility and peanut pod yield as influenced by application rate and timing of prohexadione calcium.[a]

Prohexadione calcium		Row visibility[c]	Pod yield
Timing	Rate[b]		
	g/ha		kg/ha
Non-treated	-	3.0 d	3300 ab
50% row closure	140 then 140	8.6 a	3630 a
One wk after 50% row closure	140 then 140	5.9 c	3260 ab
One wk after 50% row closure	210 then 210	6.9 bc	3050 b
One wk after 50% row closure	280 then 280	7.2 b	3060 b

[a]Means for row visibility and pod yield followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over two experiments in 2002 and one experiment in 2003 in North Carolina.

[b]Prohexadione calcium was applied with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha. The repeat application was made on the same day for all treatments.

[c]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as described by Mitchem *et al.* (1996).

Table 4. Peanut row visibility and pod yield as influenced with prohexadione calcium applied within 2 to 3 wks of digging and vine inversion during 2005 in North Carolina and 2006 in Georgia.

Prohexadione calcium[a]	Row visibility[b]							Pod yield	
	North Carolina								
	Lewiston-Woodville			Rocky Mount					
	Exp. 1	Exp. 2	Exp. 3	Exp. 1	Exp. 2	Bethel	Georgia	NC[c]	GA
	Scale-10							kg/ha	
No	6.0 b	1.9 a	5.5 b	6.0 b	3.1 b	4.9 a	4.1 a	4120 a	4210 a
Yes	8.0 a	3.5 a	7.5 a	7.1 a	4.1 a	4.9 a	4.5 a	3930 a	4560 a

[a]Prohexadione calcium was applied at 140 g/ha with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha.
[b]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as described by Mitchem *et al*. (1996).
[c]Data are pooled over 6 sites in North Carolina and 2 sites in Georgia.

prohexadione calcium can increase harvestable yield by reducing pod shed (Beam *et al.*, 2002b). In our experiment the interaction of site by prohexadione calcium as well as the main effect of prohexadione calcium was not significant for pod yield. These results indicate that applications made within 2 to 3 wks prior to digging do not improve yield (Table 4).

Influence of pyraclostrobin and 2,4-DB on peanut response to prohexadione calcium. The interaction of site by treatment was not significant for row visibility and pod yield at sites in North Carolina in the experiments evaluating interactions of prohexadione calcium with pyraclostrobin or 2,4-DB. When pooled over sites, row visibility did not differ and ranged from 9.3 to 9.4 when prohexadione calcium was applied alone or with pyraclostrobin and was significantly better than the non-treated peanut row visibility of 5.2 (Table 5). A value of 6.9 to 8.3 was noted when prohexadione calcium was applied alone or with 2,4-DB compared with a value range of 2.9 to 4.5 for non-treated peanut (Table 6). However, the improvement in row visibility did not translate into increased yield regardless of prohexadione calcium or pesticide treatment (Table 5 and 6). These results suggest that pyraclostrobin or 2,4-DB are compatible when tank mixed with prohexadione calcium and do not reduce the effectiveness of prohexadione calcium on improving row visibility of peanut.

Summary

Collectively, these data indicate that prohexadione calcium can be applied less expensively without compromising benefits of improved row visibility by banding applications or by broadcasting prohexadione calcium using spray nozzles delivering different spray volumes with different orifices. These respective approaches could save producers up to 50% of the expense associated with applying prohexadione calcium, crop oil concentrate, and nitrogen solution. However, these applications require greater precision, and most likely would require using a sprayer that matches sets of planted rows rather than using standard broadcast sprayers that cover multiple sets of planted rows. When comparing across experiments, row visibility was improved the greatest when prohexadione calcium was applied at the recom-

Table 5. Influence of prohexadione calcium on row visibility and pod yield when applied with pyraclostrobin.[a]

Prohexadione calcium[b]	Pyraclostrobin	North Carolina	
		Row visibility[c]	Pod yield
g/ha	g/ha	Scale-10	kg/ha
-	-	5.2 b	5290 a
280	-	9.4 a	5410 a
280	175	9.3 a	5350 a

[a]Means for row visibility and pod yield followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data from North Carolina are pooled over three experiments during 2007.
[b]Prohexadione calcium was applied at 280 g/ha with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha.
[c]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as described by Mitchem *et al*. (1996).

Table 6. Influence of prohexadione calcium on row visibility and pod yield when applied with 2,4-DB.[a]

		North Carolina		Georgia	
Prohexadione calcium[b]	+ 2,4-DB	Row visibility[c]	Pod yield	Row visibility[b]	Pod yield
g/ha	kg/ha	Scale-10	kg/ha	Scale-10	kg/ha
0	-	2.9 b	5340 a	4.5 b	4590 a
140	-	7.3 a	4950 a	8.0 a	4770 a
140	0.14	7.1 a	5330 a	7.8 a	4700 a
140	0.28	6.9 a	5180 a	8.3 a	4320 a

[a]Means for row visibility and pod yield followed by the same letter are not significantly different according to Fisher's Protected LSD test at $p \leq 0.05$. Data are pooled over two experiments in 2002 and one experiment in 2003.
[b]Prohexadione calcium was applied at 140 g/ha with crop oil concentrate at 1.2 L/ha and nitrogen solution at 1.2 L/ha.
[c]Row visibility defined using a scale of 0 to 10 where 0 = a flat canopy with no row definition and 10 = peanut rows that are triangular in shape as described by Mitchem *et al*. (1996).

mended rate at 50% row closure. These data also suggest that prohexadione calcium is compatible with two commonly applied crop protection chemicals in peanut. However, few differences in pod yield were noted when prohexadione was applied, even when applied based on the manufacturer's recommendation. These results are in contrast to other research demonstrating positive yield response of peanut to prohexadione calcium (Beam *et al*., 2002b; Culpepper *et al*., 1997; Jordan *et al*., 2000; Jordan *et al*., 2001; Mitchem *et al*., 1996). However, in other research, prohexadione calcium improved row visibility but did not increase yield when applied based on the manufacturer's recommendation (Faircloth *et al*., 2005). The full benefit of improved row visibility in terms of digging equipment staying in the proper position relative to peanut rows was not realized in our small-plot research, and additional efforts are needed to document benefits of row visibility provided by prohexadione calcium in large-scale peanut production.

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