Peanut Response to Grazon® P+D

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UNIVERSITY OF GEORGIA
EXTENSION

Grazon® P+D (picloram + 2,4-D) injury, diagnosed as leaf roll, is occasionally observed in Georgia peanut fields due to the presence of contaminated soil, forage, animal waste (manure/urine), and/or irrigation water (Figure 1).

Since peanut plants are very tolerant of low levels of 2,4-D, the primary cause of these leaf roll symptoms is picloram. When this injury occurs, growers are often concerned about how it can potentially influence final peanut yield.

Figure 1 | **Peanut leaf roll caused by Grazon® P+D.**

History and use of picloram

Picloram was discovered in 1960 and introduced by Dow Chemical Company as Tordon™ 101 in 1963 (Shaner 2014). The Grazon® P+D formulation (picloram + 2,4-D) was first registered in 1990. It has been estimated that Grazon® P+D is used on approximately 5% of the pasture/grassland acres in Georgia for broadleaf weed control (~200,000 acres).

Picloram is considered to be a persistent herbicide in the soil. Picloram is degraded in the environment through photolysis (light) and microbial metabolism (Shaner, 2014). It has an average field half-life of 90 days with a range of 20 to 300 days depending upon the application rate, soil type, and climate.

Previous research on picloram in peanut

Limited research about the effects of picloram on peanut has been conducted. In Oklahoma, sub-surface applications of picloram at 0.5 lb ai/A caused complete peanut death (Banks *et al.*, 1977). In Texas, picloram rates as low as 1 part per billion caused visual injury symptoms (leaf roll) but no yield data was collected (Ketchersid *et al.*, 1995).

Recent University of Georgia picloram research

From 2015 to 2017, UGA researchers conducted replicated, small-plot field trials in Georgia to evaluate the effects of various rates of Grazon® P+D on peanut yield (Prostko, 2015, 2016, 2017). In these studies, 'GA-06G' peanut plants were treated with 0.33%, 1%, and 10% of the labeled Grazon® P+D 2.54SL rate (24 ounces/acre) at either 0 (preemergence), 30, 60, or 90 days after planting (DAP). Peanut plants exhibited leaf roll symptomology with all rates and timings. The application timing had no effect on peanut yield response to Grazon® P+D (Figure 2). However, estimated yield losses ranging from 5% to 10% would occur when peanut plants are exposed to rates ranging from 0.95% to 6.3% of the labeled Grazon® P+D rate (0.23 to 1.5 ounces/acre) (Figure 3).

Since the U.S. Environmental Protection Agency has not established picloram or 2,4-D tolerances for peanuts, harvested nuts from Grazon® P+D contaminated peanut fields should be tested for residues prior to sale. If picloram and/or 2,4-D residues are detected in the harvested nuts, those nuts should not enter the supply/food chain and should instead be destroyed.

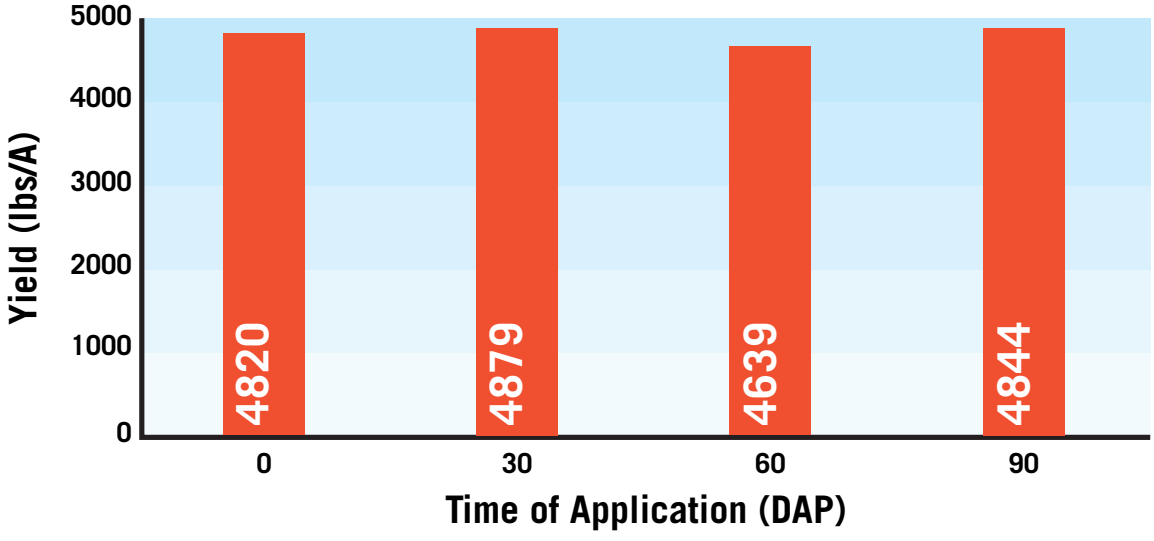

Figure 2 | **Peanut yield response to Grazon P+D 2.54 SL application timings in Georgia, 2015-2017. Data are averaged over four application rates (0, 0.33%, 1%, and 10%) and three site-years.**

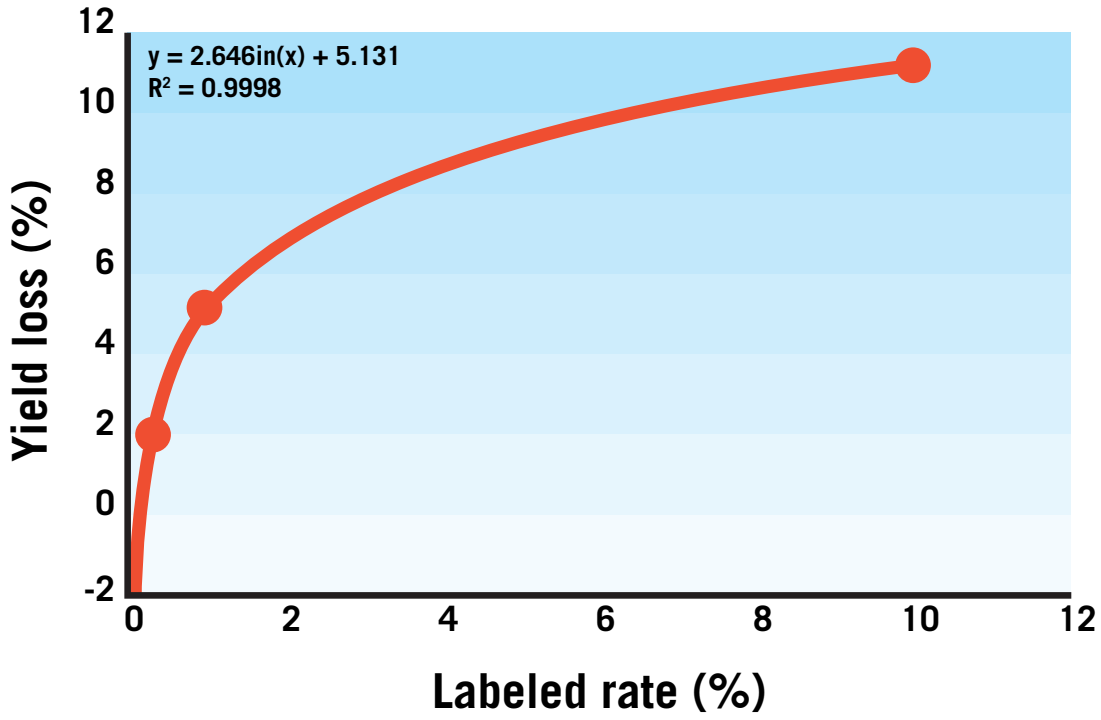

Figure 3 | **Peanut yield loss caused by Grazon P+D 2.54SL in Georgia, 2015-2017. Data are averaged over four application timings (0, 30, 60 and 90 DAP) and three site-years. The labeled rate of Grazon P+D 2.54SL is 24 oz/A.**

Similar symptoms

Grazon® P+D injury (leaf roll) is also very similar to off-target injury (drift or volatility) that can occur from dicamba herbicides such as Clarity®, Engenia®, FeXapan®, Status®, or Xtendimax® (Figure 4). Consequently, historical information should be collected about the use of Grazon® P+D and dicamba when investigating potential peanut injury (leaf roll) complaints.

Figure 4 | **Peanut leaf roll caused by dicamba.**

Preventing future peanut problems with Grazon® P+D

1. Follow all Grazon® P+D labeled crop rotation restrictions. The label includes the following restriction regarding peanut planting: "*Do not rotate food or feed crops on treated land if they are not registered for use with picloram until an adequately sensitive bioassay or chemical test shows that no detectable picloram is present in the soil*" (Corteva Agriscience, 2020). **Based upon experience, field observations, and application rates, this time period could range anywhere from two to three years or longer.**
2. Prevent Grazon® P+D treated forages and livestock that has been fed Grazon® P+D treated forages from entering into potential peanut fields.
3. Do not spread manure from livestock that was fed Grazon® P+D treated forages into potential peanut fields.
4. Avoid using Grazon® P+D contaminated irrigation water on the peanut crop.

Conclusion

Growers should avoid exposing their peanut crop to Grazon® P+D. Peanut plants are extremely sensitive to low rates of picloram. Although symptomology (leaf roll) is likely to occur at any rate, peanut yield losses ranging from 5% to 10% would occur if plants are exposed to rates ranging from 0.95% to 6.3% of the labeled rate (0.23 to 1.5 ounces/acre of Grazon® P+D 2.54SL).

References:

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