

## Photosynthetic Efficiency, Leaf Spot Control, and Yield of Peanut Plants Treated with Dodine

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Peanut plants are susceptible to many foliar diseases. One of the most spread diseases in Georgia is leaf spot (caused by *Nothopassalora personata* and *Passalora arachidicola*) which can reduce considerably the final yield. Chlorothalonil is one of the most widely used fungicide in the control of intensity of this disease. However, in 2020 European Union banned this chemistry due to its high risk to amphibians and fish. Dodine is an alternative fungicide with a similar range of activity. However, this chemistry was reported to suppress photosynthesis in some species (e.g. pecan). The lack of information on the effects of dodine on the photosynthetic activity of peanut plants led to study the impact this chemical has on peanut physiology before recommending its application. The objectives of this research were to evaluate the effects of dodine on leaf photosynthetic activity of peanut and assess the potential of dodine as a replacement of chlorothalonil. The experiment was conducted at the University of Georgia Lang Farm in Tifton using the cultivar Georgia-06G. The experimental design was a randomized complete block with 5 replicates. Treatments consisted of four fungicides, 1) chlorothalonil (Bravo 720 g/L) at 1.2 L/ha (full rate), 2) chlorothalonil at 0.6 L/ha (half rate), 3) dodine (Elast 400 g/L) at 1.7 L/ha ml (full rate), and 4) dodine at 0.8 L/ha (half rate). Total chlorophyll and total carotenoid were collected every two weeks from 33 days after planting (DAP) until 124 DAP. Net photosynthesis rates were obtained biweekly using a LI-6800 portable photosynthesis system connected to a fluorometer chamber. Yield was collected at harvest and pod maturity profile was assessed using the Peanut Profile Board. Leaf spot rating was collected the day of digging. There were no significant differences in net photosynthesis among the four treatments over the season. Similarly, total chlorophyll and total carotenoids as well as maturity profile were not significantly different between the treatments, indicating that these parameters were not affected by the fungicides and rates. Significant differences were observed in leaf spot rating, with highest leaf spot incidence in plots treated with half rate of chlorothalonil and lowest in plots treated with full rate of dodine. Yield did not show significant differences among the treatments fungicides and also by their rates. In summary, results demonstrated that the use of both rates of dodine did not have a negative impact on the photosynthetic activity of peanut plants, pod maturity profile, and final yield. Moreover, full rate of dodine reduced the intensity of leaf spot, hence, this chemical could be considered as a potential replacement of chlorothalonil in the control of leaf spot in peanut.