

Productivity of runner peanuts IAC-503 and IAC-886 submitted to glyphosate application in Pindorama, SP, Brazil

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Workshop Information

I Workshop of Plant Biology (I Workshop de Biologia Vegetal) was held in the Bioscience Institute – UNESP, campus of Rio Claro, Brazil, during August 20 and 21, 2012. Workshop was a scientific event organized by Post-graduate students from that Institute aiming to integrate Post-graduate and Graduate students from different areas related to Plant Biology (Anatomy, Ecology, Evolution, Morphology, Physiology, and transitional areas) from different Universities. Workshop Organization offered a large number of speaking activities, scientific discussions, and extra short-courses to improve the knowledge and formation of students in Plant Biology.

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INTRODUCTION

Peanut crop is a legume used in succession in sugarcane field reform. However, the runner peanut cycle, in Sao Paulo state, is 130 to 140 days, depending on the genotype. This period is considered excessive for sugar-cane field reform, which inhibits the expansion of the peanut crop in these regions. One solution would be use ripeners to promote anticipated of the cycle.

Glyphosate provides artificial maturation of sugarcane, it modifies the participation of photoassimilates, may promote better on agroindustrial yield (Mutton 1993).

Accordingly, the glyphosate can promote better agroindustrial yield, so this work aimed to evaluate the productivity of peanut IAC 503 and IAC 886 submitted to glyphosate application in Pindorama-SP.

MATERIAL AND METHODS

The experiment was carried out at the Agência Paulista de Tecnologia dos Agronegócios (APTA), regional polo north central, at Pindorama, São Paulo

state, Brazil, in the agricultural year 2011/2012. The soil of the region is classified as Acrisol, eutrophic, fine textured sandy (Embrapa 1999).

Two experiments were established, one for each peanut cultivar: IAC 503 (indeterminate growth, with cycle of 130-140 days) and Runner IAC 886 (determined growth, with cycle of 130 days) (Godoy et al. 2005). In this work, it was used a randomized blocks design with four replications in a factorial scheme (3 x 3), with three treatments and three harvesting periods. The treatments consisted of glyphosate application at two times, 80 and 100 days after seeding, at a dose of 0.72 L ai ha⁻¹ and a control (without application of the product). The three harvesting periods were determined in the following order: 119, 132 and 144 days after seeding (DAS). The experimental plots were formed by four sowing rows, 6 m long and 0.9 m between rows. The experimental unit considered was two central lines, not considering 0.5 m of each line ends

The soil tillage was done with two plowing with disks and one disking intermediate. The seeds were previously treated with the fungicides thiram and the insecticide-Vitavax tiametoxan (Cruiser ®). Sowing

was done manually and was added 25 seeds per meter.

Glyphosate was applied in periods pre-determined for each cultivar, near the phase of peanut grain filling and/or maturation. The doses of the products were determined according to the recommendation given to the sugarcane crop. For each application was used a pressurized costal sprayer with CO₂, equipped with fan type nozzles (TTJ60 VP-11002), working at a constant pressure of 2.3 kgf cm⁻² and volume of 200 L ha⁻¹. At the moment of application, air temperature, relative humidity and average wind speed were recorded.

For the evaluation of productivity were collected 5 m of each plot, and then were weighed to determine the unpeeled peanut yield and the data were transformed into kg ha⁻¹.

The results of each harvesting periods were subjected to analysis of variance by F test for the comparative test means. Tukey's test was applied at 1 or 5% probability level.

RESULTS AND DISCUSSION

Treatments with glyphosate application at 80 or 100 DAS showed a reduction of approximately 15% and 26% in the pods yield to 119 DAS. The application with glyphosate at 80 DAA, when peanut was harvested at 119, showed a reduction of approximately 7%. With the application at 100 DAS it was reduced by approximately 13% when compared to control. It was observed that the application at the 80 DAS result on approximately 6% increase in the pods yield, in comparison to control, in the third harvest time at 144 DAS, while with the application at 100 DAS it was reduced by approximately 15%.

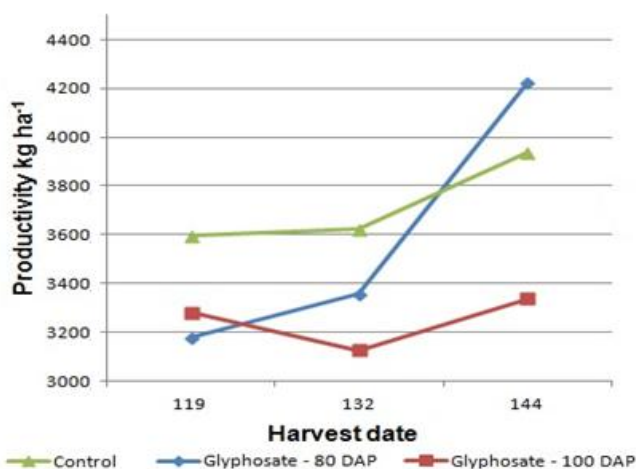


Figure 1. Pods yield peanut (kg ha⁻¹), cultivar IAC 503, 2010/2011 spring-summer growing seasons, Pindorama -SP. Control: $y = 144,31x^2 - 406,77x + 3858,4$ $R^2 = 1$; 80 DAS: $y = 344,37x^2 - 854,22x + 3688,3$ $R^2 = 1$; 100 DAS: $y = 180,54x^2 - 693,51x + 3792,4$ $R^2 = 1$.

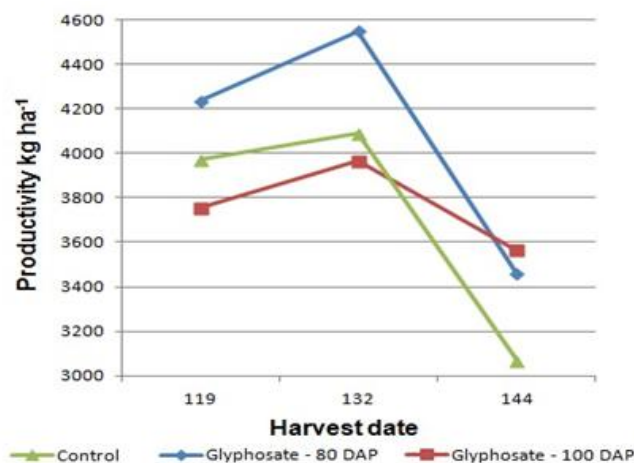


Figure 2. Pods yield peanut (kg ha⁻¹), cultivar IAC 886, 2010/2011 spring-summer growing seasons, Pindorama -SP. Control: $y = -568,51x^2 + 1820,8x + 2719,9$ $R^2 = 1$; 80 DAS: $y = -704,26x^2 + 2427,6x + 2512,3$ $R^2 = 1$; 100 DAS: $y = -305,99x^2 + 1128,4x + 2931,8$ $R^2 = 1$.

CONCLUSIONS

The glyphosate application at 80 DAS increased pods yield, comparing it with the control, when peanut harvest was at 144 DAS and 119 DAS for cultivar IAC 503 and cultivar IAC 886, respectively. The glyphosate application at 80 DAS increased pods yield about 10%, when peanut harvest was at 132 DAS for cultivar IAC 886. With the glyphosate application at 80 and 100 DAS, in the third harvest, the cultivar IAC 886 showed highest pods yields.

Acknowledgements

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