

Thesis Title Effect of Position of Boron Placement on Yields and
 Distribution of Boron in Peanut.

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ABSTRACT

A pot experiment was set up to investigate the effects of position of boron placement on yields and distribution of absorbed boron in peanut, SK 38 cultivar. A boron deficient soil (possessed 0.06 mg B/kg of soil as hot water extractable boron) in the Quartzipsamments Great Group was used. Peanut was planted in a specially designed pot in order to separate the soil medium for peg growth from root system. A ring type tray of 20 cm in diameter and 3 inches depth containing two kilograms of soil was placed on top of eight kilogram of soil in a pot of 25 cm in diameter. Peanut seed was planted in the pot and allowed to grow with all pegs penetrated into the soil in the tray. Randomized Complete Block Design was used with four replications and nine treatments. The first treatment has no boron. Two rates of boron as boric acid : 1 and 4 kg B/ha were applied at either

rooting system or pegging vicinity. The others were combinations between rates of boron applied at rooting and pegging area.

Response of peanut yields to boron depended on rates and position of boron placement. At 1 kg B/ha, the similar responses were found between root and pegging in increasing total seed weight, number and weight of large sized seed, and harvest index.

At 4 kg B/ha, application of boron in pegging area gave the same results as those at 1 kg B/ha. However, at such high rate of boron, application of boron in rooting area decreased total seed weight, number and weight of large sized seed. This adverse effect could be due to the toxic level of accumulated boron in the plant. Both types of placement were similar in increasing the harvest index value. For shelling percentage, root placement of boron at both 1 and 4 kg B/ha gave higher value than the pegging one. This could be due to a thicker shell of the pod. In general, boron application did not affect the number of mature pods per plant and number of seeds per pod.

Seeds with hollow heart or yellow plumule symptoms or both were found in peanut received no boron as high as 71%, 25% and 22% respectively. Application of boron at the rate of 1 kg B/ha or higher eliminated all these symptoms.

The distribution of absorbed boron in the plant was affected by the positions of boron placement. Absorbed boron that accumulated in the leaves and seed were 63% and 18% respectively for the root application but 26% and 40% respectively for the pegging application.