

Improvements of peanut pod-filling and yield by applying ca. mg and bin strongly acid soils¹

Ching-Hsi Lin²

summary

Field experiment was carried out in the spring of 1985 to evaluate the effectiveness of levels, sources of Ca, Mg and B on pod-filling and yield of peanut. Smallseeded variety (Tainan selection No.9) was grown in well acid schist alluvial soils with low pH, Ca, Mg, B and coarse texture at Kwan-Fu.

Application of hydrated lime either 1.5t/ha or 3 t/ha significantly increased soil pH values and Ca concentration, Adding 1.5ton slags/ha to soils slightly increased soil pH and Ca concentration, but remarkably increased the SiO₂ concentration of soil. The content of B in soil was raised significantly as 10 kg borax/ha added.

Applications of hydrated lime with or without borax, and slag were most effective in improving number of pods/plant, number of nodules/plant and podfilling percentage.

Pod yields increased with hydrated lime 1.5t/ha or combined with magnesium sulfate 0.2t/ha from 1837 kg(control)to 2319 kg and 2497 kg/ha, respectively; further increase in hydrated lime application to 3t/ha with or without magnesium sulfate had no effect on yield. The highest pod yield (2903 kg/ha) was obtained, when 10 kg borax/ha was added to the treatment of hydrated lime 1.5t/ha and magnesium sulfate 0.2t/ha which indicating that borax had great effect on yield (16% increase). Yield response to B may be due to B deficiency (hot-water-soluble B 0.07 ppm) in soils. At the same application rate of 1.5t/ha, slag was inferior to hydrated lime which produced 85 kg pods/ha more. The effectiveness of slag on the yield was attributed to the increase of soil SiO₂ content rather than the increase of soil pH and Ca; but the role of siO₂ for peannt production in needed for further studies.

In addition to the hydrated lime for the strongly acid soils, B addition is probably required to reach the maximum yield of peanuts.

¹. Research Article No.16 of Hualien District Agricultural Improvement Station.

². Soil chemist and chief, Division of Crop Environment.