

TABLE 1. Effect of copper supply on growth, leaf copper concentration and leaf AO activity in peanut.

Cu supply (mg/pot)	Shoot yield (g/pot)	Pod no./plant	Cu conc. ($\mu\text{g/g}$)	AO activity in YFL	
				O ₂ uptake (nmol/leaf/min)	Strip test ($\mu\text{g/ml}$)
0	13.7	3.8	1.3	47	900
300	13.2	3.6	1.6	33	850
1000	17.3	4.7	2.0	134	250
3000	17.5	5.8	3.8	360	150
SE	0.4	0.3	0.3	27	150

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A Field Survey of Boron Deficiency in Peanuts Grown in the Chiang Mai Valley

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HOLLOW heart is a boron-specific disorder of peanut kernels (Cox and Reid 1964) which renders the crop especially sensitive to boron deficiency. Using the incidence of hollow heart as an indicator of boron deficiency, a survey of farmers' peanut crops in the Chiang Mai valley was conducted in the dry season 1985. Sites were widely distributed in the Chiang Mai valley and surrounding uplands, including 88 locations in seven districts. The percentage of kernels with hollow heart was determined by visual assessment and samples were rated according to severity of the disorder, as follows:

Nil — zero kernels with hollow heart;

Mild — 0.1-5.0%;

Severe — 5.1-20%;

Very severe — >20%

Hollow heart was found in peanut kernels from half the sites and rated as severe at 32% of sites surveyed (Table 1). A high incidence of hollow heart was found in Hang Dong (80%), Doi Saket (38%) and San Kamphaeng (31%), the districts where most intensive sampling took place. Upland sites had a higher incidence of hollow heart (85% of sites) than the lowland sites (40%). Kernels with hollow heart contained <13 $\mu\text{g/g}$ boron.

These results, together with studies on the boron status of major soil series in northern Thailand (Hiranburana and Chawachati, these proceedings), suggest that boron deficiency may be widespread in northern Thailand. Further research should now define soil and environmental factors associated with boron deficiency in peanut and other crops and develop fertiliser practices for correction of the deficiency.

TABLE 1. Number of sites in the Chiang Mai valley at which hollow heart disorder was observed in peanut kernels from farmers' fields. (Lowland sites <350 m elevation).

	Severity of hollow heart			
	Nil	Mild	Severe	V. Severe
Lowlands	41	11	13	3
Uplands	3	5	10	2
All Sites	44	16	23	5

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