

## **The tolerance of different types of Peanut varieties to leaf chlorosis under Iron deficiency and buffered nutrient solution containing $\text{Fe}^{3+}$ <sup>(1)</sup>**

Ming-Ho Chou<sup>2</sup> Wen-Fu Tsai<sup>3</sup>

### **Summary**

The purpose of this experiment was to investigate the tolerance of different types of peanut (*Arachis hypogaea* L.) varieties to iron chlorosis under iron deficiency (without any types of iron in nutrient solution) and buffered nutrient solution containing  $\text{Fe}^{3+}$ . The experiment consisted of three types (Virginia, Spanish and Valencia) in a total of seven varieties. Two buffer solutions, 10 mM MES [2-(N-morpholino) ethanesulfonic acid] at pH 6.0 and 10 mM MOPS [3-(N-morpholino) propanesulfonic acid] at pH 7.5, were included in each of the nutrient solutions to stabilize the pH value during the culture period. Results were as follows:

1. Peanut seedlings grown in the nutrient solution for 28 days without Fe (control pots supplied with Fe-EDTA) showed that plant height, root and top dry weight, leaf thickness and leaf chlorophyll content all decreased significantly among each type of varieties. Spanish type varieties were more tolerant to iron chlorosis than Virginia type and Valencia type varieties.
2. At pH 6.0 of the buffered nutrient solution containing  $\text{Fe}^{3+}$ , all types of peanut varieties showed slightly chlorosis. Except ICG(FDRS)-44 (Valencia type), which showed intermediate chlorosis. The  $\text{Fe}^{3+}$  reduction activity was higher in Spanish types than the other two types.
3. At pH 7.5 of the buffered nutrient solution containing  $\text{Fe}^{3+}$ , the response of peanut seedlings was reversed as compared with that of iron deficient treatment. The  $\text{Fe}^{3+}$  reduction activity was lowest in Tainung 5 and Tainan Sel. 9 of Spanish type. Leaf chlorosis also began earlier and serious than Virginia and Valencia types. Except Tainan 11, which showed similar response as Virginia types.
4. At pH 6.0, the  $\text{Fe}^{3+}$  reduction activity was steady at relative high level. Whereas, at pH 7.5, the  $\text{Fe}^{3+}$  reduction activity was decreased significantly in all types of varieties. Particularly, the decrease was found more seriously in Spanish type varieties than the other two types. This indicates that the loss of  $\text{Fe}^{3+}$  reduction of peanut grown at high pH value of calcareous soil is the major factor causing iron chlorosis.

(Key words: leaf chlorosis, Iron deficiency,  $\text{Fe}^{3+}$ , Type of peanut).

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<sup>2</sup>Associate Agronomist, Division of Crop Improvement.

<sup>3</sup>Professor, Department of Agronomy, National Taiwan University.