

## Timing of nitrogen uptake pattern by maize using $^{15}\text{N}$ isotope technique at different growth stages

### ABSTRACT

It is necessary to know the right time for nitrogen (N) fertilizer application to meet the plant's need in order to reduce N loss. A glasshouse experiment was conducted at Universiti Putra Malaysia to determine the timing of N uptake at different growth stages of maize. Nitrogen was labeled as  $^{15}\text{N}$  urea with 10% atom excess (a.e). The total N uptake increased until eighth week of planting. After the eighth week of planting, total N decreased due to remobilization of nitrogen from leaf and stalks to grain. The maximum nitrogen use efficiency (NUE) was only 37% throughout the growing season. This indicated that the NUE was very low. NUE can be increased by understanding the right rate and time of nitrogen fertilizer application. The best timing for nitrogen fertilizer application was before the eighth week of planting which reduced the loss of N.

**Keyword:**  $^{15}\text{N}$  isotope, Maize; N uptake; Nitrogen derived from fertilizer (NDFF); Nitrogen derived from soil (NDFS)