

## SUMMARY

The factors involved in the use of nitrogenous fertilisers by rice are considered. An experiment was carried out comparing two slow-release fertilisers (manufactured by the ESSO Research and Engineering Co.) with ammonium sulphate as a standard source of nitrogen using the short duration rice variety Bluebelle. A moderately rapid rate of release material (EAP 3032 - 500 hours to 75% release of its nitrogen), when applied 2 inches deep at 70 lbs. N/acre at transplanting, did not significantly increase grain yield over the increase due to ammonium sulphate. A medium rate of release material (EAP 3033 - 1500 hours to 75% release of its nitrogen) increased grain yield by 2,291 lbs./acre over the control which was more than twice the increase due to ammonium sulphate (1,026 lbs./acre). This response was made up by a small increase in all yield components, but especially panicle weight as a result of more spikelets/panicle and a higher percentage of filled grains. Nitrogen fertilisers reduced the response to a top dressing applied 35 days after transplanting in the following order of increasing effectiveness - EAP 3032, ammonium sulphate, EAP 3033.

The pattern of nitrogen recovery by rice was closely related to the release of nitrogen from the fertilisers. Plants treated with ammonium sulphate had absorbed all of their nitrogen when they had accumulated only 50% of their final dry weight. At the same stage, plants treated with slow-release materials had absorbed only half of their final nitrogen content, and they continued to absorb nitrogen much later in growth. The potential of controlled release fertilisers was discussed for rice and other dry-land crops in the climate and soils of the tropics.