Assessment of phosphorus placement techniques and it's levels on growth, yield attributes and yield of rice fallow zero tillage maize

Ch Pavan, M M V Srinivasa Rao, B Rajendra Kumar and P Gurumurthy
Department of Agronomy, Acharya N G Ranga Agricultural University,
Agricultural College, Naira-532185, Andhra Pradesh, India

ABSTRACT

A field experiment entitled "Phosphorus management in zero tillage maize" was conducted during *rabi*, 2025-2026 at Agricultural College Farm, Naira, Andhra Pradesh. The experiment was laid out in a split plot design with four methods of phosphorus application *viz*., farmer's practice (check) (M_1) - application of basal phosphatic fertilizer at first irrigation (15-20 DAS), broadcasting of basal phosphatic fertilizer 10 days before harvest of paddy (M_2), pocketing of basal phosphatic fertilizer at the time of seed dibbling (M_3) and drenching of basal phosphatic fertilizer at 10 DAS (M_4) as main plot treatments and three phosphorus levels viz., 40 kg P_2O_5 ha $^{-1}$ (S_1), 80 kg P_2O_5 ha^{-1} (S_2) and 120 kg P_2O_5 ha^{-1} (S_3) as sub plot treatments with three replications. The results revealed that phosphorus management practices significantly influenced growth and yield attributes of zero tillage maize. Among the different methods of phosphorus application, drenching of basal phosphatic fertilizer at 10 DAS (M_4) recorded superior growth performance with higher plant height (201.5 cm), number of leaves plant^{-1} (12.8), drymatter production (11,795 kg ha^{-1}), number of kernel rows cob^{-1} (15.4), number of kernels row^{-1} (41.7), cob weight (119.7 g), kernel weight cob^{-1} (105.5 g) and kernel yield (9,311 kg ha^{-1}). The treatment M,, recorded 16.4 and 8.5 per cent higher kernel yield over farmer's practice (M) and broadcasting (M_2), respectively and remained statistically on par with pocketing at seed dibbling (M_3). Further, M_4 hastened crop phenology by recording lower days to 50% tasseling (55.1 days), 50% silking (58.2 days) and maturity (106.0 days). Among the phosphorus levels, application of 120 kg P_2O_5 ha^{-1} (S_3) registered significantly higher plant height (195.8 cm), number of leaves plant^{-1} (13.0), drymatter production (11,454 kg ha^{-1}), number of kernel rows cob^{-1} (15.2), number of kernels row^{-1} (40.3), cob weight (118.2 g), kernel weight cob^{-1} (104.1 g) and kernel yield (9,155 kg ha^{-1}) which was on par with 80 kg P_2O_5 ha^{-1} (S_2). The kernel yield under 120 kg P_2O_5 ha^{-1} (S_3) was 10.9 and 3.6 per cent higher than that obtained with 40 kg P_2O_5 ha^{-1} (S_2) and 80 kg P_2O_5 ha^{-1} (S_2), respectively. The interaction effect between methods of phosphorus application and phosphorus levels was non-significant for all growth, phenological and yield parameters.

Key Words: *Application methods, crop phenology, kernel yield, phosphorus levels, yield attributes and zero tillage maize*