MANAGEMENT OF ACID SOILS FOR RICE PRODUCTION IN THE TROPICS: EXPERIENCE IN THE PHILIPPINES

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ABSTRACT

The acid soils used for rice production in the Philippines have low pH, organic carbon, available P, exchangeable Ca, Mg and K and effective CEC but high in Al content. Acid lowlands are also high in active Fe while uplands in active Mn.

Rice in these soils both under upland and lowland conditions positively respond to the applications of N, P, and K but significantly only when they all were applied in combination and in large quantities. Phosphate applications as broadcast and band placement gave comparable but most dramatic and consistent results in both soils. Lime was effective at low rates only. Rice straw and chicken manure also significantly contributed to the growth and yield of rice. Chicken manure was more effective than rice straw. Submergence for two weeks before transplanting and rice straw incorporation reduced acidity hazards, and increased grain yields significantly but tolerant varieties benefited more from this combination.

Rice straw was used as mulch in uplands appeared advantageous in many ways reduced soil moisture tension, improved yields and soil physical conditions and suppressed weed growth. Maintaining high plant populations by close spacing and applying fertilizers in furrows is highly desirable in upland soils with limited fertility. This allows more effective use of fertilizers by increased root contact and reduced fixation.

These soils, though relatively infertile can be made productive by a combination of practices including the use of tolerant and input responsive varieties, proper soil, fertilizer, crop residues and water management, and appropriate cropping pattern.