crops, it has been previously reported as an inadequate method for flooded rice.

Examination of the relationship between relative grain yields and soil pH indicates that soil pH is a better predictor of P fertilizer response by rice than is M3P (**Figure 2**). While predictability is still relatively low (R^2 = 0.14), the negative slope indicates that as soil pH increases, relative yield decreases, likely due to decreased P availability. This in turn increases dependence of rice on P fertilizer as soil pH increases and supports conclusions made in previous studies that suggest that rice response to P fertilizer is more likely on alkaline soils [*Better Crops with Plant Food*, 82(2):10-11, 1998].

Multiple regression analysis indicated that a model containing both M3P and soil pH provided the best prediction (R^2 = 0.17) of relative grain yields, but was only slightly better than soil pH alone.

The relationship between rice P concentration at mid-tillering (MT) and M3P indicates that Mehlich 3 does not predict P uptake by rice (**Figure 3**). The relationship between rice P concentration at MT and soil pH was highly significant (R^2 = 0.38, **Figure 4**). The P concentration in the plant declined significantly as soil pH increased. This decline with increased soil pH further strengthens the point that soil pH is a major factor affecting P availability to rice.

Summary

While these results suggest that soil pH is a better estimator of P fertilizer response by rice than M3P, a direct measurement of available P is more desirable. It is clear that the predictability is not high for either method, and development of a more effective method for estimating P availability to rice is sorely needed. In the interim, soil pH and M3P together provide a better indication of P fertilizer response than M3P alone.

As a result of this research, we have modified the P fertilizer recommendations for rice, effective in 1999 (**Table 2**), to consider both M3P and soil pH as contributing factors. This approach will also help to address removal of P in harvested rice (0.29 lb P_2O_5/bu) and limit soil P "mining." BC

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