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USE OF QUICK TEST METHODOLOGY FOR PHOSPHORUS FERTILIZER RECOMENDATIONS

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ABSTRACT

The study was undertaken with an objective to improve the indigenous phosphorus (P) recommendation system by the inclusion of soil test values and P- fixation tendencies of a specific site. To assess the applicability of quick test methodology (Mclean's model), field experiments were started on different soil series i.e. Pindorian and Kamonke. Wheat was grown as a test crop. Phosphorus dose to get 95 and 99% yield targets were calculated for both soils by McLean's model. It was observed that phosphorus fertilizer dose for both sites to get 95% yield target was lower (15-19 Kg P_2O_5 ha^{-1}) than the generalized rate by the Punjab Agriculture Department for wheat crop. Non-significant difference in grain yield was recorded for the treatments receiving the generalized and calculated dose (for 95% yield target) of P fertilizer. However, P application at the rate calculated for 99% yield target based on soil test resulted in significantly higher yield as compared to generalized dose. Phosphorus concentration in the diagnostic plant tissue also depicted the same trend. Initial data on the application of quick test in the field was quite satisfacctory but its use for advisory service to the farmers needs extensive experimentation.

INTRODUCTION

Fertilizer requirements of a crop may range tremendously because they are product of plant requirement, soil quantity and capacity factors. The maximum economic yields can only be obtained through balanced nutrients fertilization keeping in view the amounts of nutrients available from the existing status of soils. Therefore, the value of soil testing and its use in a fertilizer programme to maximize net returns from fertilizer application is extremely important. Especially, when soils are (reciprocal of fraction of added P recovered) could be ascertained for a specific soil under target (McLean *et al*, 1982) and as a second step by converting the quick test values to the actual 6 or 8 weeks equivalent by regressing the quick test values upon the actual ones (Akram *et al*, 1993).

The present study was taken in hand to see the applicability of P fertilizer requirements calculated through quick test methodology in the field and its comparison to the existing system of P recommendation (generalized rate) and also to cover the economic aspects of this system.

MATERIALS AND METHODS

Two sites were selected in Gujranwala district under vegetable-wheat and rice-wheat cropping systems and varying in soil texture. The initial soil characteristics of the sites are given in Table-1. Phosphorus fixation factors (F_P) were determined by taking 1.0 g aliquote of each soil, adding 0.5 ml of KH_2PO_4 solution of 60 mg L^{-1} P and equilibrating for 2 hours (McLean *et al*, 1982). The reciprocal of P recovered of that added were designated as P fixation factors i.e. 2.4 and 2.5 for Pindorian and Kamonke soils respectively. The P treatments comprised of a generalized rate recommended by Punjab Agriculture Department and P computed for 95% and 99% relative wheat yield goals. At one site (site-1), an additional treatment of P for 75% relative yield target was also included.

Table-1. Soil characteristics of experimental sites.

	Site-1	Site-2