

## Comparative performance of phosphatic fertilizers and time of nitrogen application on wheat (*Triticum aestivum* L.) Variety PBW-343

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### ABSTRACT

A field experiment on wheat PBW-343 was conducted during *rabi* 2005-06 and 2006-07 at Students' Instructional Farm of C.S. Azad University of Agriculture and Technology, Kanpur. Three sources of P, viz, DAP, SSP and NPK mixture (12:32:16) and four times of N application viz., zero, 25, 33.3 and 50% as basal + rest N in two equal splits at C.R.I. and heading stages were tried in Randomised block design. The treatment of DAP @125 kg./ha having at par with SSP @60kg P<sub>2</sub>O<sub>5</sub>/ha + 25 or 33.3 % N as basal + rest N in two equal splits at C.R.I. and heading stages produced higher grain (46.68 q/ha) and straw yield (51.78 q/ha) and net profit (Rs. 31771/ha) than other treatments. The treatment of SSP + 50% N as basal + rest N in two equal splits at C.R.I. and heading stages produced significantly minimum seed (35.78 q/ha) and straw yield (40.70 q/ha), and net profit (Rs. 19779/ha). Nitrogen was applied @ 150 kg N/ha in all treatments.

**Key words :** Wheat, DAP, Single super phosphate, Yield, Net profit

### INTRODUCTION

Wheat is the staple food crop of our country. It responds well to fertilizer nutrients particularly the major plant nutrients N, P and K. It is the use of fertilizer which made a breakthrough in wheat production through high yielding dwarf wheat varieties. The fertilizer, Di-ammonium phosphate gained much popularity among wheat farmers, thus majority of farmers are using it in wheat crop. Now-a-days, there is acute shortage of this fertilizer, thus alternatives are needed. Nitrogen is quickly mobilized under field conditions results in poor efficiency particularly in light textured soils. It needs the application of N in splits. Therefore, an experiment was carried out to compare the effectiveness of different phosphatic fertilizers and times of nitrogen application on wheat under sandy loam soil conditions.

### MATERIALS AND METHODS

A field experiment was conducted during 2005-06 and 2006-07 at Students' Instructional Farm of C.S. Azad University of Agriculture and Technology, Kanpur. The soil of experimental field was sandy loam in texture having 7.6 pH, 0.40 % O.C., 17.0 kg/ha available P<sub>2</sub>O<sub>5</sub> and 225 kg/ha available K<sub>2</sub>O. The treatments tried were as -T<sub>1</sub> Recommended P and K as basal + 50% N at CRI and 50% N at heading stage, T<sub>2</sub> Recommended P and K as basal + 25% N as basal + 37.5% N at C.R.I. and 37.5% N at heading stage, T<sub>3</sub> Recommended P and K as basal + 33.3% N basal +33.3% N at C.R.I. + 33.3% N at heading stage. T<sub>4</sub> Recommended P and K as basal +50% N basal +25% N at C.R.I. +25% N at heading stage, T<sub>5</sub> N:P:K mixture (12:32:16) @ 125 kg/ha basal +67.5 kg N/

ha each at C.R.I. and heading stages, T<sub>6</sub> DAP (18:46) @ 125 kg/ha basal + 63.75 kg N/ha each at C.R.I. and heading stages. The design used was randomized block design with four replications. Recommended P and K were considered as 60 kg P<sub>2</sub>O<sub>5</sub> and 40 kg K<sub>2</sub>O/ha supplied through single super phosphate and muriate of potash, respectively. In all treatments, nitrogen was applied @ 150 kg N/ha. Except treatments, source of nitrogen was urea fertilizer.

The sowing of wheat variety PBW-343 was done in furrows 20 cm apart behind country plough on 27<sup>th</sup> November, 2005 and 4<sup>th</sup> December, 2006. Seed rate was used @ 100 kg/ha uniform in all treatment plots. Crop was irrigated 4 times in each year as per requirement. The observations were recorded as growth characters, yield attributes, yields and economics of wheat under different treatments.

### RESULTS AND DISCUSSION

#### *Effect on growth characters*

Dry weight /plant and total number of tillers/plant were recorded significantly maximum of 4.98 g and 330.88/m<sup>2</sup>, respectively in treatment T<sub>6</sub> of DAP application followed by treatment T<sub>2</sub>, which registered significantly higher growth values over treatment T<sub>4</sub>. Other treatments remained at par with each other in both dry matter and number of tillers/m<sup>2</sup> (Table 1). Plant height was not influenced significantly by treatment effects. The best performance of treatment T<sub>6</sub> might be due to sufficient starter dose of N through DAP and more availability of P to growing plants in early stage of growth. David (1989) reported that P utilization was 11.8% from