

Influence of different levels and sources of phosphorus, pressmud and PSM on dry matter partitioning and yield of summer groundnut

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ABSTRACT

The study was conducted to determine the effect of different source and level of phosphorus with and without pressmud and PSM on dry matter partitioning, pod and haulm yield of summer groundnut crop during summer seasons of 2002 and 2003 at Navsari. Total dry matter partitioning increased significantly upto harvest, leaves dry matter was increased upto 90 DAS and decreased thereafter where as stem dry matter accumulation increased from 30 DAS to at harvest and pod dry matter accumulation start from 90DAS and increased upto harvest. Single super phosphate perform better than diammonium phosphate. It was observed that leaves, stem, pod and total dry matter accumulation plant⁻¹, pod and haulm yield was enhanced due to optimum dose treatment receiving 15 kg P ha⁻¹ from SSP + 5 t pressmud ha⁻¹ + 2.5 kg PSM ha⁻¹.

Key words : Phosphorus, Pressmud, PSM, Dry matter, Yield, Summer Groundnut.

INTRODUCTION

Groundnut is an important oilseed and cash crop of the country and is widely grown in between 40° N and 40° S latitudes. In the past few decades increasing attention has been paid to the application of nutrient in different sources i.e. chemical, organic and bio-fertilizer (integrated) to increase yield. The pre-requisite for the any high yielding crops is its ability to produce higher amounts of total dry matter when compared with lower yielder. The manner in which the net dry matter produced and distributed among the different parts of the plant will determine the magnitude of the economic yield. But less attention on dry matter accumulation in groundnut crop, this factor is mainly responsible for getting higher crop production.

MATERIALS AND METHODS

The present investigation was conducted at Research Farm, Department of Agronomy, Navsari Agricultural University, Navsari during summer seasons of 2002 and 2003. The treatments compared the combinations of three levels of phosphorus (0, 15, 30 kg P ha⁻¹) and its two sources (SSP and DAP) with and without pressmud (5 and 10 t ha⁻¹) and PSM (2.5 kg ha⁻¹ soil application). Thus there were fifteen phosphorus management treatment combinations are as follows: T₁-2.5 kg PSM ha⁻¹ only, T₂-5 t pressmud ha⁻¹ + 2.5 kg PSM ha⁻¹, T₃-10 t pressmud ha⁻¹ + 2.5 kg PSM ha⁻¹, T₄-15 kg P ha⁻¹ from DAP + T₁, T₅-15 kg P ha⁻¹ from SSP + T₁, T₆-30 kg P ha⁻¹ from DAP + T₁, T₇-30 kg P ha⁻¹ from SSP + T₁, T₈-15 kg P ha⁻¹ from DAP + T₂, T₉-15 kg P ha⁻¹ from SSP +

T₂, T₁₀-15 kg P ha⁻¹ from DAP + T₃, T₁₁-15 kg P ha⁻¹ from SSP + T₃, T₁₂-30 kg P ha⁻¹ from DAP + T₂, T₁₃-30 kg P ha⁻¹ from SSP + T₂, T₁₄-30 kg P ha⁻¹ from DAP + T₃, T₁₅-30 kg P ha⁻¹ from SSP + T₃. The experiment was laid out in randomized block design with three replications. The pH of the soil taken before laying the experiment was 8.0. organic carbon 3.9 g kg⁻¹, low in nitrogen 237 kg ha⁻¹, moderate in P (8.44 kg ha⁻¹) and rich in K (287.18 kg ha⁻¹). Irrigations were given when needed. A recommended package of practices were followed. During second year experiment was conducted on same site.

RESULTS AND DISCUSSION

Dry matter production (g) plant⁻¹

Dry matter accumulation in leaf, stem and reproductive organs and eventually the total dry matter accumulation plant⁻¹ (Table 1 and 2) recorded at various growth stages clearly indicates that during vegetative stage, higher dry matter was accumulated in leaves, while at harvest its accumulation was higher in reproductive organs.

At 30 DAS, 59.09 per cent dry matter was accumulated in leaves while 40.91 per cent was accumulated in stem during 2002. During 2003 at the same crop growth stage, 59.04 per cent dry matter was accumulated in leaves and 40.96 per cent was accumulated in stem. The dry matter accumulation at 60 DAS was 63.57 per cent in leaves and 36.43 per cent in stem during 2002 crop season. The corresponding figures for 2003 were 63.66 and 36.34 per cent respectively.

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