

Chapter 2

Nutrient Management for Sustainable Potato Production in India: New Initiative

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ABSTRACT

Potato is important crop for solving food and nutritional security problem of growing population of India. Application of N in two split dose i.e. half at planting time and rest at time of earthing up produce higher yields and higher N recovery. At the time of planting, calcium ammonium nitrate or ammonium sulphate should be preferred by furrow application. Selection of suitable variety may play major role beside time and method of application in improving nutrient use efficiency. Balanced use of major and micronutrients plays an important role in improving quality of produce besides good yield. Potato based cropping system mostly shows build up of P and negative balance of N and K which may be overcome by organic residues recycling. Intensive cropping system has resulted in wide spread deficiency of secondary and micro nutrients particularly Zn and these must be applied on soil test basis. Integrated nutrient management is a must for an exhaustive and responsive crop like potato.

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INTRODUCTION

The book chapter “Nutrient Management for sustainable potato production” deals with the problems and potentials of natural resources of India in relation to Potato production. The results presented in this chapter are summarized findings of the research conducted in India; its agricultural universities and Indian council of Agricultural Research (ICAR). Nutrient management (major, secondary and micro-nutrients) for potato production in tropical and subtropical climatic are discussed with the findings of multi-location trials of All India Coordinated Research Projects. The potato production, area and productivity dynamics are also discussed with time series of Indian continent. Knowledge of improved nutrient management for potato growing area can increase production potential of land resources, improve soil and fruit quality and reduce economic burden of low income group of farmers.

BACKGROUND

Potato, a carbohydrate rich food highly popular worldwide, can be important crop in solving food and nutritional security problem of India. This crop is third in production after rice and wheat with only 0.8% of gross cropped area. Production of rice, wheat and maize is 99.15, 80.58 and 19.29 m tonnes from 45.35, 27.88 and 8.19 m ha of land, whereas, potato produces 28.47 m tonnes from 1.55 m ha of land area. In addition, potato produces more dry matter (47.6 kg/ha/day) and edible protein (3 kg/ha/day) than the major cereal food crops and therefore, requires higher amount of nutrients on per day basis. Freshly harvested potato tubers contain about 80% water and 20% dry matter of which 70% is starch. On the dry weight basis, the protein content of potato is similar to that of cereals and is very high in comparison with other root and tuber crops. The quality of protein in potato is very high with its biological value similar to egg. In addition, the potato is low in fat (0.1%) and energy (80 k cal/100g edible portion) and is rich in several nutritional components, especially vitamin C (17 mg/100 g edible portion). The potato is a moderate source of Iron, and the non-haem form of Iron is more readily available for absorption by intestines in the presence of ascorbic acid. It is a good source of vitamins like thiamine, riboflavin and niacin and minerals such as potassium, Phosphorus, Magnesium, Calcium, Sodium, Iron and Zinc. It can supply at least part of the daily requirement of trace elements like Copper, Manganese, Molybdenum and chromium. Dietary antioxidants and fibre in potato tubers take part in preventing diseases related to ageing and benefit health (Ezekiel *et al.*, 1999).

Potato has emerged as one of the most important cash crop due to its fitting into many cropping systems and resulting into expansion of area of the crop. The

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