INTRODUCTION
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Medicinal plants occupy an important niche in the treatment of disease worldwide. Majority of the developing world continues to rely on traditional medicines, predominantly plants, for primary health care (Farnsworth et al., 1985; Chevallier, 1996; Purohit and Vyas, 2004; Sharma, 2004). In India, medicinal plants serve as the main form of health care for a majority of the populace, in part because of cultural preference and also because of the prohibitive cost of synthetic pharmaceutical products. For large numbers of rural and urban poor people in this region, medicinal plants offer the only available treatments for both minor and serious ailments.

India’s progress in improving the cultivation of traditional crops is a matter of pride for us. However, compared to other crops, little attention seems to have been given to medicinal plants which occupy a unique place in Indian socioeconomy (Jakhar et al., 2003). Therefore, many scientists have repeatedly advocated to undertake applied and fundamental research work on cultivation of medicinal plants, several of which may attain the position of important cash crops for Indian farmers in future (Swaminathan, 1982; Atal and Kapur, 1982; Jakhar et al., 2003; Singh and Tyagi 2004).

During the past decade, there has been dramatic increase in sales of medicinal plants in domestic as well as in the international market (the international market is growing at the rate of 7% annually). India being one of the major sources of medicinal plants holds a share of 2.5% in the international market (Natesh and Ram, 1999). Ironically, supply lags behind demand probably due to the lack of attention being paid to these plants which were mostly exploited from their natural resources. Therefore, large scale cultivation of these plants on scientific lines is the sole dependable alternative which will also ensure procurement of authentic, pure and fresh source of the natural medicines.

For the cultivation of medicinal plants as well as other crops, more than sixty factors play important roles to ensure the desired yield and quality. Among these the use of mineral nutrients (fertilizers) is the most important limiting factor (Wallace and Wallace, 2003). According to Farooqi and Shreeramu (2001), the mineral requirements of most of the medicinal plants remained unexplored and meagre reports
are available to exploit their maximum genetic potential regarding the optimum dose of nitrogen, phosphorus and potassium (Jakhar et al., 2003; Singh and Tyagi, 2004).

Of these, nitrogen and phosphorus are essential for normal plant growth as well as development and are considered most important mineral nutrients (Lauchii, 1983; Wallace and Wallace, 2003). Demonstrations have shown that mineral deficiencies substantially impair production of dry matter and its partitioning between different plant organs (Marschner et al., 1996; Mc Donald et al., 1996), reduce sink strength (Farrar and Williams, 1991; Paul and Stitt, 1993) and adversely affect the photosynthetic potential of source (Farrar and Williams, 1991, Stitt, 1991; Pollock and Farrar, 1996). To avoid mineral nutrient deficiencies, indiscriminate use of fertilizers is practised by uneducated farmers. This is invariably associated with the hazards of degradation of the soil, pollution of the environment and low yield. This implies that the study of the critical levels of N, P and K is, therefore, of vital importance for successful plant cultivation.

It is imperative to note that at Aligarh, Afridi and his associates have contributed a lot in the knowledge of mineral nutrition on a number of medicinal plants, including Anethum, Carum, Cassia, Cichorium, Curcuma, Cymbopogon, Datura, Foeniculum, Lallemantia, Linum, Mentha, Nigella, Plantago, Solanum, Trigonella, Withania and Zingiber (Khan and Mohammad, 2006). To continue this project, two medicinally important plants, Withania somnifera L. (Ashwagandha) and Datura innoxia Mill. have been selected by the author to workout the optimum nitrogen and phosphorus fertilizer dose (Aligarh soil is already rich in potassium). These plants have been selected due to the reason that they bear following useful therapeutical properties.

Ashwagandha enjoys a considerable therapeutic repute in Allopathic (Jain, 1979), Homeopathic (Sanyal, 1982), Unani (Israeli, 1982) and Ayurvedic (Dastur, 1964) systems of medicine. The dried roots of the plant are used as tonic for development of muscles and bones, against hiccup, female disorders, rheumatism, ulcers, senile debility etc. The leaves are applied for carbuncles, inflammations and swellings. The leaf-juice of this plant is useful in conjunctivitis. Decoction of bark is taken for asthma and applied locally to sores (The Wealth of India, 2003 a; Purohit and Vyas, 2004; Sharma, 2004). Recently, Ashwagandha has been reported to have anti-carcinogenic effects in animals and cell cultures by decreasing the
expression of nuclear factor-kappa B, suppressing intercellular tumor necrosis factor, and potentiating apoptotic signalling in cancerous cell lines (Ichikawa et al., 2006). As far as Datura innoxia is concerned, it is used in India for the same purpose as Datura stramonium. It is therefore, of interest as a possible source of the alkaloid scopolamine used as a pre-anaesthetic in surgery and child birth, in ophthalmology and prevention of motion sickness (The Wealth of India, 2003b).

The application of N and P as fertilizers has been an established practice for increasing the inherent capacity of crops for growth and yield. However, fertilizer's efficiency reaches to a point of saturation in realizing the full genetic potential of the plants. Thus, the crop management should be undertaken in such a way that the available resources are utilized to the maximum possible extent which could further lead to the enhancement of crop productivity. Research results showed that PGRs can significantly modify crop yield and mineral balance (Khan et al., 2006; Czapla et al., 2007; Khan et al., 2007; Khan et al., 2009). Out of several PGRs, triacontanol (TRIA) has also been proved a potent plant promoter in agricultural productivity.

Triacontanol (Fig. 1) is a naturally occurring saturated long-chain alcohol that is known to have a growth promoting activity when supplied exogenously to a number of plants. TRIA brings about certain physiological changes that give rise to desirable yield and quality of the crops (Ries et al., 1977).

Keeping in mind all the above aspects, the literature relevant pertinent to the effect of mineral nutrition and triacontanol on medicinal plants cultivation, was thoroughly reviewed. Obviously, it would be highly interesting and useful, if one could work out the influence of some macronutrient elements (such as N and P) and triacontanol, on the growth, yield and quality of some of these plants. Thus, there arises the question “Could we improve the growth, yield and alkaloid content of these medicinal plants by using fertilizer and triacontanol judiciously?” To test this hypothesis, the author has carried out the following eight pot experiments with different aim and objective.

1. To establish the optimum dose of basal nitrogen (N) for desired maximum growth, yield and alkaloid content of Withania somnifera L. and Datura innoxia Mill. (Experiments 1 and 2).

2. To establish the optimum dose of basal phosphorus (P) on the basis of growth,
yield and alkaloid content of both the above mentioned test plants (Experiments 3 and 4).

3. To establish the best concentration for foliar application of TRIA for achieving maximum growth, yield and alkaloid content of the test crops (Experiments 5 and 6).

4. To find out the best combination of N and P in the presence of the optimum concentration of TRIA (determined in Experiments 5 and 6) for achieving maximum growth, yield and alkaloid content of the above mentioned plants (Experiments 7 and 8).
Fig. 1: Structure formula of triacontanol