



ORIGINAL ARTICLE

Effect of drip fertigation on growth, seed and root yield of ashwagandha [*Withania somnifera* (L.) Dunal]

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Abstract An experiment was conducted during 2005–06 and 2006–07 winter seasons to study the effect of drip irrigation regimes and fertility levels on physiological parameters, growth and yield of ashwagandha (*Withania somnifera* L. Dunal). The treatments consisted of three irrigation regimes, viz., I₁: drip irrigation at 100 % pan evaporation (PE), I₂: drip irrigation at 80 % PE and I₃: drip irrigation at 60 % PE, combined with three fertility levels, i.e., F₁: 100 %, F₂: 75 % and F₃: 50 % of recommended dose of NPK, control having surface irrigation and soil application of fertilizers. The cultivation of ashwagandha with application of drip irrigation at 80 % of pan evaporation along with application of 100 % recommended dose through fertigation resulted in significant improvement in growth, physiological parameters such as crop growth rate, relative growth rate, net assimilation rate, leaf area index, chlorophyll content, and root and seed yields.

Keywords Ashwagandha · Medicinal crop · Method of irrigation and physiological parameters

Withania somnifera L. Dunal commonly known as Ashwagandha is one of the important medicinal crops in Ayurvedic medicine system and an indigenous medicine for over 3,000 years in India (Shrivastava and Sahu 2013), which is having high economic value. In India *Withania somnifera* is cultivated in around 10,780 ha with an annual root production of 8,429 tones (Shrivastava and Sahu 2013). The cultivation of this crop during post-rainy season would be of great significance as many of the farmers either keep the land fallow or cultivate winter pulses with low yield and economic returns. Irrigation and fertilization are the key inputs that affect growth, yield parameters and quality of ashwagandha. The factor productivity is declining, which needs scientific management. Among the