

Effect of organic manure in ambient and increased temperature conditions on growth and yield of medicinal plant *Ashwagandha* (*Withania somnifera*)

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Ashwagandha or *Amukkara* (*Withania somnifera*), is a prevalent medicinal herb used in traditional medicine. Commercial cultivation of medicinal plants is on the rise due to the increasing threat to their natural habitats caused by global temperature stress. This study aimed to investigate the effect of different organic matter combinations on the growth and yield responses of *Ashwagandha* to ambient and increased temperature conditions. The experiment was conducted in a completely randomized design with three replications. Two-temperature conditions; ambient temperature (27°C - 32°C) and temperature stress (35°C - 36°C); three types of organic manure; 100% compost, 100% cow dung, and a mixture of 50% compost and cow dung were used in the experimental design. The application rate for compost and cow dung was 10 tons ha⁻¹ in 100% manure application, while it is half in 50% application. Reddish brown earth soil was chosen as the soil type, and field capacity was maintained through continuous irrigation. Statistical analysis was done using the R 4.3.2 version. According to the results, 100% cow dung application in ambient temperature treatment has shown significantly ($p \leq 0.05$) highest number of leaves, leaf area index, root diameter, fresh shoot weight m⁻², and dry shoot weight m⁻² and 50% compost with 50% cow dung application in ambient temperature has shown significantly ($p \leq 0.05$) highest shoot length, number of branches, number of secondary roots. However, 100% cow dung application treatment has shown significantly the highest root length and fresh root weight m⁻² while 100% compost treatment gives significantly higher dry root weight m⁻² in increased temperature treatment at $p \leq 0.05$. Increased temperature conditions are not good for *Ashwagandha*, except when grown with 100% cow dung and 100% compost for root length and root yield. At ambient temperature, *Ashwagandha* grows well with 100% cow dung and 50% compost with 50% cow dung.

Keywords: *Ashwagandha*, Growth, Organic manure, Temperature, yield

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