



E-ISSN: 2618-0618
P-ISSN: 2618-060X
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NAAS Rating (2026): 5.20
www.agronomyjournals.com
2026; 9(5): 305-307
Received: 16-02-2026
Accepted: 21-03-2026

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International Journal of Research in Agronomy

Studies on moisture content and yield of Giloy-satva

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DOI: <https://www.doi.org/10.33545/2618060X.2026.v9.i5d.5521>

Abstract

The effect of moisture content and yield of *Giloy-satva* (%) in selected genotypes of Giloy (*Tinospora cordifolia*) was investigated to identify the best quality planting material. The genotypes studied included IC-0639890, IC-0639896, IC-0639898, IC-0639899, IC-0639908, IC-0639910, and IC-0639914. The results of the present study revealed that IC-0639899 is the most suitable genotype for the agro-climatic conditions of Jharkhand due to its significantly higher moisture content (72.34%) and yield of *Giloy-satva* (4.74%) compared to the other studied genotypes. The findings of this investigation are useful for farmers and medicinal plant growers cultivating Giloy.

Keywords: Giloy, moisture content, *Tinospora cordifolia*, yield, *Giloy-satva*.

Introduction

Giloy (*Tinospora cordifolia*) is a perennial climbing shrub belonging to the Menispermaceae potentially used in traditional ayurvedic medicine in India (Kumar 2023) [7]. Giloy is a woody climber with heart-shaped leaves and aerial roots developing from nodes of root (Kothari *et al.*, 2025; Meena and Sarkar 2025) [5, 8]. The flowering season spans both summer and winter (Upadhyay *et al.*, 2010) [11]. For commercial cultivation, stem cuttings are considered the most suitable planting material. (Sahu, 2016) [9]. The starch obtained from the stem known as “Guduchi-satva” is highly nutritive and digestive and used for many diseases (Chopra *et al.*, 1982) [2] and also as *rasayana* in ayurveda. The stem powder is greyish, creamish brown to dark brown in colour with characteristic odour and bitter taste. The stem are potentially utilized as antipyretic and immunomodulator and also reported useful in treating leprosy, fever, asthma, anorexia, jaundice, gout, skin infections, diabetes, chronic diarrhoea, dysentery, dyspepsia, fever and urinary diseases etc. (Bishayi *et al.*, 2002) [1]. In the present study it was studied to observe moisture content in stem in pertinence to yield *Giloy-satva*.

Materials and Methods

In the present observation among 30 IC Accessions numbers of Giloy have allotted by ICAR-NBPGR on the germplasm that was extensively collected from various locations in India and characterized under AICRP on Medicinal and Aromatic Plants. Among the above 30 IC Accessions, seven (07) of them were selected (Kumar *et al.*, 2026) [6] because they are the most promising and well performed. The plant Giloy (*Tinospora cordifolia*) was planted in Randomized Block Design (RBD) with 7 treatments and 3 replications in a plot size of 3m x 3m at spacing of 100 cm x 100 cm. The numbers of plants kept in a treatments was 9 and details of *Tinospora cordifolia* genotypes are viz. T₁ (IC-0639890), T₂ (IC-0639896), T₃ (IC-0639898), T₄ (IC-0639899), T₅ (IC-0639908), T₆ (IC-0639910) and T₇ (IC-0639914). The annual rainfall of this areas are approximately 1400 mm and the temperature varies from 23.0°C to 37.9°C and humidity varies from 69.82 to 86.32% were recorded at Ranchi during the experimental period as agro-climatic condition. The soil pH of the study site was 5.25. The analytical works have been carried out at Center for Giloy Processing and Research, Department of Forest Products & Utilization, Faculty of Forestry, BAU, Ranchi.

Preparation of *Giloy-satva* from stem of Giloy (*Tinospora cordifolia*)

A known quantity of fresh Giloy stem was recorded at the time of harvesting of plants. It was again calculated after drying digital hot air oven at 35°- 40° C for 8 hours until constant dry weight keeping in the view for phytocomponents may not be loss.

The moisture content (%) as
$$\frac{\text{Loss in weight of sample (g)}}{\text{Original weight of sample (g)}} \times 100$$

For extraction of *Giloy-satva* the stem thickness greater than 2.0 cm was collected from the experimental field and chopped into pieces of 1.5–2.0 inches in length. These pieces were then thoroughly pounded to form a slimy paste. The resulting mass was soaked overnight upto 12 hours in four times its volume of potable water (w/v) in a glass flask. After that, the mass was thoroughly macerated in water for about 1 hour and then filtered in clean cotton cloth. The filtrate which was white, smooth, starchy sediment that settled at the bottom was collected in a petri dish, air-dried stored (Sharma *et al.*, 2013) ^[10] with some modifications.

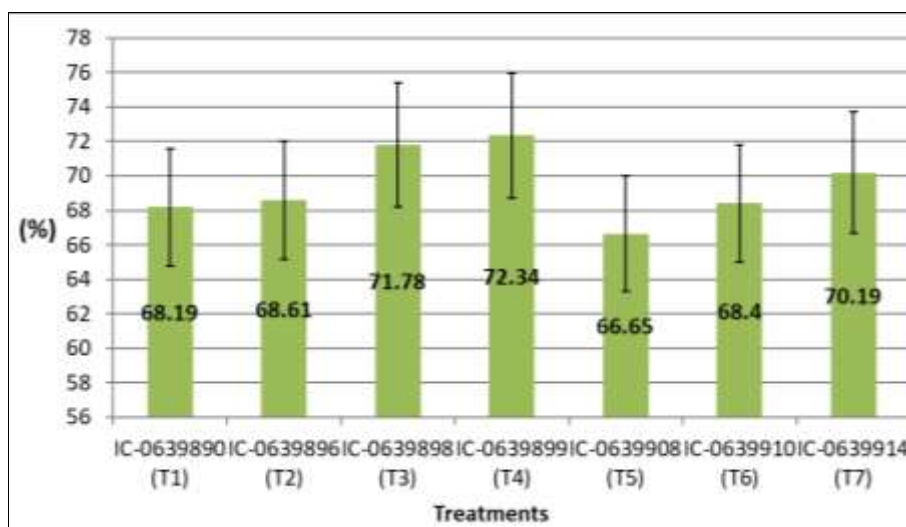
Results and Discussion

This research work was carried out to find out the effect on moisture content and yield of *Giloy-satva* to observe maximum moisture content (%) and yield of *Giloy-satva* (%) presented in Table 1 and also shown mean value of moisture content (%) and

Giloy-satva (%) in Graph-1 and Graph 2. The maximum mean moisture content (%) was recorded for T₄, IC-0639899 (72.34%) which was significantly superior to rest 6 Giloy genotypes. Treatment T₃ IC-0639898 had shown mean moisture content (%) of 71.78%, which was *at par* with treatment T₇ IC-0639914 (70.19%) & T₂ IC-0639896 (68.61%). Minimum value of mean moisture content (%) was recorded for T₅ IC-0639908 (66.65%), which was inferior with all remaining 6 genotypes of Giloy followed by T₁ IC-0639890 (68.19%) and T₆ IC-0639910 (68.40%). Jaiswal *et al.*, (2021) ^[3] recorded the initial moisture content of Giloy stem slices was determined by oven drying method. The average initial moisture content of Giloy was found as 72.67 per cent (wet basis).

Table 1: Mean moisture content (%) of selected genotypes of Giloy

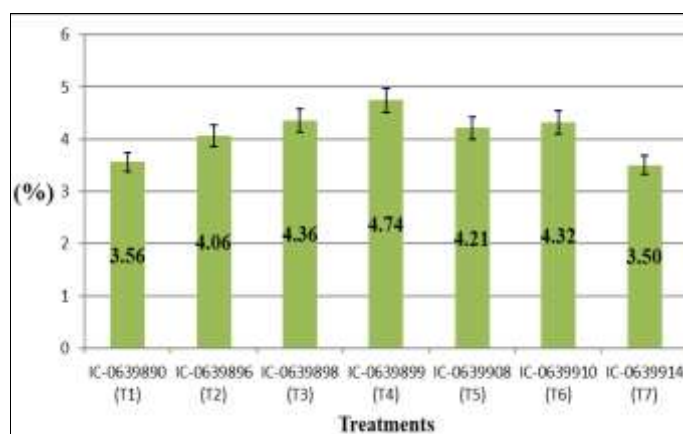
Sl. No.	Treatments details	Moisture content (%)	Mean <i>Giloy-satva</i> %
1.	IC-0639890 (T ₁)	68.19	3.56
2.	IC-0639896 (T ₂)	68.61	4.06
3.	IC-0639898 (T ₃)	71.78	4.36
4.	IC-0639899 (T ₄)	72.34	4.74
5.	IC-0639908 (T ₅)	66.65	4.21
6.	IC-0639910 (T ₆)	68.40	4.32
7.	IC-0639914 (T ₇)	70.19	3.50
SEm ±		1.19	0.14
CD (p=0.05)		3.71	0.43
C.V. (%)		2.97	5.80



Graph 1: Showing graphical representation of Mean moisture content (%) of Giloy genotypes

Mean *Giloy-Satva*% of Giloy genotypes

Among all parameters, the percentage of *Giloy-satva* was the most important, as it is used for ayurvedic medicines. The mean *Giloy-satva*% of 7 Giloy genotypes showed significant difference with each other. Maximum mean *Giloy-satva*% was observed for T₄, IC-0639899 (4.74%) which was significantly superior to rest 6 Giloy genotypes. Treatment T₃ IC-0639898 had shown mean *Giloy-satva*% of 4.36, which was *at par* with treatment T₆ IC-0639910 (4.32%) and T₅ IC-0639908 (4.21%). Minimum value of mean *Giloy-satva*% was recorded for T₇ IC-0639914 (3.50%), which was significantly inferior with all remaining 6 genotypes of Giloy followed by T₁ IC-0639890 (3.56%) and T₂ IC-0639896 (4.06%). The *Giloy-satva*% was observed higher than the findings of Kachhap (2022) ^[4] from the treatment combination of (mid-April 3m× 3m; 3.67%). *Giloy-satva*% is observed by Sharma *et al.*, (2013) ^[10] the *Giloy-satva*% is 3.8%.



Graph 2: Showing graphical representation of mean *Giloy-Satva*% of Giloy genotypes.

Conclusion

The present experiment conducted under the agro-climatic conditions of Ranchi, Jharkhand revealed that the genotype IC-0639899 consistently exhibited superior performance across the highest moisture content (72.34%). It also recorded the maximum Giloy-satva% (4.74%) indicating a higher concentration of possible bioactive compounds essential for medicinal purposes. Genotype IC-0639898 followed closely, showing commendable values across similar parameters, thus establishing itself as the second most promising variety. These genotypes demonstrated not only robust vegetative growth but also a higher yield of medicinally important phytochemicals, making them highly suitable for cultivation in Jharkhand's red-lateritic soils and semi-humid subtropical climate. Earlier there are less studies conducted to observe moisture content percentage in relation to Giloy -satva hence the present data are most significant for further studies.

Acknowledgements

Authors are thankful to the Dean, Faculty of Forestry and Director Research, Birsa Agricultural University, Kanke, Ranchi for providing facilities for the works.

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