

Morphological characterization of Veldt grape (*Cissus quadrangularis* Linn.) ecotypes

K.Vinoth, S.Padmapriya* and K.Rajamani

TNAU, Coimbatore – 641 003

*Corresponding author : spadmapriyaa@yahoo.co.in

Abstract

Morphological characterization of fifty Veldt grape ecotypes collected from different geographical locations of Tamil Nadu indicated, 23 ecotypes with kidney shaped (46%), 16 with cordate shaped (32%), 7 with circular shaped (14%) and 4 with pentagonal shaped (8%).

Among the 50 ecotypes of Veldt grape, only 4 ecotypes entered the reproductive stage with greenish pink coloured flowers.

All the genetic parameters were positively and significantly correlated with stem yield, except for days taken for rooting.

Objectives

To understand the existence of genetic variability through morphological characterization in veldt grape ecotypes

Introduction

- ❖ *Cissus quadrangularis*, commonly known as veldt grape, is one of the medicinally important perennial, climbing succulent, widely distributed in Africa, Arabian Peninsula, Northern India, and South East Asia
- ❖ The plant extract serves as rich source of calcium ions and is known to accelerate healing of fracture, protects cardiovascular system, atherosclerosis, prevents heart attacks, stroke and elevated blood pressure levels (Oben *et al.*, 2006)
- ❖ Lack of knowledge on genetic wealth posed a main barrier for the commercial cultivation in Tamil Nadu

Materials and Methods

- Fifty ecotypes of *Cissus quadrangularis* collected from different geographical locations of Tamil Nadu were evaluated for genetic diversity.

$$\text{Genotypic coefficient of variance (GCV)} = \frac{\sqrt{\sigma^2_g}}{\text{Mean}} \times 100$$

$$\text{Phenotypic coefficient of variance (PCV)} = \frac{\sqrt{\sigma^2_p}}{\text{Mean}} \times 100$$

GCV and PCV were classified as below;

Above 20 %: High
10-20 % : Moderate
0-10 % : Low

Correlation analysis

Simple correlation was worked out using the following formula as outlined by Johnson *et al.*, (1955).

$$r_{xy} = \frac{\sum xy - \frac{\sum x \cdot \sum y}{N}}{\sqrt{\sum x^2 - \frac{(\sum x)^2}{N} \cdot \sum y^2 - \frac{(\sum y)^2}{N}}}$$

Results and Discussion

Morphological variations among the *Cissus* ecotypes



Variability in stem of different veldt grape ecotypes



Flowering ecotypes of veldt grape

- ❖ Among the population, 23 ecotypes possessed kidney shaped (46%) leaves, followed by 16 with cordate shaped (32%), 7 with circular shaped (14%) and 4 with pentagonal shaped (8%) leaves.
- ❖ Analysis of genetic parameters of morphological traits indicated high estimates of GCV and PCV for plant height, number of matured leaves, number of twiners and number of primary roots supported by the findings of Idahosa *et al.*, (2010).
- ❖ Path coefficient analysis revealed direct positive effect for number of sprouts (0.143), twiner length (1.205), leaf width (0.527), stem girth (0.046), root length (0.562), number of primary roots (0.119), number of secondary roots per plant (1.243), internode length (1.138) and plant height (0.451) on stem yield.

Conclusion

- ❖ Existence of higher variability for morphological traits viz., leaves and stem characters
- ❖ Significantly highest values for root weight, root length, root girth, number of secondary roots per plant, internode length, plant height and stem yield could well be exploited for selection of superior parents hybridization programmes.

References

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