Estimation of Genetic Variability, Heritability and Genetic Advance for Essential Oil Yield and Related Traits in Genus *Ocimum*

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Received date: March 13, 2018; Accepted date: March 24, 2018; Published date: March 30, 2018

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Abstract

Assessing variability is fundamental to identify the most important traits in U&i { i [Å improvement program. The objective of the present study was to estimate variability, heritability and genetic advance based on twelve morphological characters of U&i { i {. The experiment was conducted in 2015/16 main cropping season at one location by using randomized complete block design with three replications. The results revealed highly significant differences (P<0.01) among genotypes for all characters considered. The phenotypic coefficient of variation (PCV) for all character was higher than genotypic coefficient of variation (GCV). The estimation of broad sense heritability 2(BS)% was observed to be lower than those of broad sense heritability 2(BS)% for all characters. Genetics advance was recorded as maximum for eugenol content (96.65). Highest heritability in broad sense 2(BS)% recorded for days to maturity (99.46). On the basis of study accessions G-4, G-7, G-9, G-11, G-18 and G-25 were identified high oil of better quality. These accessions may be exploited for commercial cultivation.

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Introduction

Ocimum (family-Lamiaceae) is a genus of about 200 species of annual and perennial aromatic herbs and shrubs. Most species are native to the tropical and warm temperate regions [1]. e dry herb (leaves), Ocimum leaf tea, essential oil and its chemical derivatives (eugenol, methyl-eugenol, linalool etc) are exported to European

S.No	Accessions/Genotypes/cultivar	Botanical name	Origin
1	CIM-Ayu	U&å { ~ { Å•æ}&c~ {	CSIR-CIMAP, Lucknow U.P. (India)
2	Vikarsudha	U&ā { ` { Áàæ•ālā& ` {	CSIR-CIMAP, Lucknow U.P. (India)
3	CIM-Angana	U&ā { ~ { Å•æ}&c~ {	

36	Lemon basil		U &ã { ~	{ Áæ~/å&æ} ~ {				Phagwara, Punjab (India)	
37	Indian basil		U&i { `	{ Áàæ•ã ã& ~ {				Barabanki U.P., (India)	
38	Clove basil		U&i { `	{Á*¦æcã••ã {	{ L			Shillong, Meghalaya (India)	
39	Indian basil		U&i { `	{ Áàæ•ã ã& ` {				Razaganj, U.P. (India)	
40	Indian basil		U&i { `	{ Áàæ•ã ã& ` {				Rishikesh, Uttaranchal (India)	
41	French basil		U&i { `	{ Áàæ•ã ã& ` {				Bangalore, Karnataka (India)	
42	French basil		U&ã { ~	{ Áàæ•ã ã& ~ {				Mangalore, Karnataka (India)	
43	French basil		U&ã { ~	{ Áàæ•ã ã& ~ {				Chandigarh	
44	Sweet basil		U&ã { ~	{ Áàæ•ã ã& ~ {				CSIR-CIMAP, Lucknow U.P.	
45	Sweet basil		U&ã { ~	{ Áàæ•ã ã& ~ {				Singapore	
46	Sweet basil		U&ã { ~	{ Áàæ•ã ã& ~ {				Singapore	
47	Sweet basil		U&ã { ~	{ Áàæ•ã ã& ~ {				Singapore	
48	Sweet basil		U&ã { ~	{ Áàæ•ã ã& ~ {				CSIR-CIMAP, Lucknow U.P. (India)	
49	Sweet basil		U&i { ~	{ Áàæ•ã ã& ~ {					
44	44	Sweet basil		U		Ð	Ð	ĊĊĘ ^^ch(U&ā { ~ { Å	

Total	(rg ⁻¹)	

Table 2: Break up of variance components.

e ANOVA based on this model led to the following break up of variance components (Table 2).

Parameters of genetic variability

In order to evaluate and quantify the genetic variability among the genotypes for the characters and study the following parameters were estimated (Table 3).

Genetic parameters	Days to flowering (50%)	Plant height (cm)	Number of branches	Inflorescence length (cm)	Fresh herb yield/plant (g)	Oil content (%)	Oil yiel/ plant (g)	Days to maturity	Methyl chavicol content (%)	Linalool content (%)	Citral content (%)	Eugenol content (%)
Genotypic variance (² g)	74.05	371.97	6.15	72.33	98350.78	0.048	11.597	764.39	243.16	135.69	59.71	6.58
Phenotypic variance (² g)	79.799	523.31	15.74	76.23	216420.4	0.0594	19.63	768.47	247.86	137.14	60.45	12.27

Genotypic coefficient of variation

Results and Discussion

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