RESEARCH ARTICLE

MORPHOLOGICAL CHARACTERIZATION OF SESAME (*SESAMUM INDICUM* L.) GENOTYPES USING DUS DESCRIPTORS

Pavani, K.*[1], Lal Ahamed M.[2], Ramana, J.V. [3] and Sirisha, A.B.M.[4]

[1]*Advanced Post Graduate Centre (APGC), Lam, Guntur*
[2]*Dept. of Molecular Biology and Biotechnology, APGC, Lam, Guntur*
[3]*Dept. of Molecular Biology and Biotechnology, APGC, Lam, Guntur*
[4]*Plant Breeding, Agricultural Research Station, Yelamanchili,Visakhapatnam*
Email: pavanikoduru3@gmail.com

Received-09.06.2020, Revised-28.06.2020

Abstract: The aim of present investigation is to characterize 30 sesame genotypes (25 advanced breeding lines and 5 released varieties) based on DUS characteristics of Protection of Plant Varieties & Farmers' Rights Authority (PPV & FRA). The field experiment was conducted at Agricultural Research Station, Yelamanchili, Visakhapatnam District of Andhra Pradesh and twenty DUS descriptors were recorded in the genotypes. The study revealed the presence of significant variation for days to 50% flowering, plant height, branching, stem hairiness, leaf lobes, capsule hairiness, capsule length (cm), days to maturity, seed coat colour, 1000 seed weight (gm) and oil content (%) indicating variations due to genetic makeup of the lines and these descriptors can be utilized in genotype identification, characterization and maintenance.

Keywords: Genotypes, Morphological characterize, *Sesamum indicum*

REFERENCES

Abate, M. and Mekbib, F. (2015). Study on genetic divergence in low-altitude sesame (*Sesamum indicum* L.) germplasm of Ethiopia based on agro-morphological traits. *Advanced Studies in Agricultural, Biological and Environmental Sciences*. 2: 78-90.

Abdou, R., Moutari, A., Ali, B., Basso, Y. and Djibo, M. (2015). Variability study in sesame (*Sesamum indicum* L.) cultivars based on agro-morphological characters. *International Journal of Agriculture, Forestry and Fisheries*. 3(6): 237-242.

Anilakumar, K.R., Pal, A., Khanum, F. and Bawa, A.S. (2010). Nutritional, medicinal and industrial uses of sesame (*Sesamum indicum* L.) seeds: An overview. *Agriculture Conspec. Science*. 75:159–168.

Arriel, N.H.C., Mauro, A.O.D., Arriel, E.F., Trevisoli, S.H., Costa, M.M., Barbaro, I.M and Muniz, F.R.S. (2007). Genetic divergence in sesame based on morphological and agronomic traits. *Crop Breeding and Applied Biotechnology*. 7: 253-261.

Bandila, S., Ghanta, A., Natarajan, S., Sivaramakrishnan and Subramoniam (2011). Determination of genetic variation in Indian sesame (*Sesamum indicum* L.) genotypes for agro-morphological traits. *Journal of Research in Agricultural Science*. 7(2): 88-99.

Bishit, I.S., Mahajan, R.K., Loknathan, T.R and Agrawal R.C. (1998). Diversity in Indian sesame collection and stratification of germplasm accessions in different diversity groups. *Genetic Resources and Crop Evolution*. 45: 325-335.

Dar, A.A., Mudigunda, S., Mittal, P.K. and Arumugam, N. (2017). Comparative assessment of genetic diversity in *Sesamum indicum* using RAPD and SSR markers. *3 Biotech. 7:* 10.

Ercan, A.G., Taskin, M. and Turgut. K. (2005). Analysis of Genetic Diversity in Turkish sesame (*Sesamum indicum* L.) populations using RAPD markers. *Genetic Resources and Crop Evolution*. 51: 599-607.

Eryigit, T., Kaya, A.R., Tuncturk, M., Aldemir, R. and Yildirim, B. (2016). Evaluation of some sesame (*Sesamum indicum* L.) varieties performances under micro-climate conditions of Igdir-Turkey. In: 7th *International Scientific Agriculture Symposium* (Agrosym 2016), Jahorina, Bosnia and Herzegovina, 6-9 October 2016. 182-276.

Falusi, O.A., Yahaya, S.A., Gado, A.A., Daudu, O.A.Y., Akinbo, O.A. and Teixeira, S.J.A. (2015). Morphological evaluation of selected sesame (*Sesamum indicum* L.) genotypes from five states in Northern Nigeria. *African Journal of Agricultural Research*. 10(37): 3657-3661.

FAOSTAT (2017). http://faostat.fao.org/site/567/default.aspx#ancor.

Fray, A., Tekin, P., Celik, I., Furat, S., Uzun, B. and Doganlar, S. (2015). Morphological and molecular diversity in Turkish sesame germplasm and core set selection. *Crop Science*. 55(2): 702-711.

Furat, S. and Uzun, B. (2010). The use of agro-morphological characters for the assessment of genetic diversity in sesame (*Sesamum indicum* L.). *Plant Omics*. 3(3): 85-91.

Gidey, Y., Kebede, S. and Gashawbeza, G.T. (2012). Extent and pattern of genetic diversity for morpho-agronomic traits in Ethiopian sesame landraces (*Sesamum indicum* L.). *Asian Journal of Agricultural Research*. 6: 118-128.

Gupta, V.K. and Gupta, Y.K. (1977). Variability, interrelationship and path coefficient analysis for

*Corresponding Author

some qualitative characters in sesame (*Sesamum indicum* L.) cultivars. *Indian Journal of Heredity*. 9: 31-37.

Kashiram (1930). Studies in Indian oil seed (4). The types of *Sesamum indicum.* D.C. Memo. Department of Agriculture, India, Botany. 18: 127-147. Mohammed, A and Alam, Z. 1933. Types of *Sesamum indicum* in Punjab. *Indian Journal of Agricultural Sciences.* 3: 897-911.

Kiranmayi, S.L., Roja, V., Sivaraj, N. and Sivaramakrishnan, S. (2016). Genetic diversity analysis in sesame (*Sesamum indicum*) using morphological, biochemical and molecular techniques. *International Journal of Applied Biology and Pharmaceutical Technology*. 7: 95-110.

Menzir, A. (2012). Phenotypic variability, divergence analysis and heritability of characters in sesame (*Sesamum indicum* L.) genotypes. *Indian National Science Academy.* 10(10): 117-126.

Mohammed, A. and Alam, Z. (1933). Types of *Sesamum indicum* in Punjab. *Indian Journal of Agricultural Sciences.* 3: 897-911.

Morris, J.B. (2009). Characterization of sesame (*Sesamum indicum* L.) germplasm regenerated in Georgia, USA. *Genetic Resources and Crop Evolution*. 56: 925-936.

Narayanan, R. and Murugan, S. (2013). Studies on variability and heritability in sesame (*Sesamum indicum* L.). *International Journal of Current Agriculture Research*. 2(11): 52-55.

Ozcinar, A.B. and Sogut, T. (2017). Analysis of sesame (*Sesamum indicum* L.) accessions collected from different parts of Turkey based on qualitative and quantitative traits. *Journal of Crop Breeding and Genetics.* 3(1): 45-51.

Parameshwarappa, S.G., Palakshappa, M.G., Salimath, P.M. and Parameshwarappa, K.G. (2008). Studies on genetic variability and character association in germplasm collection of sesame (*Sesamum indicum* L). *Karnataka Journal of Agriculture Sciences*. 22(2): 252-254.

Ramachandra, M., Ramananthan, T. and Sridharan, C.S. (1972). Association of certain morphological characters with yield in *Sesamum indicum* L. *Madras Agricultural Journal*. 59: 9-10.

Rhind, D. and Thein, B. (1933). The classification of Burmese sesame (*Sesamum oriental* L.) *Indian Journal of Agricultural Sciences*. 3: 478-495.

Shadakshari, Y.G., Virupakshappa, K. and Shivashankar, G. (1985). Genetic variability studies in germplasm collection of sesamum (*Sesamum indicum* L.). *Mysore Journal of Agricultural Sciences*. 29: 133-137.

Shrivastav, S.R. and Kaushal, P.K. (1972). Phenotypic variability in sesamum (*Sesamum indicum* L.). *JNKVV Research Journal*. 6: 141-144.

Singh, B., Bisen, R. and Tiwari, A. (2017). DUS testing of Sesame (*Sesamum indicum* L.) varieties using morphological descriptors. *Bulletin of Environment, Pharmacology and Life Sciences*. 6(1): 05-12.

Suhasini, K.S. (2006). Characterization of sesame genotypes through morphological, chemical and RAPD markers. *M.Sc. (Agriculture) Thesis*, University of Agricultural Sciences, Dharwad, India.

Tripathi, A., Bisen, R., Ravindra, P., Paroha, A.S., Sahu, R. and Ranganatha, A.R.G. (2013). Study on genetic divergence in sesame (*Sesamum indicum* L.) germplasm based on morphological and quality traits. *An International Quarterly Journal of Life Sciences*. 8(4): 1387-1391.

Valarmathi, G., Kumar, M. and Saravanan, N.A. (2003). Genetic variability and correlation studies for seed related traits in sesame. *Sesame and Safflower Newsletter*. 19: 7-9.

Wongyai, W. (2007). Sesame: Botany, cultivation, breeding and utilization. Agronomy Department, Faculty of Agriculture, Kasetsart University, Thailand. 257p.

Yahaya, S.A., Falusi, O.A., Daudu, O.A.Y., Muhammad, L.M. and Abdulkarim, B.M. (2014). Evaluation of seed-oil and yield parameters of some Nigerian sesame (*Sesamum indicum* L.) genotypes. *International Journal Agriculture and Crop Sciences*. 7(10): 661-664.