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Morphological Characterization and Assessment of Genetic Variability, Character Association using MOORA Method

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Abstract. Morphological Characterization. Electron microscopy, optical Microscopy, scanning probe microscopic like microscopy (SPM). Morphology using techniques characterizations were carried out. Morphology of nonmaterial's various used for study A comprehensive of microscopic techniques The explanation is given here. The shape of animals and plants and of biology dealing with structure A division the form of an organism and organization or its parts. Amphibian morphology. The internal structure of words and Segmentation into different types of morphemes Two basic objectives or Essential to Morphology: New Words Creating and. Already Change of words in. Therefore, morphology is body Physically recognizable letterforms Read, they are morphological characters are referred to as of an organism Specific elements are shape, size, color And so on. Morphology is structure A word that describes a characteristic. activity, Taxonomy, heredity, ecology, development and other branches of biology A basis for understanding Morphology gives us, therefore other A for us to read the branches Provides the site. Very simply Said morphological classification, Physiology to establish species boundaries Attributes (or roles) Uses similarity, same As well as interracial relationships uses. Characteristics may be characteristic. The multi-objective optimization by ratio analysis (MOORA) method is one of the MADM techniques. It is a group of qualities (prospective students). It is possible to calculate the worth of criteria, making this the ideal choice for decision-makers like prospective students. Days to flowering, Days to maturity, Plant height, Branches per plant, Pods per plant, Seeds per pod. Genotypic variance, Phenotypic variance, Grand mean, Heritability. From the result it is seen that Plant height is got the first rank where as is the Days to flowering is having the lowest rank. As a result, the plant height received the first rank, as well as the days to flowering received the lowest rank.

Keywords: Morphology Characterization, Genotypic variance, Phenotypic variance, Moora

1. INTRODUCTION

Nano is secreted by cells A heterogeneous group of nanoparticles (NPs). Fig. of extracellular vehicles (EVs). Visualize and classify the system Advanced and optimized microscope Methods are required[1]. Sepiolites have the largest surface area and accicular form when they are made of polymeric matrix. Improves adhesion/compatibility and provides better reinforcement and van der Waals interactions Mostly adsorption at the interface Involved in events. polymer/ Thermal of sepiolite systems Recent studies on stability, silanols on the sepiolite surface Polyol due to excess On thermal degradation of fins show a strong catalytic effect[2]. is called wavelet transform This novel is mathematics and signaling The processing tool is a variety of signal Used in processing industries. For surface morphology analysis An application of wavelet theory is presented An application of wavelet theory is presented[3]. Due to air cold plasma PET fabrics occur on the surface Morphological alterations, mostly rms As a function of gas pressure, surface area, surface roughness, and treatment duration are also measured. similar to how pressure works Additionally, quantities of the gases He, Ar, SF₆, and CF₄ were measured. [4]. In preparing membrane casting solutions Properties of solvents used Membrane morphology and performance is an important influencing factor. morphology and using different solvents Performance of the prepared PPO dense membrane. [5]. of these two biological species Very similar adult morphology, of partial rRNA gene sequence data Presents the analysis, and then some Discusses taxonomic features and implications [6]. Each host within G1 and G3 For all

isolates from species Instructions and within G2 and G5 from each host species Methods of individual isolations According to Thompson et al., previous studies Displayed with data. (2006). host Regardless of species, G1, G2 and G3 Isolates belonging to the group Large and small hook morphology Both can be seen together[7]. Micro-morphology is first described Structural features directly soil Responsible for system dynamics are linked to cultivation activities. Second, the structure of the soil of spatial variation description [8]. From the highest part of the stem in the cross sections taken Bundles than other parts Although hard to notice, the stem Flax shape according to the position along the length Differences in structure It worked [9]. Cabbage seeds in turkey Open pollinated Collected from the best plants. Flower morphology and self-in In cabbages due to compatibility Cross-pollination is common. Local variety in turkey A cross between Brassica varieties of the population in the same areas Increased genetic variation. Geography of cluster groups Distribution was more uneven than expected [10]. Environmental Scanning Electron Microscopy and Atomic Force Microscopy the use of a microscope It was done to characterise morphology. pictures produced via microscopy employing image analysis next processed. mesh size and Network like fiber orientation Characteristics were categorized. This Bone of new nano composites The fracture surfaces were analyzed [11]. TEM imaging is particularly useful in air Nanoparticles and others Morphology of submicrometer particles and Nano embedded in toner To assess the presence of particles required. Basic composition Many primarily related to toxicology Targeting transition metals[12]. Characterization of tissue structures Measurement and segmentation-induced artifacts and visualizing 3D blocks and Defined by difficulties in separation. Tomography (Micro CT) and Nano Tomography (Nano CT) are composite unique 3D textures Rapid resolution of areas (such as collagen). By doing this you can avoid these problems Here we prove that rich in elastin and adventitia Rat artery lamellae are rich. Then, each of their various x-rays Opacities and Fig Can be separated due to settings[13]. In Archaeology, Diaspora Taxonomy is usually simple morphology Monitoring and exit of seeds By visual comparison with collections, However, of biometric codes The use is mostly of the genus Vitis One of the taxonomic studies has proven to be a powerful approach. as well as archaeological remains For species attribution [14]. In Italy, the rice producing area is mainly In the Piedmont and Lombardy regions, Alps and Po River (N-W Italy) is between Veneto, Emilia- Romagna, Tuscany, Calabria and Sarteena areas are smaller There are portions of rice. In 2010, Total allocated for rice in Italy The area is about 250 000 hectares It accounts for 50% of the total European rice area [15]. Physics of Ceramic Source, Chemical and morphological properties Its waste is new for bitumen Converts to transform. This study is a to produce nanoceramic powder (NCP). Dry in mechanical ball mill Grind the top-down approach used. Consequently, the NCP Successfully 15 hours and 10:1 With an optimal milk-to-powder ratio of (BPR) was developed. Particle size of NCP significantly less than 100 nm The results also indicated that reduced [16]. Number of organisms in this group increasingly, the morphol based trusted identity It is becoming increasingly difficult to be seen. This Species and populations from campus Many biochemical and Molecular techniques have been used [17]. Natural fiber reinforced Manufacturing of Thermoplastics (NFRTP) of some of the processes Morphological characterization techniques. Among the studied mixes Polypropylene or polyethylene Team and individual jute, sisal and other nature Fibers are reinforcement including single screw exhaust, Compression and rotational molding of NFRTPs using Processing stages during production and structure-property Different micro-techniques have been used to characterize relationships. Fi Bray Length distributions, fi brayIn Orientation and Matrix Overall FiAs unique as the Brae spread of fiber composites Important in processing The issues are explored[18]. All these factors are tadpoles Underline the importance of research show, while anuran larvae To a certain extent, of waterfalls May prove to be an "Achilles' heel". So, in the past, tadpoles Research on adulthood Less attention than waterfalls It's even more amazing that it got. False signs are for error bars Lead and other fields will seriously affect the studies in [19]. Generally "road deposits", "street dust" Also known as "road dust". Particulate matter on the road, urban are significant pollutants in the environment, Because they contain high amounts of toxic metals and polycyclic aromatic hydrocarbons contain organic impurities like These items will pass Dusted and airy by traffic Dynamically, it is atmospheric particles forms a significant part. [20]

2. MATERIALS & METHODS

2.1. Alternative: Days to flowering, Days to maturity, Plant height, Branches per plant, Pods per plant, Seeds per pod.

2.2. Evaluation Preference: Genotypic variance, phenotypic variance, Grand mean, Heritability

2.3. Genotypic variance: Genetic variation is English Biologist and statistician By Ronald Fisher in his Natural Selection outlined in the Fundamental Theorem Comment. Fisher in his 1930s Genetic theory of natural selection In the book, Biological Fitness Genetics of rate of change fitness He says that it can be calculated by variation.

2.4. Phenotypic variance: Phenotypic variation in humans is a direct result of genetic variation. Consequently, it is phenotypic environment to create diversity and in combination with behavioral factors works. Genetic variants by two basic criteria are classified as: their gene system and their frequency in population.

2.5. Grand mean: Grand average or pooled mean is of several subsamples. Contains average data points up to. For example, multiple lots. Note, each is multiple items. Every item from the lot are some variables. Samples for size and each of measurements from the lot means are calculated. The measurements of each lot were averaged. Creates a subsample average.

2.6. Heritability: Heredity is in people's genes. The differences in their characteristics. As for how good it is is measurement. Characteristics include height, eye color and traits like intelligence, Schizophrenia and Autism. Includes disorders such as spectrum disorders.

MOORA (Multi-objective Optimization on the basis of Ratio Analysis): The ratio obtained in this way. Optimization of Analysis (MOORA). A number of objectives have been achieved through dimensionless numbers. MOORA's second, it is a prelude. May be. Then of Lithuania. Between ten districts. All the objectives of the differences. Basically measures perfectly. Three well-off districts with many districts worst off. Assess sharply. Additionally, all in different districts. From to Vilnius district. Labor drain is key. Disturbances represent profits. Automatic Redistribution. Condemnation. Alternatively, commercialization and areas of industrialization should occur [21]. Multi-objective optimization. Concrete concurrent constraints or additional conflicting attributes (References) Machine. Multi-intention. Preparation of optimization problems and in process design there are many fields, including maxGreen Choices 2. or Change. In the presence of exchanges to be made between conflicting reasons. want Maximizing revenue and the price of a product. Increasing reduction efficiency and car fuel consumption decrease; And at the same time. Like losing weight. Increases complications [22]. More than one standard of decision-making (MCTM) than techniques. For us to choose Moora. Three basic objectives. There are. The first Mura is a sophisticated. Approaching the MCTM technique, It leans against the old methods. By understanding the factors is structured. therefore, It is a completely useful one. We want to be. We think. The second objective is. of the literature on MCDMAs mentioned with useful source, By MOORA to solve the problem is the computation time required. Finally, MOORA is very low. calls the system, Because literature is time denotes and is a constant. Is male or female [23]. The MOORA machine is educational. Scholarship to enhance capacity receiving university college. For selection of students. Priority is the assistive device. Designed in college. As there is an exam helper, To solve various problems. To select MOORA. Conveniently, Computer Test Doers. Scholarship. Get recipients quickly can be determined [24]. MOORA is exceptional, substantial. Versatile and beneficial. Multiplicity of components of coping options. For a complete assessment. Inexperienced multiple standards. Method of selection. MOORA. Systematic decision-making is complex. Multi-objective optimization problems effectively solve strategies together. This approach is common. Hard and fast. Consider conflicting standards. With, exceptional. Trying to choose the opportunity [25]. A MOORA is multi-purpose. Optimization approach, MOOR. The approach is the same for a few. Many to go and improve in time. Type. Attributes technique mentioned. Restrictions [26]. The MOORA approach is all about. Attributes and theirs with relative importance not to be forgotten, this. At high valuation of options continues. The MOORA approach. Very neat to hold, Be gentle to apply. May be. Proposed. The method is a general one. Attitude, too. Any length is fine. Maybe, simultaneously. Considering the characteristics, Extra focus and simplicity. Creates a will provides an approach. Also, this technique is. The kind of desire can also extend to disturbance [27]. Based on Ratio Rating (MOORA) Multi-intention optimization, and several standards or per. More feature optimization or. Many conflicting attributes (notes) simultaneously positive. Condition for controls. Upgrade is a gadget. This. Time is conflicting and. The complexity of the supply chain environment. Near a partial warehouse. Exam, provider exam preparation and method design option and more to choose from. Aggregates of extreme types contains. Best choices. Where necessary, MOORA can be used [28]. Each of the recognized failures, Using an extension in MOOR. For completed failure priority. According to the best priorities. Can be seen ranked. In other words, Application of various ideas. techniques by combining and. Concepts of credibility. Failure is uncertain, proposed. Approach. RPN score. Various major negative aspects. Trying to get out, too. Selection. Technique in Normal. MOORA. Provides reliability. Finally for the decision maker. Realistic outputs providing. of this technique. Effects 2. exclusive traditional. Comparison with techniques of failures. Full priority is fulfilled. Shows that disasters are detected [29]. MOOSRA approach the analysis is very convincing. Back to the researchers. Today's task beyond. There is more in the day, Consequently, Moorland the MOOSRA approach. For the initial selection engine. Basically available. Ultra-modern facts can be considered to be used. From the above discussion, For the decision problem, MOORA and MOOSRA approach meets all conditions, So the approach is very non-traditional. Very robust in production environments. At the denominator charge of this rate. If expressed, this ratio. Same for the benefit-cost ratio. As the model becomes, it is for financial benefit. Preferred overall performance. May be a degree. So,

thisMOORA AND MOOSRA are subtle, Unique established overall with performance measurement techniques Conceptually there is every day. Rate Engine and Reference MooraAttitude and attitude are both components with the feature factor. We are very into simulation of port planning effectively engaged, goals and type of substitutes and We determined the significance. Applicable shareholders National and local authorities and participating companies. Consumers in the production problem Sovereignty is implied cares. Nevertheless, Officers in addition to customers Act as legal representatives were taken MOORA in a group Subjective and inaccurate, inconsistent information For CNC gadget device rating issues A solution-oriented, decision-making environment. Because this time bush Integrating full scale, will be referred to as a linguistic variableTwo ambiguous pieces of information For exam makers to coordinate helps. In this newsletter, Using regions A multi-moura ranking is provided Results of orders are summarized with the help of evaluation. [30].

3. RESULT AND DISCUSSION

TABLE 1.Morphological Characterization

	Genotypic variance	Phenotypic variance	Grand mean	Heritability
Days to flowering	23.27	28.51	Grand mean 63.84	81.62
Days to maturity	61.11	78.95	123.15	77.4
Plant height	139.33	159.4	65.91	87.74
Branches per plant	1.564	1.851	3.57	84.5
Pods per plant	63.73	76.43	48.13	83.38
Seeds per pod	0.047	0.058	1.96	81.03

Table 1 shows the Morphological Characterization for Alternative: Days to flowering, Days to maturity, Plant height, Branches per plant, Pods per plant, Seeds per pod. Evaluation Preference: Genotypic variance, Phenotypic variance, Grand mean, Heritability.

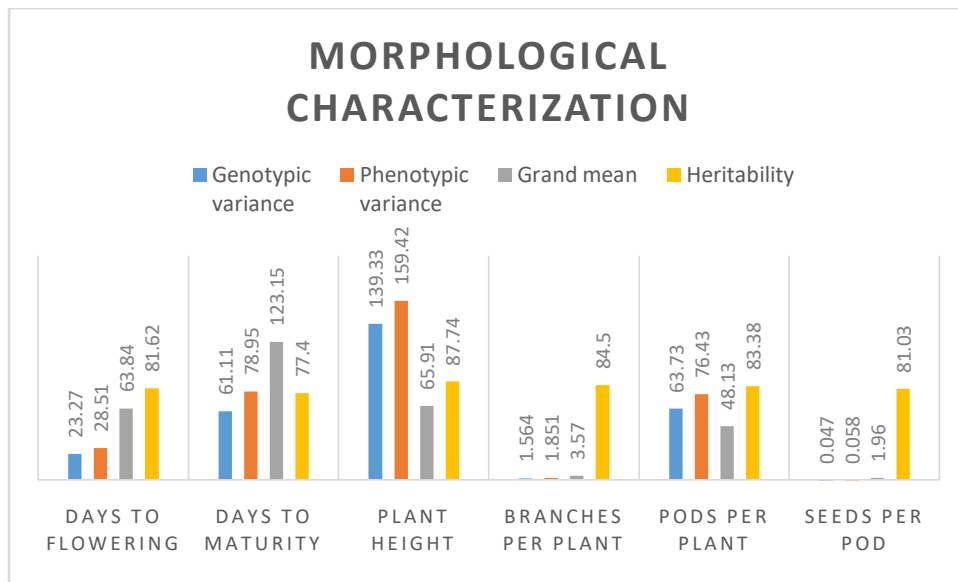


FIGURE 1.Morphological Characterization

Figure 1 shows the graphical representation Morphological Characterization for Alternative: Days to flowering, Days to maturity, Plant height, Branches per plant, Pods per plant, Seeds per pod. Evaluation Preference: Genotypic variance, Phenotypic variance, Grand mean, Heritability. Genotypic variance it is seen that Days to maturity is showing the highest value for Seeds per pod is showing the lowest value. Phenotypic variance it is seen that Days to

maturity is showing the highest value for Seeds per pod is showing the lowest value. Grand mean it is seen that Days to maturity is showing the highest value for Seeds per pod is showing the lowest value. Heritability it is seen that Plant height is showing the highest value for Days to maturity is showing the lowest value.

TABLE 2.Divide & Sum

541.4929	812.8201	4075.5456	6661.8244
3734.4321	6233.1025	15165.9225	5990.7600
19412.8489	25414.7364	4344.1281	7698.3076
2.4461	3.4262	12.7449	7140.2500
4061.5129	5841.5449	2316.4969	6952.2244
0.0022	0.0034	3.8416	6565.8609
27752.7351	38305.6335	25918.6796	41009.2273

Table 2 shows the Divide & Sum matrix formula used this table.

TABLE 3.Normalized Data

Normalized Data			
Genotypic variance	Phenotypic variance	Grand mean	Heritability
0.1397	0.1457	0.3965	0.4030
0.3668	0.4034	0.7649	0.3822
0.8364	0.8145	0.4094	0.4333
0.0094	0.0095	0.0222	0.4173
0.3826	0.3905	0.2990	0.4117
0.0003	0.0003	0.0122	0.4001

$$X_{n1} = \frac{x_1}{\sqrt{(x_1)^2+(x_2)^2+(x_3)^2\dots}} \text{----- (1)}$$

Table 3 shows the various Normalized Data Genotypic variance, Phenotypic variance, Grand mean, Heritability Normalized value is obtained by using the formula (1).

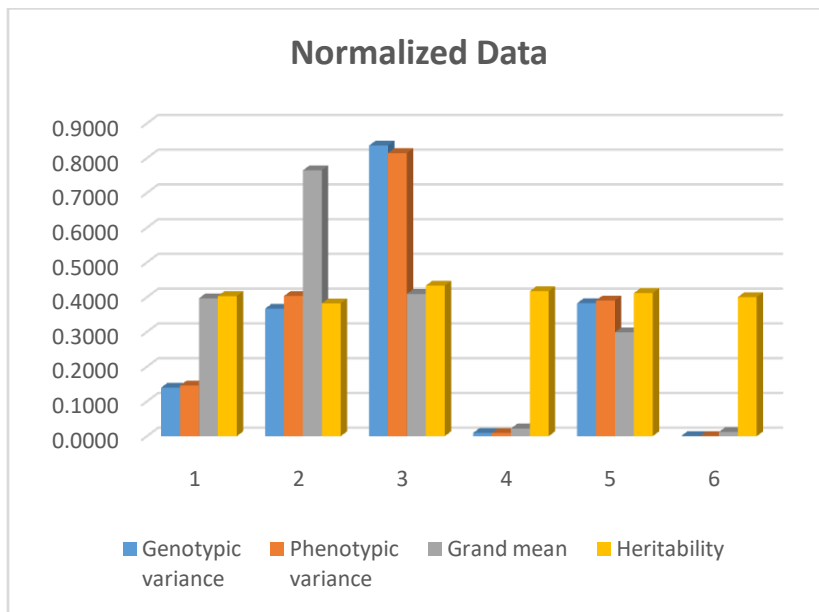


FIGURE 1.Normalized Data

Figure 1 shows the graphical representation Genotypic variation shows the maximum value for days to maturity per seed and the lowest value. Days to maturity shows the highest value for seeds per pod and the lowest value for seeds per pod. Grand mean, days to maturity shows the highest value for seeds per pod and lowest value. Heritability, plant height showing highest value in days to maturity shows lowest value.

TABLE 3.Weight

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

$$X_{wnormal1} = X_{n1} \times w_1 \text{-----}(2)$$

Table 4 shows the Weightages used for the analysis. We taken same weights for all the parameters for the analysis. All weight value same 0.25.

TABLE 5.Weighted normalized decision matrix

Weighted normalized decision matrix			
0.035	0.036	0.099135	0.100761774
0.092	0.101	0.191235	0.095552087
0.209	0.204	0.102349	0.108317055
0.002	0.002	0.005544	0.104317201
0.096	0.098	0.074739	0.102934535
7E-05	7E-05	0.003044	0.100033406

Table 5 shows the weighted normalized decision matrix Genotypic variance, Phenotypic variance, Grand mean, Heritability. The weighted default result is calculated using the matrix formula (2).

TABLE 6.Assessment value Rank

	Assessment value	Rank
Days to flowering	-0.12856	6
Days to maturity	-0.09423	3
Plant height	0.202057	1
Branches per plant	-0.10515	5
Pods per plant	0.015592	2
Seeds per pod	-0.10293	4

Table 6 shows the Assessment value&Rank value used. Assessment value for Days to flowering = -0.12856, Days to maturity =-0.09423, Plant height =0.202057, Days to flowering =-0.10515, Branches per plant =0.015592, Seeds per pod =-0.10293. the final rank of this paper the Solar sourced energy is in 6th rank, the Days to maturity is in 3rd rank, the Plant height is in 1st rank, the Branches per plant is in 5th rank, the Pods per plant is in 2nd rank and the Seeds per pod is in 4th rank. The final result is done by using the moora method.

$$Assesmentvalue = \sum X_{wn1}+X_{wn2}-X_{wn3}\text{-----}(3)$$

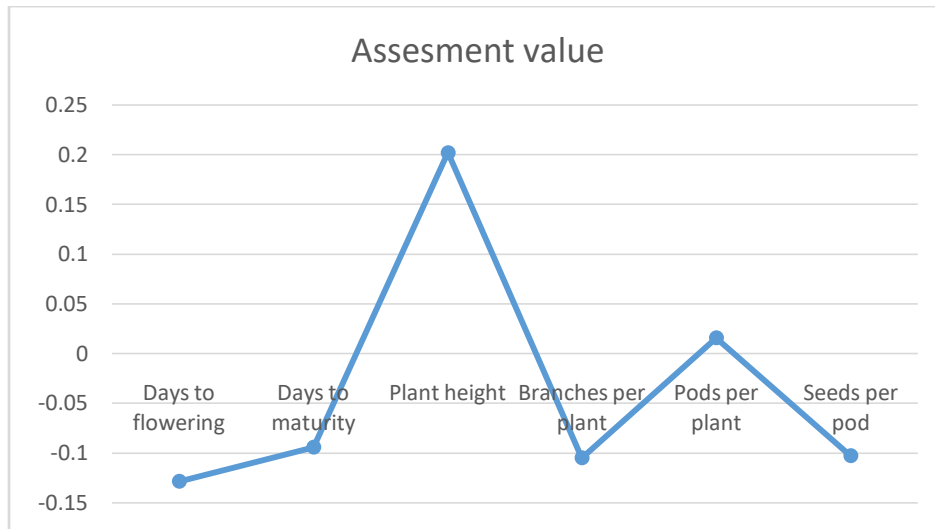


FIGURE 2.Assesment value

Figure 2 graphical view of MOORA method using the analysis Assesment value Plant height is showing the highest value for Days to flowering is showing the lowest value.

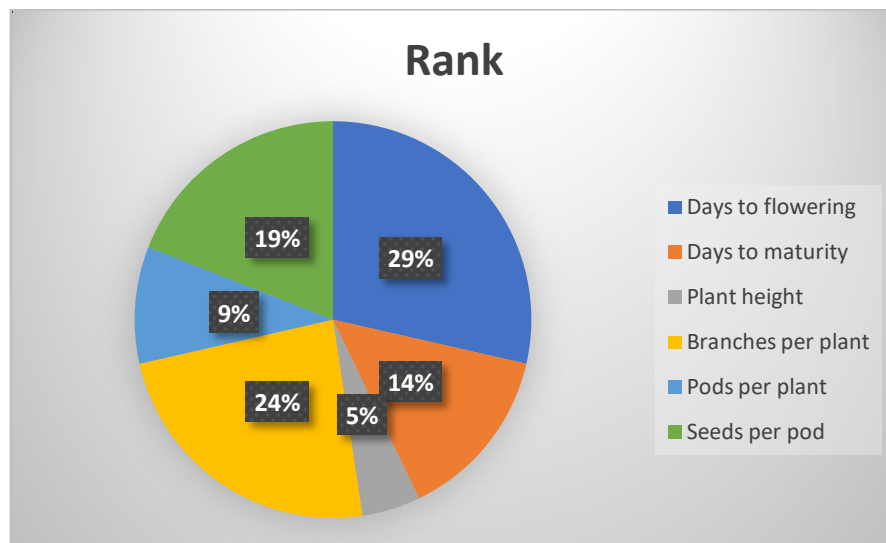


FIGURE 3.Rank

Figure 3 shows the graphical view of the final rank of this paper the Solar sourced energy is in Sixth rank, the Days to maturity is in Third rank, the Plant height is in First rank, the Branches per plant is in Fifth rank, the Pods per plant is in Second rank and the Seeds per pod is in Fourth rank.

4. CONCLUSION

Genetic diversity for crop improvement Important. 27 soybean mutants and in four maternal genotypes Genetic variation, traits and Study of genetic diversity A test in 2011 to do conducted. Analysis of Variance for nine morphological traits Among mutants and mothers revealed significant differences. Seed yield of eighteen mutants and some including yield attributes performed better than mothers. Phenotypic for most characters and between

genotypic coefficients Differences in narrowness (PCV and GCV) less in their expression Environmental Impact Revealed. Branch No., Plant height, pod number and seed weight High heritability for and of genetic improvement High values for soybean development can be considered favorable characteristics, and achieve higher expected genetic gain. Pod and seed number and maturity period are first order for high yield appeared as attributes and their Strong correlations and direct in yields Because of the high volume of effects Priority should be given in examination. Therefore, these traits are useful phenotypic Soybean improvement through selection can be considered favorable attributes and more for these characters Expected genetic gain can be achieved. Most of the traits are mutual highly heritable and easily scalable Selection of phenotypic traits For the combined improvement of these properties by will help. Coefficient of Cluster Analysis 235 The value grouped 31 genotypes into five groups. from cluster I and cluster II Mutants/Genotypes, IV and with mutants of V clusters can be used for hybrid scheme, High yield for further development Soybean cultivars derived from mutants can be created. Plus, high in soybeans First row for seed yield Characteristics include number of pods per plant and a pod and seeds and days As first-order traits to mature Correlation and path coefficient as appeared The analysis points to both. Direct effects on seed yield High volume. All nine are different Cluster analysis using attributes 27 soybean mutants and five main of four mother genotypes grouped into clusters. These results are geographical Not only the background, but also the induced mutations In creating genetic variations confirm that they contribute significantly. All of the first four main elements of total variation for morphological traits is 99.996%. For rated roles High levels among mutants This study points to the existence of genetic diversity. The final ranking of this thesis is by solar energy is ranked sixth, days to maturity is ranked third, plant height is ranked first, branches per plant is ranked fifth, pods per plant is ranked second. Seeds per pod ranked fourth.

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