

IV. RESULTS AND DISCUSSION

The present study was designed to find out definition characters of faba bean varieties under tests. This is for the sake furnish such needed information to the breeder and field inspectors as well as people, traders and farmers. Breeders need these data in the evaluation course of their program. In addition, it serves as a true witness in the course of breeder's right implementation. Field inspectors require having recognizable characters of the specific variety of crop under inspection so that such standard of purity might be worked out properly. Certain morphological characters and biochemical aspects were therefore needed to be studied to furnish the requited necessary needed data in this respect. Among such information are the following:-

1-Morphological characteristics:

- 1- Data in Table (4) indicate that the tannin in all of the faba bean varieties was present in seeds.
- 2- Regarding the plant height, faba bean are medium in height except for Sa.1 and Sa.2 varieties which were the shortest and Y.S. was the tallest variety.
- 3- Concerning number of stem including branches, more than half the length of medium main stem in all faba bean varieties are medium.
- 4- Data in Table (4) show that stem (number of nodes up to and including first flowering node, including the scale nodes) was medium in the all varieties under studied.
- 5- The anthocyanin coloration in stem was present in all faba bean varieties except Sa.1 variety where such coloration was absent.

- 6- The intensity of anthocyanin coloration in stem was medium which detected in M.1 variety but was slight in the rest of the tested varieties.
- 7- The data shown in Table (4) indicate that the color of foliage was green in all varieties of faba bean under study.
- 8- The intensity of green color before flowering was medium for all varieties of faba bean as shown in Table (4).
- 9- Results in Table (4) indicate that the length (basal pair of leaflet) was short in two varieties M.1 and Nu.1 .Whereas, the other varieties were medium.
- 10- Results in Table (4) show that the leaflet width was medium in all varieties except G.3Im has long leaflet but Nubaria1 has narrowest leaflet.
- 11- Results in Table (4) show that all varieties were of medium leaflet folding (long the main vein terminal pair of leaflets).
- 12-Regarding raceme number of flowers at 2nd or 3rd flowering node in all faba been varieties was medium
- 13- Time of flowering 50 of the plants with at least one flower was early in Y.S. variety and late in Nu.1 variety but in the rest varieties was medium as presented in Table(4).
- 14- Medium flower length in all the varieties was noticed as shown in Table (4).
- 15- Results in Table (4) indicate that all the studied varieties having wing melanin spot.
- 16-The standard melanin spot was present in all varieties of faba bean under study.
- 17- Data listed in Table (4) clarify that all the varieties of faba bean under study having standard anthocyanin coloration.

- 18-Standard extent of anthocyanin coloration was slight in all varieties as present in Table (4).
- 19-Number of pods in Table (4) show that Y.S. faba bean variety was the only one variety which have many number of pods but the other varieties were of medium ones.
- 20-Concering pod attitude Nu.1variety was semi-pendulous while Sa.1and G.843 varieties were erect and the other varieties were of semi-erect pod (Table 4).
- 21-Pod length without beak was medium in the all of the tested faba been varieties.
- 22-Concerning pod melanin width, only Nu.1 faba bean variety has melanin width of pod whereas all the other studied varieties having medium melanin width.
- 23-Regarding the pod degree of curvature at green shell stage, Sakha 1 and Y.S. varieties were ranked medium while M.1and Nu.1 varieties were strong but G. 643 variety was ranged between slight and medium pod degree of curvature at green shell stage as show in Table(4).
- 24-The Nu.1 variety was the only one has pod intensity of light green color but the rest varieties (Table 4) were of pod intensity of medium green color.
- 25-Data in Table (4) clarify that pod number ovules including seeds was medium in all the studied varieties of faba bean.
- 26-Pod thickness of pod wall of G.461and Y.S. varieties were thin whereas the other varieties were of medium pod thickness.
- 27-Seed shape of medium longitudinal section was square for M.1 variety, oblong for G-717, elliptic in Y.S., and ovate for the rest of the tested faba bean varieties.

- 28- Seed shape of seed cross section was elliptic for Nu.1 and Sa.1 faba bean varieties, but elliptic broad for the rest of the varieties.
- 29-Weight of 1000 – seed of the studied faba bean varieties were medium for M.1, G.717 and Y.S.; very large for Nu.1 and Sa.2 and large for the rest of the rest of the studied varieties.
- 30-Seed color of the testa immediately after harvest was beige for all of the tested faba bean varieties except for G.717 which was ranged between beige and green (greenish beige)
- 31-All of the studied faba bean varieties were of the black pigmentation of hilum in seed.
- 32-Variety of Y.S. was the only one which recorded to be the earliest variety of first developed pods and Nu.1 variety was the latest variety but the other varieties were recorded to be of medium time.

Results presented in this investigation about Morphological characteristics of varieties under study are in agreement with many authors which studied different morphological characteristics for faba bean varieties identification. As instance, (Abd El-Gawad *et al.* 1981) reported that horse bean cultivars could be distinguished according to seed characters such as seed color, hilum color and seedling characters. The different varieties of the crop could be distinguished on the basis of their morphological as well as biochemical characters. In this respect, Higgins and Evans (1983) identification thirty four cultivars of field beans using 10 continuous plant characters. Results had allowed only a limited extension of the initial classification of filed bean cultivars. Nevertheless, it had been possible to provide comparative cultivars descriptions.

Along the same line **Nassib (1984)** described faba bean cultivars in Egypt using the flowering data, plant height, No of stems/ plant maturity data, seed size, seed color and number of seeds/ pod. Similarly, **Higgins *et al.* (1988)** classified and described faba bean cultivars based on easily observed qualitative morphological characters such as growth habit, seed characters. Also, **Kotecki (1994)** compared five faba bean lines and found variation among genotypes with large kernels, and differs for flowering dates, plant height and yield.

Similarly, **Mudzana *et al.* (1995)** and **El-Emery and El-Rabie (1996)** identification of some faba bean varieties using visual assessment of plant morphology and biochemical character. These assessments included seed, plant, stem, flower and pod characters. Moreover, **Naguib (2000)** evaluated the morphological characters to identify some faba bean varieties by using qualitative characters and quantitative characters. This study indicated that these characters are important descriptor for discrimination among different studied faba bean genotypes.