

Identification some wild species of Poaceae family in some areas of Salah Al-Din / Iraq

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Abstract

The current research included a comparative morphological and taxonomic study among ten species, which are *Avena sterilis*, *Agropyrum repens*, *sorghum halepense*, *Cynodo dactylon*, *Dactylis glomerata*, *Echinochloa crus-galli*, *Hordeum pusillum*, *panicum repens*, *Poa annua*, belonging to the family Poaceae, belonging to the family Steriaceae. Salah al-Din Governorate, Iraq the phenotypic taxonomic study included studying the characteristics of stems, leaves and inflorescences

Keywords: phenotypic study, Poaceae

1. Introduction

The phenotypic study is one of the basic and main branches relied upon in plant taxonomy, where plants are characterized by these traits of ease of dealing with them, clarity, lack of complexity, and the possibility of distinguishing with the naked eye, which facilitates the diagnosis process and gives the researcher the field of plant classification in a preliminary and direct manner. Stace (1965) Taxonomy is one of the most important basics of plant sciences and gained its importance because of its connection to human life and organisms. The science of taxonomy began when researchers arranged plants into groups to facilitate the process of studying them and determining the properties possessed by plant parts. Alkatib (1988), Through classification, plants are divided into groups according to the degree of closeness between these species to facilitate their classification, diagnosis and study, and it is called Lawrence (1951), and the development that took place on microscopes, including the scanning electron microscope (SEM, TEM), which was a great supporter in classifying, The Poaceae family, or called Graminae, is characterized by its global spread, as it is found in tropical, semi-tropical, desert and semi-desert regions and is found in the Mediterranean regions as well as the temperate regions of the world, Researchers and classifiers differed about the number of its types and genera, as it included about 13,000-11,000 species belonging to 800 genera within 42 clans and 14 families (GPWGII, 2012). This family is the second largest family after the orchid family Orchidaceae, and the number of its genera reached about 620 genera and includes about 10,000 species and on this basis it was considered one of the largest families of monocots (Mustafa et al. 2014). Poaceae are either annual or perennial plants, and some species are both annual and perennial, as well as they are among the most important economic families that are used as food for humans and animal fodder and used as a treatment in many cases, and some of their types are

used for decoration, industry and perfumes.

2. Material and method

A group of samples were studied for their phenotypic traits, and they were 10 species belonging to the Poaceae family. The fresh samples collected during field trips in the different areas of Salah al-Din included (Tikrit - Al-Alam - Shirqat - Dhuluiya - Dujail) were relied on. Fresh samples were obtained to study the different parts, which included (stem, leaves, inflorescences and fruits). The samples were studied in detail and measurements were taken for each part used for the study and were tabulated for the purpose of comparison between species within the genus or one species on the basis of the difference and similarities between them. Pictures were placed to clarify the characteristics more and also rely on previous studies using the following sources (1973) Stearn and 1980) Stace and AL-Shimmery (1991).

3. Results and Discussion

stem

The results of the studied species showed a similarity in the types of stems, as all of them were of the standing or ascending type and characterized by being cylindrical and hollow from the inside in all species. The longest stem was 25 cm in *A. sterilis*, and the stem was dark green with few branches, and the lowest length was in *C. dactylon* and *E. crus-galli*, reaching 5.5 and 4 cm, respectively. The first type was the stem of the creeping and standing type, distinguished by its light green color, and its branches ranged from the first type, stem of the creeping and standing type, distinguished by its light green color, and its branches ranged between 3-4, As for the second species, it was characterized by the fact that all its stems were upward and few branches, while the color of the stem was in all plant species of light green and dark green. This is due to the age of the plant and its nature, and that the stems varied in terms of length and color, due to the climatic and

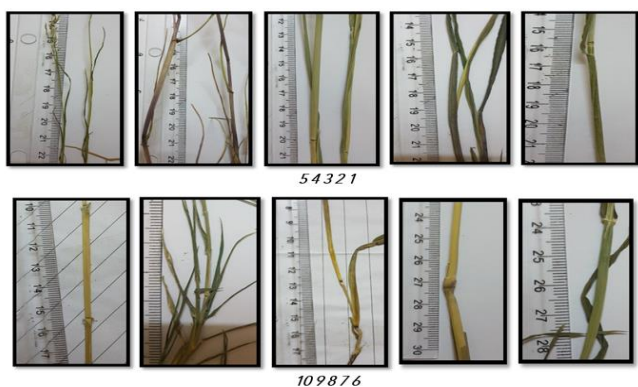
environmental conditions, while in terms of the surface covering of the stems, all species were smooth except for the type P.repense which had scattered bristles, The context was characterized by the plant species by containing the knot bug, and their number ranged between the knot bug, and

their number ranged between 2-3, Table 1 and Panel 2 showing the shapes of the plant stems. This study agreed with AL-Gara'awi (2005) to study the type E.grusgail in terms of phenotypic characteristics.

Table 1 Quantitative and qualitative characteristics of some types of studied stems of the Poaceae family measured in centimeters

growth trend	number of branches	stem length	traits species
vertical	+	17 - 12.5 (14.3)	Agropyrum repens L.
vertical + horizontal	-	12 - 9.5 (10.8)	Poa annua L.
vertical	+	25 - 15 (19.6)	Avena sterilis L.
vertical	+	8 - 4 (6)	Echinochloa crusgalli L.
vertical	-	18 - 8 (13.3)	Dactylis glomerata L.
vertical + horizontal	-	8.5 - 5.5 (6.6)	Cynodon dactylon L.
vertical	-	12 - 6.5 (9.5)	Panicum repense L.
vertical	+	25 - 16 (20.3)	Setaria verticillata L.
vertical	-	23 - 12 (18)	Hordeum pusillum L.
vertical	+	30 - 15.5 (21.3)	Sorghum halepense L.

(+) indicates many branches, (-) indicates few branches



Panel 1. Phenotypic traits of the stems of the studied plant species

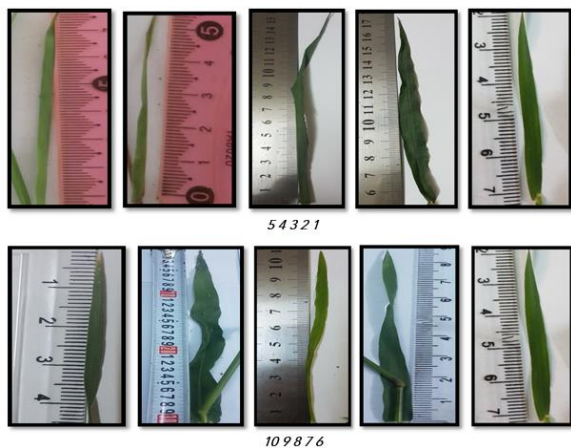
1/ Ag. repen 2/ P. annua 3/ A. sterilis 4/ E. grusgali 5/ D. glomerata 6/ C. dactylon 7/ P.repens 8/ S. verticillata 9/ H. pusillum 10/ S. halepense leaves

The results of the study varied among plant species according to the leaves of the Grassaceae family in terms of length and width. All school species were characterized by the shape of their leaves ranging between ribbon and spear with a flat blade, and the leaves are arranged alternately on stem. The veins in

the leaves are of a parallel type, leaves varied in terms of length, The longest leaf in the type P.repense was 30 cm and the length in the type S. verticillata was 27 cm, and the lowest length in the type C.dactylon and reached 3 cm and in the type P.annua the leaf length was 4 cm and the rest of the species ranged between these values. While in terms of width, the species also varied, with the width of the blade in A. sterilis reaching 4 cm and 2.5 cm in the two species P.repens and S.halepens, and the lowest width, which reached 2 mm in the following species P.annua, C.dactylon and Ag .repens While the blade shapes varied between spear-shaped in species S. halepense, P. repens, E. grus-galli, A. sterilis, H. psuillum, and D. glomerata, and were ribbon-shaped in species P.annua, S.verticillata and C.dactylon. and Ag.repens, as the species varied in terms of the shape of the top and the edge. As shown in panel 3. The leaves have an important phenotypical taxonomic value to facilitate the process of separating and studying the races, as well as the comparison between the types of the same sex, and they are the parts most exposed to changes due to the environmental conditions to which the plant is exposed, such as humidity, drought and temperatures.

Table 2 Quantitative and qualitative traits of leaves in some species of the studied Poaceae family, measured in cm

blade shape	blade dimensions		Traitsspecies
	Width	length	
Linear	0.9-0.2(0.5)	14 - 6(10)	Agropyrum repens L.
Linear	0.7-0.2 (0.4)	12 - 4(7.3)	Poa annua L.
Lanceolate	4.5-1(3)	12 - 7 (9.3)	Avena sterilis L.
Lanceolate	2 - 0.5(1.1)	19 - 16(17.8)	Echinochloa crusgalli L.
Lanceolate	0.8 -0.4 (1.8)	11 - 4.5 (7.5)	Dactylis glomerata L.
Linear	0.5-0.2(0.3)	6 - 3(4.5)	Cynodon dactylon L.
Lanceolate	2.5 -0.5(1.3)	30 - 10 (19)	Panicum repense L.
Linear	0.7-0.3(0.5)	27 - 20 (23.3)	Setaria verticillata L.
Lanceolate	1-0.4(0.6)	8.5 - 3(5.5)	Hordeum pusillum L.
Lanceolate	2.5 -1 (1.5)	15 - 8 (12.6)	Sorghum halepense L.



Panel 2 Phenotypic characteristics of the leaves of the studied plant species

1/ Ag. repen 2/ P. annua 3/ A. sterilis 4/ E. grusgali
5/ D. glomerata 6/ C. dactylon 7/ P.repens 8/ S. verticillata 9/ H. pusillum 10/ S. halepense

inflorescences

The results of the current study showed that the flowering inflorescences in the Grassland family varied in their types, shapes and colors, through which it was possible to distinguish between the genera and the species belonging to Poaceae , which is an important taxonomic trait and can be distinguished just by looking at it and knowing its types. The inflorescences were of an unlimited type, with the nature of the inflorescence, its shapes, colors, and number of its branches different, and it varied between the same al-Huwaimel and others of the seated type, while its shapes varied between the

cluster and the spike, which rests on the central axis. They were spikelets, single and simple in Ag.repens and were alternately arranged, seated and up-oriented type, and in H.psuillum it was of the seated type on the central axis and huddled spikes, Whereas in C.dactylon the inflorescences were cluster branched finger-shaped, while in S. halepense and E grusgali the inflorescences were long, dense, upright, branched panicate clusters, but they were more intense in E.grusgal While in the type S. verticillata the inflorescences were of the type seated and grouped together on the central axis and containing the bristles, and in the type P. repens the inflorescences were in clusters that branched into secondary branches and followed by spikes based on a holder. The inflorescences are characterized by being of the drooping type and dense, and the type A. sterilis inflorescences are single clusters with long globs and branching into several branches and the cluster is drooping to the bottom. In the two types, P. annua and D. glomerata, the inflorescences are clusters with long pods and they are many branched, dense and scattered. along the central axis. The inflorescences varied in terms of color, length and number of branches. The species S.halepense distinguished that the inflorescences were purple in color, the two species A.sterilis and C.dactylon. The ears are green in growth and when they mature, their color becomes yellowish. The two types, E. grusgali and p.repens, were distinguished by a dark green color. As for the rest of the species, the color of the inflorescences was light green. The current study of inflorescences agreed with the study of AL-Sultani (2011) and AL-Hashimi (2011).

branches number	Inflorescence type	inflorescence nature	inflorescence length	Traits species
10 – 6(8)	Simple	sitting	15 – 7 (10.6)	Agropyrum repens L.
12 -8 (10)	Simple	sitting	6.5-3.5(4.8)	Poa annua L.
14 – 6 (10)	Simple	Pedicellate	16.5-10.5(13.7)	Avena sterilis L.
8 – 4 (6)	Compound	Pedicellate	10-6(8)	Echinochloa grusgalli L.
9 - 5(7)	Compound	sitting	5-3.5(4.3)	Dactylis glomerata L.
8 - 4(6)	Simple	sitting	6-4.5(5.1)	Cynodon dactylon L.
18 – 8(10)	Compound	Pedicellate	20-12(18)	Panicum repense L.
-	Simple	sitting	9- 5.5(7.1)	Setaria verticillata L.
-	Simple	sitting	8-5 (6.8)	Hordeum pusillum L.
12 – 6 (9)	Compound	Pedicellate	15.5-10(13)	Sorghum halepense L.



Panel 3 Phenotypic characteristics of the flowering inflorescences of the studied plant species

1/ Ag. repen 2/ P. annua 3/ A. sterilis 4/ E. grusgali

5/ D. glomerata 6/ C. dactylon 7/ P.repens 8/ S. verticillata 9/ H. pusillum 10/ S. halepense

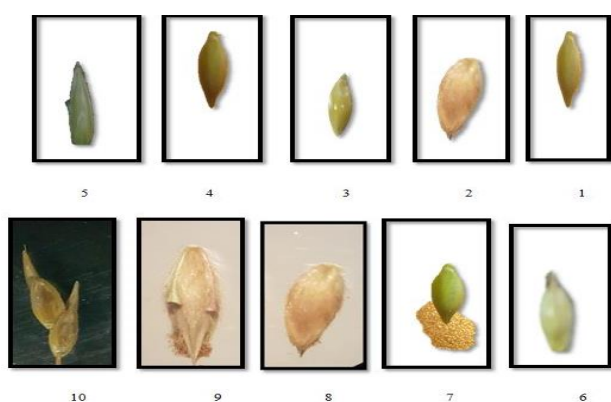
fruits

The fruits of the studied species were of the type of bean and characterized by a light yellow color in the species Ag.repens, A.sterilis and S.halapense, while the rest of the species were light green in color, and in some species E.grusgail, P.repense and S.verticillata. They had rough surface engravings and the other types were smooth, and the types ranged between oval or elongated shapes and the fruits differed in their lengths, as the longest fruit reached 6 mm and was in the type S.halepense and the shortest length reached 2.5 mm was in the two types P.annua and D.glomerata While the width of the

fruits also varied among the types, as the width of the fruit reached 4 mm in the two types *S.halepense* and *P.repens*. The lowest width was recorded in *E. grusgail*, *P.annua*, *S.vreticillata* and *C.dactylon*, which was 1.5 mm, and the value of other species

ranged between these two limits. The current study agreed with what was confirmed by (Nasrallah et al., 2013) about the taxonomic importance of fruits and their stable shape in front of environmental factors.

fruit		Traitsspecies
Width	length	
4-2(3.2)	4.5-2.5(3.3)	<i>Agropyrum repns L.</i>
3-1.5 (1.8)	2.5(3.1)-3	<i>Poa annua L..</i>
4-2.5(3.3)	5-2.5 (3.5)	<i>Avena sterilis L</i>
3-1.5(2.3)	4-2(3.2)	<i>Echinochloa grusgalli L</i>
4-2(3.2)	3-2.5(3.1)	<i>Dactylis glomerata l.</i>
3-1.5 (1.6)	4-2.5(3.3)	<i>Cynodon dactylon L.</i>
4-2(3.2)	6-4(5)	<i>Panicum repense L.</i>
3-1.5(2.1)	4-2(3.2)	<i>Setaria verticillata L.</i>
3.5-1.5(2.1)	5-2(3.6)	<i>Hordeum pusillum L.</i>
4-2(3.2)	6-2(3)	<i>Sorghum halepense L.</i>



Panel 4 phenotypic traits of fruits in the studied plant species

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verticillata 9/ H. pusillum 10/ S. halepense

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