DEPARTMENT OF BIOLOGY
FACULTY OF SCIENCE
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Weed Flora of Great Man-Made River Agriculture Project (Sirte)

By

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A thesis submitted in partial fulfillment of
The requirements for the degree of
Master of Science in Biology

Sirte, Libya
(2004)

AL-TAHDI UNIVERSITY

Faculty of Science

Department of Biology

Title of Thesis

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Acknowledgments

Thanks to Allah and him alone I should thank for giving me strength to complete this work.

I am highly thankful and grateful to my Supervisor Dr. Mohamed A. Alaib for his support and guidance throughout this work. And for this I am forever grateful.

I am sincerely thankful to my teacher Dr. Salah S. El- Amari for his help and continuous encouragement.

I thankful to Dr. Mohamed A. Salem chairman, Department of Biology for facilities for me.

I sincerely thank my friends Mr. Mohamed Al-Habony and Othman Abu Aisha for their help and continuous encouragement.

I am also thankful to Mr. Faraj Erkaes, Mr. El-Sadiq Hasan and Mr. Farhat Abu Zakhar for their help in diverse ways.

My sincere thanks all staff members and colleagues Biology Department for their encouragement. To all postgraduate students of the Department I am thankful for their help.

Finally, I am indebted to my family and all of those who helped me and encouraged me throughout this study.

Allah bless upon them all

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Abstract

The goals of the present work were to document the weed species and to numerate density, frequency and distribution of individual species in barley fields in GMR agricultural project and to provide quantitative data that could be used to estimate losses due to weeds, So also as to attract the attention to the economically important weeds in GMR agricultural project and to develop methods for their control.

In this study a survey was conducted to identify weed species naturally occurring in GMR agricultural barley fields in Sirte Libya. A check list including 105 species was prepared. 27 species are being reported for the first time. The check list includes the scientific name for each species in addition to vernacular name. Reported species belonging to 83 genera and 31 families of angiosperms. Dicotyledons were represented by 93 species, 71 genera and 28 families and Monocotyledons were represented by 12 species, 12 genera and 3 families.

The life forms were dominated by the therophytes with 62.86%, chamaephytes with 27.62%, cryptophytes with 5.71%, phanerophytes with 2.86% and hemicryptophytes with 0.95%.

The dominant families according to the number of species were Fabaceae (21 species), Asteraceae (17 species), Poaceae and Brassicaceae (8 species), and Boraginaceae, and Scrophulariaceae (4species).

In addition to that, the dominant species according to species density (number of individual species per m^2) were *Lolium rigidum* represented by 24.96 plant/m^2, *Melilotus indicus* represented by 19.29 plant/m^2, *Emex spinosus* represented by 5.7 plant/m^2, *Cutandia dichotoma* represented by 3.68 plant/m^2 and *Bromus rigidus* represented by 3.61 plant/m^2.

Moreover, the most frequently occurring weeds in the study area were *Melilotus indicus* (62.36%), *Lolium rigidum* (57.27%), *Emex spinosus* (56.18%), *Rhaponticum acaule* (38%) and *Hussonia pinnata* (33.82%).

Furthermore, the highest distribution among the weeds, *Lolium rigidum, Melilotus indicus, Rhaponticum acaule, Hussonia pinnata, Senecio gallicus* and *Brassica tournefortii* (100%), *Emex spinisus* (95.45 %), and *Centurea dimorpha* (90.91%).

Finally the survey revealed that there were two species of plants found growing in the study area which is not their normal habitat as far as distribution is concern. These species were , *Medicago disciformis* which is restricted to Cyrenaica and *Cynara cardunculus* which is restricted to Benghazi plain.

Chapter I

Introduction

In no other parts of the world does uncontrolled weed growth cause as great reduction in crop yields as it does in dry areas where soil moisture is the limiting factor and weeds compete significantly with the crop for available moisture (Robson,1992). Weeds and crops usually have the same requirements, but weeds make their living at the expense of the crop by competition for nutrients, moisture, light, carbon dioxide and space (Abdul Ghafoor and Shad, 1995; Klingman *et al.* , 1975; Muzik, 1970).

Weed problems in Libya have become very important not only in the coastal belt with its higher rainfall, but also in the newly established irrigation project in the desert where it was very difficult to find a single weed in the past (Robson, 1992). In Libya however, the recognition of weed science as a discipline with the same position as other crop protection disciplines, such as entomology and plant pathology, has been neglected (Kukula and Ghanuni, 1992). As a result no systematic research has been done on regular bases. Some experiments, however, carried out during the late 1970s and early 1980s in agriculture research center, particularly in Tripoli and Al-Jabal AL-Akhdar region. The results of these experiments have been

published in a form of reports remained in the shelves of the library of the agriculture research centers.

Therefore data on crop losses due to weeds are lacking in Libya. Crop losses reported in the literature are mainly estimates of reduction in crop yield due to weed competition. The losses are usually higher in dry farming areas than in irrigated areas because weeds can survive better than the crop under condition of low soil moisture (Kukula and Ghanuni, 1992).

According to the farmers, crop losses can be as high as 15-80% depending upon the level of weed infestation and the crop. This has been confirmed by some chemical weed control trials on cereals in desert irrigation projects as well as on legumes and vegetables grown mainly in the coastal belt of Libya (Kukula and Ghanuni, 1992).

The infestation of some weed species in field crops, particularly on irrigated cereals projects, is getting worse because of cropping intensities, poor cultural practices and the lack of a crop rotation system. Grass weeds in particular are becoming a serious problem because of the continuous use of herbicides for the control of broad leaved weeds. One of the most dominant weeds in cereals is *Avena sterilis*. Other grass weeds that are becoming established include *Lolium*, *Bromus*, and *Phalaris spp*. The original infestation of these weeds is suspected to have been caused by their introduction in contaminated crop seeds (Kukula and Ghanuni, 1992). In areas where phenoxy herbicides have been used tolerant broad leaved

weeds, such as *Anthemis*, *Polygonum*, *Vicia*, *Plantago*, *Malva*, *Galium*, and *Anagalis*, are becoming a problem in cereal fields.

Oglivy (1975), surveyed agricultural fields of El-Marj, Zarda, El-Beyda, Sahel El-Fateh men September and Al-Abiar, he recorded 25 species of weeds (c.f. Saleh *et al*, 1983). Kassian (1978), also surveyed agriculture fields of Sahel El-Marj, El-beyda and Derna, and recorded 36 weed species (c.f. Saleh *et al*, 1983).

Saleh and El-Garbawi (1979), recorded a total of 205 species of monocots and dicots weeds in the survey of North- weastern of Libya. The results of their survey showed that *Lolium rigidum*, *Bromus rigidus*, *Fumaria parviflora*., *Anagalis arvensis*, *Brassica tournefortii*, *Cutandia dichotoma*, *Cyndon dactylon*, and *Phalaris minor* were the dominant species in studied fields. Saleh *et al* (1979), also have reported 134 weed species growing within wheat and barley fields in eastern region of Libya. The results of this survey showed that *Avena sterilis*, *Lolium rigidum* , *Brassica tournefortii* ,*Anagalis arvensis*, and *Bromus rigidus* were the common weed species in studied fields.

A.O.A.D.*(1981), reported 134 of important weed species recorded in agriculture fields in Libya. These species belong to 29

* Arab Organization for Agriculture Development.

family. 27 species of monocotyledons and 107 species of dicotyledons.

Paratov and El-Gadi (1981), surveyed the pasture zone in the northern part of Libya south of Sirte, they recorded 306 species, 66 species, of which were weeds.

Saleh and El-Garbawi (1981), carried out a survey for weed species growing in wheat and barley fields in Fazan region, they recorded total of 36 species of monocots and dicots. The results of this survey showed that *Lolium multiflorum,Cyndon dactylon, Brassica tournefortii ,Chenopodium mural, Polygonum equisetiforme* and *Sonchus oleraceous* were the dominant species in the studied fields.

Saleh and El-Garbawi (1983), have also surveyed weed species of wheat and barley fields at El-Kufra project and found a total of 24 weed species. The results of the survey showed that *Brassica tournefortii* was dominant species in project fields. They also found that 87.04% of the fields were infested by weeds.

Saleh *et al.* (1983), published a report about 294 weed species growing in wheat and barley fields in Libya. The results of this survey showed that *Anagalis arvensis, Brassica tournefortii, Bromus rigidus, Cutandia dichotoma, Cyndon dactylon, Lolium rigidum,* and *Phalaris minor* were present in all studied fields. In addition, Saleh

(1988), published a book of weeds in Libya, which included the description, distribution and control methods of weeds in Libya.

Ghanuni (1995), published a list of a common weed species which distributed in Libya, with relative distribution more than 80% , these species included; *Avena fatua, Bromus rigidus, Lolium rigidum, Sonchus oleraceous, Brassica tournefortii, Emex spinosus, Linaria tenuis* and *Chenopodium album.*

Ghanuni (1998), has also prepared country weed list which included nine locations in Libya, Benghazi, Ebn Zaidon, El-Marj, Erawin, Maknusa, Sarir, Zahra and Abu Sheeba. The list confined 20 species of monocotyledons and 77 species of dicotyledons.

The objectives:

Survey of weed flora is considered the key for good control programme of weeds, especially in the newly reclaimed areas such as in GMR agriculture project (El-Gharbawy *et al*, 1988). Weed surveys are also useful for determining the occurrence and relative importance of weed species in crop production systems (Frick and Thomas, 1992; McCully *et al*.,1991; Thomas,1985), as well as providing the base line information for future comparisons. These comparisons can help to elucidate the effect of new weed control technologies, and document the development of herbicide resistant weeds. Documenting the relative importance of weed species also

facilitates the establishment of priorities for research and Extension activities.

The goals of the present survey were to document the weed species and the numeric density, frequency and distribution of individual species in barley fields in GMR agriculture project and to provide quantitative data that could be used to estimate losses due to weeds, as well as to attract attention to the economically important weeds in GMR agriculture project and to develop methods for their control.

Chapter II

The study area

2.1 Location:

The study area is located about 7 Km south east of Sitre City adjacent to the coastal highway at approximately 31^0 12\` N latitude and $16^0$ 35\` E longitude. The area rises to about 13 m above the sea level (fig.1).

The study area lies within the border of agriculture fields which belongs to Great Man-Made River Water Utilization Authority (GMRWUA). The total area of which is approximately 460 hectars.

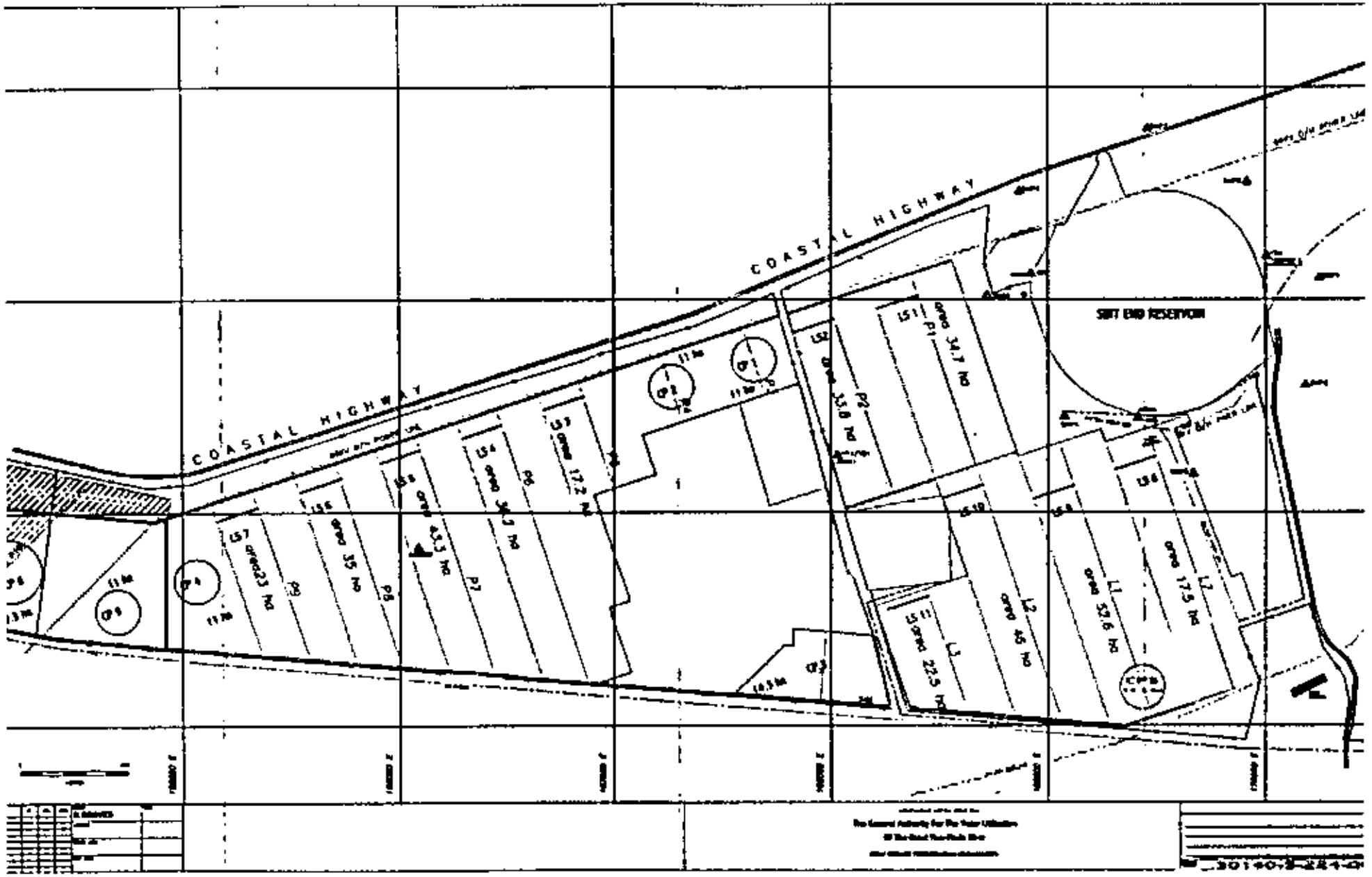
2.2 Soil:

Soil in the study area is deep. The soil depth is more than 150 cm. In addition the soil is characterized by light texture, it is between sand and loamy sand. Therefore it's characterized by high surface filtration with low water holding capacity. Electrical conductivity (EC) of the soil in the study area about 1.2 mmhos/cm which is very

good in terms of salts content. The soil in the study area howevere, suffer from nutrients deficiency except Cu, Mg and S.(C.B. E. S. 1997).*

Soil in the study area also tends to be alkaline the pH levels are very high across all fields. The high levels of the pH have negative effect on the availability of nutrients to plants (Ellwood and Hicks. 1999).

* Consutant Bureau for Economical Studies.



fig(1) : Map of the study area

2.3 Climate:

The climate of the study area is subtropical semi-arid to arid (Magrabi, 1977). It is chiefly characterized by it's aridity and by it's wide variation in temperatures. The temperatures are high and the rainfall is low. As a result there can be abrupt transition from one kind of weather to another, in summer it is extremely hot. The heat of summer is often aggravated by Ghibli winds. There is a hot dry season from May to October and a cold and rainy season from November to April.

Climate data for the study area was obtained from Libyan Meteorological Department Tripoli include rainfall, temperature, wind and relative humidity for the last 12 years from 1991 to 2002.

2.3.1 rainfall:

The rainfall in the study area is markedly seasonal, and extremely irregular in amount (table 1). The annual rainfall at the area varies considerably around the mean from one month to another, and year to year. As is typical much of the Mediterranean, the hot summer months of June, July and August are virtually rainless and concentration of rainfall is in winter months. The timing and amount of rainfall are very irregular. In general the rainfall starts in the month of October sometime in September and extends up to March. It was as low as 114.7 mm (1992) and as high as 324.8 mm (1991) and the average annul rainfull 211.6 mm (fig. 2).

2.3.2 Temperature:

The study area has a semi-arid climate and the climatic characteristics are best illustrated by mean monthly air temperature at Sirte station (Table 2). During December, January and February the mean monthly temperature ranges between 13.9 C° and 15.3 C°. It begins to rise from March and in June, July, August, September, and October the months of the year temperature rises to over 24 C°. August is the hottest month of the year with an average mean temperature of 27.0 C°. During the last 12 years, the temperature begins to dip from October with an average temperature of 24.4 C° for October and 19.5 for November (fig.3). This is an important factor, which affects the growth of plants.

Table (1): Mean monthly rainfall (mm) at Sirte (1991-2002).

Months / Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1991	56	35	12.9	0.1	43.3	0.2	0	0	34	0	21.4	221	423.9
1992	32.7	30.8	2.6	0	2.2	1.2	0	0	0	0	36.9	8.3	114.7
1993	93.7	61.9	17	0.8	0.1	0	0	0	0	2.9	27.4	17.3	221.1
1994	49	2	2	5.7	7.8	0	0	0	0	28.4	62.2	100	257.1
1995	31.4	52.9	7.2	0.1	0.5	0.1	0	0	26.7	36.8	32.3	4.1	192.1
1996	29.1	20.4	38	6.5	0.8	8.6	0	0	7	14.5	23	6.6	152.3
1997	38.7	43.5	36.5	9.3	1	0	0	0	2	58	9	32.7	228.7
1998	19	49	68.7	3.1	5.1	0.1	0	0	1	4	9	36.3	195.3
1999	28.7	33.2	4	1.3	0.2	0	0	0	13	38.9	9.2	52.8	181.3
2000	108	45.3	0	0	0	0	0	0	2	2.6	0	8.2	166.1
2001	15.3	40	0	12	0	0	0	0	1.9	6.6	57.9	85.5	219.2
2002	58.6	31.9	7.4	7.7	2	0	0	0	32.6	6.1	2	6.6	154.9
Average	46.6	37.2	16.2	3.9	5.2	0.9	0.0	0.0	10.0	16.6	24.2	48.3	208.9

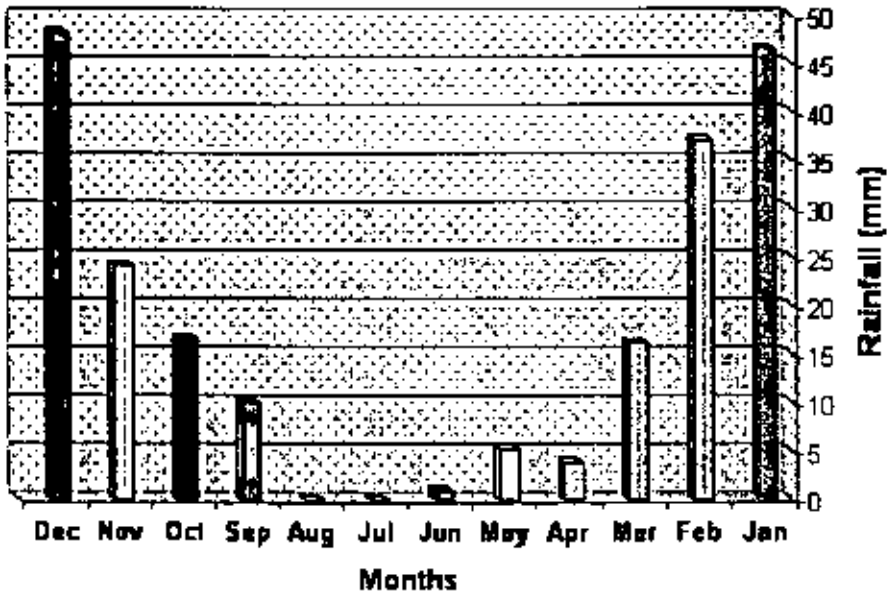


Fig. (2): Mean monthly rainfall (mm) at Sirte (1991-2002).

Table (2): Mean monthly temperature (C°) at Sirte (1991-2002).

Months / Years	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1991	14	14.3	17.8	17.7	20.1	24.3	25.2	26.4	25.9	25.9	19.1	13.7
1992	13.6	13.5	16.2	18.9	20.4	24.6	25.6	26.9	26.2	27.2	20.1	15.1
1993	13.5	13	15.9	19.8	21.5	25.2	26.2	26.9	26.4	25.1	21.5	16
1994	15.2	15.3	17.3	19.4	23	23.8	26.6	27.4	26.8	24.2	20.5	15.1
1995	12.6	15.9	17	18.7	21.9	26.4	27.3	28.5	28.1	22.7	18.1	16.4
1996	15.2	14.9	16.4	18.5	22.8	24.5	25.4	27.1	28.3	22.7	17.9	16.3
1997	14.5	13.7	14.8	16.9	20.5	27.1	27.9	26	25.9	23.5	19.2	15.3
1998	14.6	15.7	15.1	20.3	22.6	24.1	25.8	27.1	26.8	24.3	18.2	13.9
1999	13.6	12.8	15.6	12.3	22.7	25.6	25.1	27.1	27.4	25.2	20.2	14.4
2000	12.6	13.3	16	19.3	22.4	23.5	26.7	26.1	27.4	24.7	20.6	16.6
2001	14.9	14.2	19.25	18.6	23.1	23.1	26.9	27.5	27.7	24	20.5	15
2002	13	14.8	18.1	19.7	22.4	23.7	26.7	28	26.7	23.8	19.2	15.8
Average	13.94	14.28	16.62	18.34	21.95	24.68	26.45	27.08	26.97	24.43	19.59	15.3

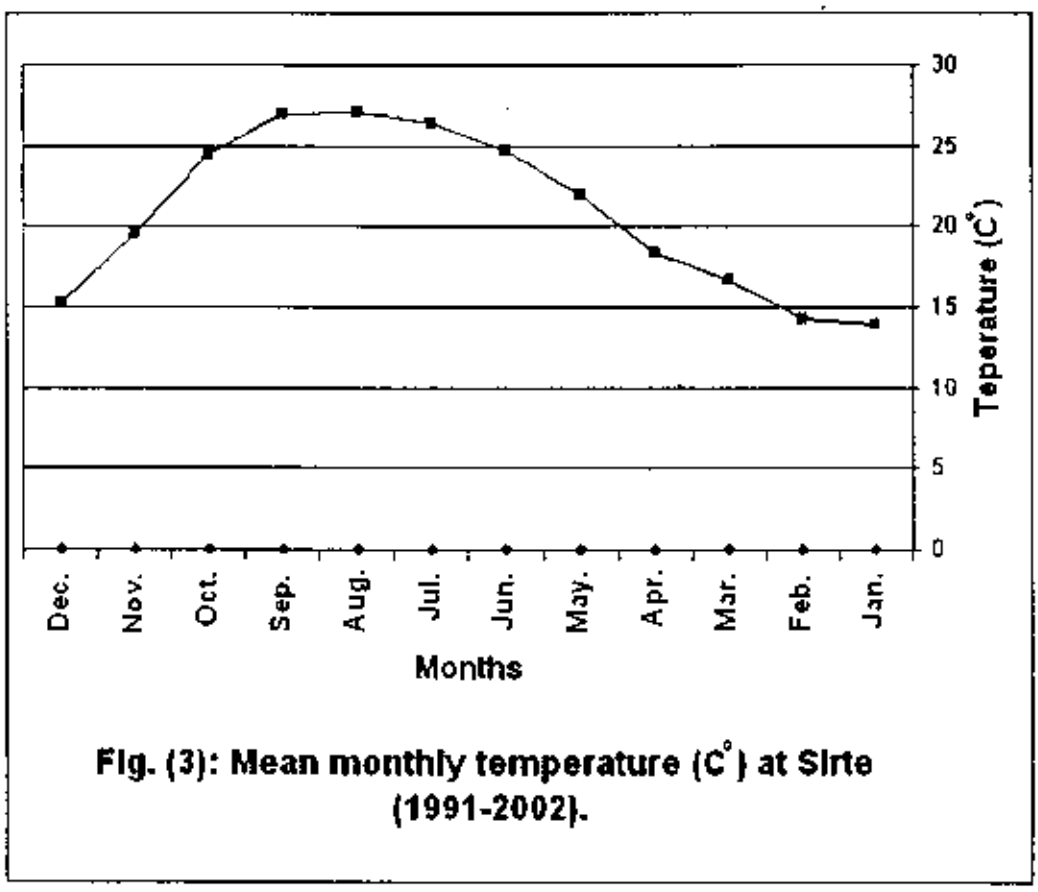


Fig. (3): Mean monthly temperature (C°) at Sirte (1991-2002).

2.3.3 Relative humidity:

Humidity in general was high in the study area. The monthly mean however, varies from 66.6% (November) to 76.2% (August). June, July, August and September are the most humid months of the year, where the relative humidity is above 72.7% as the maximum and the minimum below 67.6% in March, April, November and December (fig 4). Monthly mean relative humidity for the period between 1991 to 2002 is presented in (Table 3).

2.3.4 Wind:

The most important wind which affect the temperature of the area is the north easterly trade, the northern cold and the Ghibli wind. The north easterly trade prevail during summer. They it makes the weather mild moderating the high temperature on the coast. The northern cold wind blows during winter and a certain extent in spring and autumn as result of cyclonic depression which invade the Mediterranean basin from east to west. It brings rain and decreases temperature.

The Ghibli is sand load hot dry wind blowing from the desert. The westerly wind prevails in December, January and February, but south easterly winds also occurs frequently during this period. The average wind speed of the study area varies from 6.6 Km /h (August) to 9.2

Km/h (April) (fig. 5) and the monthly mean winds speed for the period between 1991 to 2002 in presented in (Table 4).

Table (3): Mean monthly relative humidity (%) at Sirte (1991-2002).

Months / Years	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1991	74	66	66	72	73	74	76	75	68	59	58	73
1992	72	72	65	64	73	73	76	75	68	49	71	59
1993	71	70	60	65	72	72	71	77	74	77	73	73
1994	70	65	73	71	67	61	60	63	64	74	75	78
1995	71	72	68	61	66	69	78	78	74	71	61	63
1996	64	66	66	62	68	71	74	73	68	62	68	54
1997	66	67	70	65	70	65	68	70	73	69	58	61
1998	64	70	70	69	72	74	77	76	71	68	61	65
1999	69	71	68	65	66	69	79	79	73	71	66	71
2000	80	73	68	68	65	76	75	77	68	68	68	71
2001	64	66	65	75	69	81	77	76	71	76	66	72
2002	78	76	72	75	76	79	75	76	81	74	74	71
Average	70.25	69.5	67.58	67.67	69.75	73.67	76.5	76.25	72.75	68.17	66.58	67.58

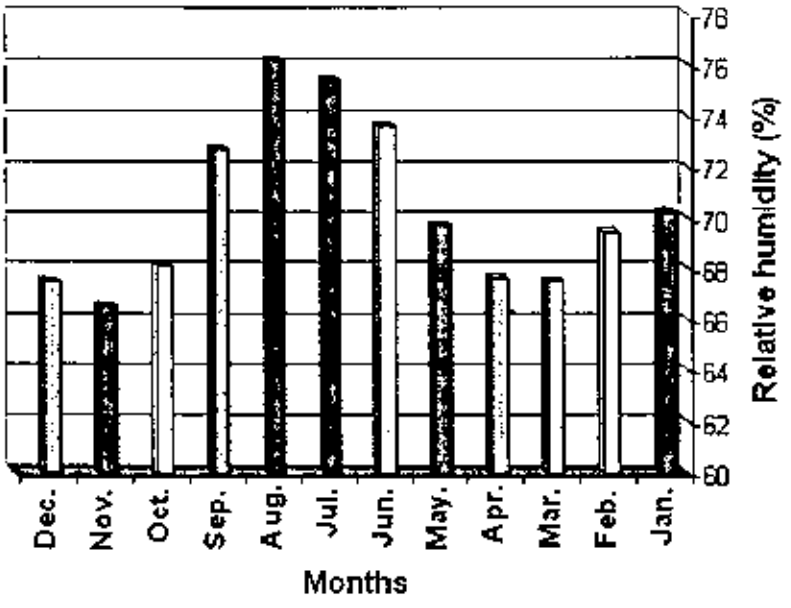


Fig. (4): Mean monthly relative humidity (%) at Sirte (1991-2002).

Table (4): Mean monthly winds speed (km/h) at Sirte (1991-2002).

Months / Years	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1991	10	11.8	11.5	11.8	11.9	9.5	12.1	12.3	11.1	11.3	11.3	13.4
1992	8	9.6	9.6	10.4	10.4	10	8.5	7.3	9.6	10.3	8.9	8.5
1993	9	9.3	10.8	10	9.3	9.3	9	7.9	9	8.6	8.3	8
1994	12.4	10.9	9.5	11.2	8.9	8.1	8.3	7.5	7.9	9.1	8.6	8.4
1995	9.5	8.1	9.3	9.6	7	7.5	6.4	6.3	7.2	6.3	8.3	6.1
1996	7	11.1	7	8.8	7.3	8.5	6.2	5.9	9.8	9.5	6.5	7.9
1997	6.7	7.7	8	8.2	7.7	7.9	8	7	7.5	6.6	7.7	7.1
1998	7.8	7	10.6	8.5	8.5	7.5	6.9	7.5	8	8.2	7.6	8.6
1999	8.1	7.6	9.2	8	6.9	7.2	6.3	5.9	6.8	4.7	7.4	7.6
2000	4.8	6.8	5.5	8.5	6.3	5.6	5.6	4.2	5.9	6.4	5.8	5.7
2001	6.9	7.6	6.3	7.9	7.3	5.8	5.4	0	0	0	8.8	8
2002	7	7	9.4	7.7	7.3	6.2	6.4	8.3	7.5	7.2	7.4	6.2
Average	8.10	8.71	8.89	9.20	8.23	7.76	7.43	6.66	7.53	7.35	8.05	7.96

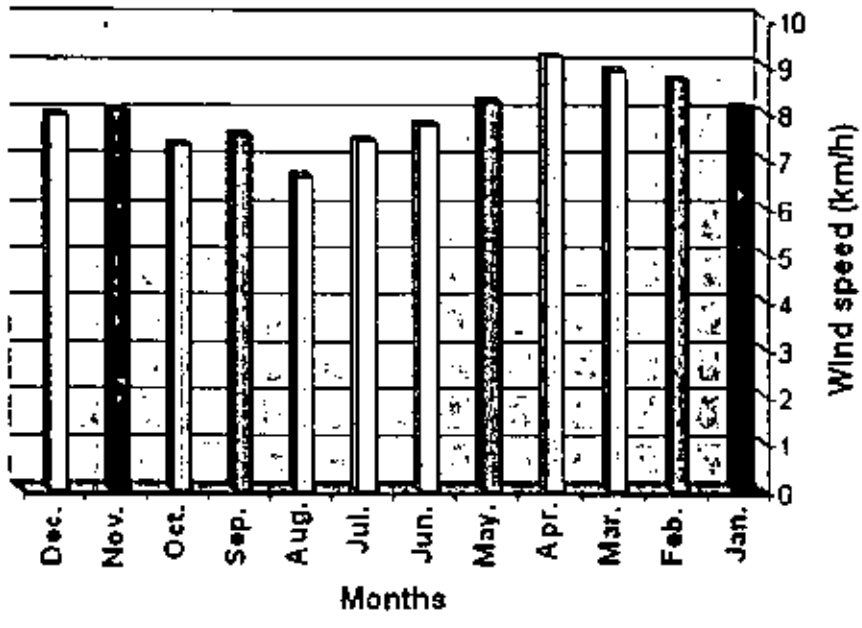


Fig. (5): Mean monthly windspeed (km/h) at Sirte (1991-2002).

Chapter III

For drying, the presser containing the specimens was placed in the sun. After that the specimens were examined individually, rearranged, transferred to fresh sheet and again tightly bonded in the presser. The specimens were changed to dry sheet every 24 or 48 hours, until they were completely dry.

After drying, specimens were flooded with poisoning solution (Mercuric chloride 15 gm, Ammonium chloride 35 gm, in 1000 ml ethanol 96%) to protect them from fungi and pests (El -Sahar, 1987). Or placed in oven at 60° C for 4-6 hours, which is enough to killed eggs of insects (Radford, *et al*, 1974).

When specimens were completely dry they were mounted on herbarium sheet with stander size (27 x 42 cm) with the aid of adhesives. On the lower right hand corner of the herbarium sheet, a label was glued and all information from the field notebook was transferred to it. First, the family of the plant was determined by the use of artificial key to the families. The genus and species was identified by the utilization of available taxonomic literature (Erteb,1994; Ali and Jafri, 1976-1977; El-Gadi, 1988-1989; Keith, 1965; Jafri and El-Gadi, 1977-1986 and Tackholm1974).

Photographs of different types of communities and plants were specimens collected from their natural environment. The specimens collected in this work have been deposited in the herbarium of Biology Department, AL-Tahady University, Sirte.

3.2 Sampling method:

For weeds survey, quadrate method was employed. Number of 25 quadrates (16 m^2 each) were taken for each of 22 Barley fields, the area of each field is between 8 to 26 hectares, with total area of 375 hectares.

Number of species and number of individuals in each species were recorded in each quadrate. The data collected from the total number of quadrates (550) taken from the study area, were used for calculation of density, distribution and frequency of weed species, according to (Smith and Smith, 2001; Thomas, 1985; McCloskey and Baker, 1998).

$$D_{ki} = \frac{\sum^{25} Z_j}{A_i}$$

where D_{ki}=density (in numbers m^{-2})of species k in field i , Z_j is the number of plants of a species in quadrate j ,and Ai is the area in m^2 of 25 quadrates in field i.

$$F_k = \frac{\sum^{n} Y_i}{n} x100$$

where F_k is the frequency for species *k*. Y_i is the presence (+)or absence (-) of species k in field i, and n is the number of quadrates of fields surveyed.

$$\%\ of\ weed\ presence = \frac{No.of\ fields\ in\ which\ species\ occurred}{Total\ No.of\ fields} x100$$

Chapter IV

Results

4.1-Enumeration of species:

A taxa collected from the study area are enumerated here. For the arrangement of families is according to Engler's syllabus der pflazen families, 12th edition (Melchoir, 1964) were used. The circumscription of the families is the same as in flora of Libya. The genera and species in each family are arranged alphabetically. Only important basionym are given. Field numbers and local name where available of each species, are provided.

Dicotyledons

Polygonaceae

Emex spinosus (L.) Campd. 40,14*
Bas. *Rumex spinosus* L.
Vern. Dors el-azouz and el-henzab
Plate 5 A

Polygonum equisetiforme Sibth. And Sm. 8,10,63*
Vern. Gurdab.
Plate 5 B

Rumex pictus Forsk. 56,107*
Vern. Hommada.
Plate 6 A

(*) numbers in the front of scientific names indicate to the number of samples in the herbarium.

Amaranthaceae

Amaranthus viridis L. 9,105,129*
*Vern.*Buzinzir

Ranunculaceae

Adonis dendata Delile 82,223*
Plate 9 A

Papaveraceae

Glaucium corniculatum (L.) Rud. 61,103*
Bas. *Chelidonium corniculatum* L.
*Vern.*Gum – aljadian
Plate 9 B

Papaver hybridum L. 53,135,177*
*Vern.*Bugraum, Garaun, Talma
Plate 10 A

Hypecoaceae

Hypecoum geslini Coss. et kral 3,28,55*
Plate 10 B

Fabaceae

Argyrolobium uniflorum (Dence.) Jaub. & Sapach ** 78 , 174*
Bas. *Cystisus uniflorus Dence.*
Vern. Ergah , Kherta

Astragalus asterias Stev , ex Ledeb. ** 12*

Astragalus boeticus L. 99 , 141*
Vern. Grambushia
Plate 13B

Astragalus caprinus L. ** 222*
vern. shaewit Erraie
Plate 14 A

Astragalus peregrinus Vahl ** 231*

Hippocrepis multisiliquosa L. 45 , 100*

Lathyrus clymenum L. 233 , 253*
Plate 16 B

Lotus cytisoides L. 98 , 245*
Plate 14 B

Lotus halophilus Boiss & Spruner. ** 133 , 189*
Vern. Nafel , Gurn al - Ghazzal

Medicago disciformis Dc. ** 126,140*

Medicago littoralis Rohde ex lois 185 , 209*
Vern. Nafal

Medicago sativa L. 16 ,191,216*
Vern. Gadb , safsafa , Berseem.
Plate 16 A

Medicago minima (L.) Bart. ** 150 , 214*
Bas. *M. polymorpha* var. *minima* L.
Vern. Nafal

Melilotus albus Medik ** 28*

Melilotus indicus (L.) All. 157 , 208*
Bas. *Trifolium (Melilotus) indica* L.
Plate 15 A

Ononis serrata Forsk.** 149*

Retama raetam (Forsk.) webb. ** 136*
Bas. *Genista raetam* Forsk..
Plate 15 B

Trigonell maritima Delile ex Poiret 173 , 188*
*vern.*Kherta , Garat

Vicia monantha Retz. 101 , 238*

Vicia sativa L. 17 , 161*
vern. Jilban.
Plate 17 A

Vicia villosa Roth ** 80 , 198*
vern. Jelbana-Hmam

Oxalidaceae

Oxalis pes-caprae L. 148 , 260*
vern. Hummdha
Plate 17 B

Geraniaceae

Erodium cicutarium (L.) L'Herit 182*
Bas. *Geranium cicutarium* L.
*Vern.*Dahmiyet el-ghazl.

Euphorbiaceae

Euphorbia terracina L. 221*
vern. lebbena

Malvaceae

Malva parviflora L.var *parviflora* 75 , 96 *
vern. Khobaiz
Plate 18 A

Malva sylvestris L. 6 , 76*
*vern.*Khobaiz , Hobbess
Plate 18 B

Thymelaeaceae

Thymelaea hirsuta (L.) Endl. ** 156,176*
Bas. *Passerina hirsuta* L.
vern. Metnan , Agaras

Cistaceae

Helianthemum lippii var. *sessiliflorum* (Desf.) Murb.** 32,71*
Bas. *Cistus lippi* L.
vern. Lerga , regig.

Apiaceae

Daucus syrticus Murb 2 , 15*

Pituranthos tortuosus (Desf.) Benth. 67,200*

Bas. *Bubon tortuosum* Desf.
vern. Gazzah.
Plate 19 A

Pseudorlaya pumila (L.) Gramde 34*
Bas. *Caucalis pumila* L.

Primulaceae

Anagallis arvensis var. *caerulea* (L.) Gouan 18,66*
Bas. *Anagallis caerulea* L.
vern. Ain Algatuus.
Plate 19 B

Convolvulaceae

Convolvulus althaeoides L. 183,190*
vern. Ullak
Plate 20 A

Convolvulus arvensis L. 110,232*
vern. Ullak
Plate 20 B

Convolvulus supinus Coss. et Kral. 24,84*
vern. Ullak
Plate 21 A

Boraginaceae

Echium angustifolium Mill. 31,47*
Vern. Henna alagrab , abat elgula

Echium horridum Batt ** 207*
Plate 21B

Gastrocotyle hispida (Forsk) Bunge ** 46*
Bas. *Anchusa hispida* Forsk .

Heliotropium ramosissimum (Lehm.) Dc. 35,38*
Bas. *Lithospermum hispidum* Forsk.
vern. tahaunna , tahenna

Lamiaceae

Ajuga iva (L.) Shreber ** 39,42*
Bas. *Teucrium iva* L.
vern. Shandgura

Salvia lanigera Poir. 212,227*
vern. Sag en naga

Teucrium davaeanum Coss. ** 70 , 102*

Solanaceae

Solanum nigrum L. var. *nigrum* ** 79,175*
vern. Anab ed. Deeb
Plate 22 A

Nicotiana glauca R.C. Graham ** 134*
vern. akkuzemusa.

Scrophulariaceae

Kickxia aegyptiaca (L.) Nabelek ssp. *aegyptiaca* 204,205*
Bas. *Antirrhinum aegyptiacum* L.
vern. Amekchin , tadjik,

Plate 22 B

Linaria laxiflora spp. *calcarlongum* Qaiser ** 241,265*

Linaria tarhunensis Pamp. ** 246*

Linaria tenuis (Viv.) Spreng. 114,181*
Bas. *Antirrhinum tenue* Viv.
Plate 23A

Orobanchaceae

Orobanche schultzii Mutel. 94,224*
Plate 23 B

Plantaginaceae

Plantago albicans L. ** 1,22,27*
vern. Aenm.
Plate 24 A

Asteraceae

Anacyclus monanthos (L.) Thell. 18,32,37*
Bas. *Tanacetum monanthos* L.
vern. Tagrefla , Serat elkabesh.
Plate 24 B

Anthemis secundiramea Biv. 115*
Plate 25 A

Artemisia monosperma Delile 104*
vern. Tguft

Calendula tripterocarpa Rupr. 52*

Carduus getulus Pomel 58 , 113*
Plate 25 B

Centurea alexandrina Delile 239*
vern. mrrier.

Centurea dimorpha Viv. 12,166*
vern. Bla'ala

Chrysanthemum coronarium L. 26,93*
vern. Gahwan
Plate 28 A

Conyza aegyptiaca (L.) Dryander ** 72,211*
Bas. *Enrigeron aegyptiacus* L.

Conyza bonariensis (L.) Cornq. ** 33*
Bas. *Erigeron bonariensis* L.
vern. Ashbet Zamora
Plate 26 A

Cynara cardunculus L.** 127*
vern. Kharshofe

Echinops galalensis Schweinf 20*
vern. Shembet Elgatoos.

Launaea resedifolia (L.) O.Kuntze 62*
Bas. *Scorzonera resedifolia* L.
vern. Adeeda.
Plate 26 B

Onopordum arenarium (Desf.) Pomel 125,234*
Bas. Carduus arenarius Desf.
vern. Libid.

Reichardia tingitana (L.) Roth. 203,147*

Bas. *Scorzonera tingitana* L.
Vern. Sahani.
Plate 28B

Rhaponticum acaule (L.) DC. 88*
Bas. *Cynara acaule* L.
Plate 27 A

Senecio gallicus Chiax 7.219,24*
vern. Daraita , Mourare.
Plate 27 B

Sonchus oleraceus L.** 256*
vern. Tefaf.

Monocotyldons

Liliaceae

Asphodelus fistulosus L. 52*
vern. Lchiat ettaes
Pate 29 A

Muscari comosum (L.) Mill. ** 11,77*
Bas. *Hyacithus comosus* L.
vern. Kelhout , Katout

Scilla Preuviana L. ** 19*
vern. Possaita
Plate 29B

Alliaceae

Allium subhirsutum L. 17,51,59*

vern. Ghazul.

Allium nigrum L. ** 206*

Poaceae

Avena barbata Pott ex Link 47,51*
Plate 30 A

Bromus rigidus Roth. 30,44,179*
Plate 30 B

Cutandia dichotoma (Forsk.) Trabut 7,41*
Bas. *Festuca dichotoma* Forsk
vern. Zewahn , bu'rukba
Plate 31A

Cynodon dactylon (L.) Pers. ** 23,83*
Bas. *Panicum dactylon* L.
vern. Najem , Najieel

Hordeum murinum L. ssp. *leporinum* (link.)Arcang. 25,242*
Plate 32

Lolium rigidum Gaud. 124,158,23*
vern. Bomanjor.

Phalaris minor Retz. 4,121,228*
vern. zewan
Plate 31 B

Stipa capensis Thunb. ** 95,10*
vern. Behma

4.2-Life form spectrum:

A total of 105 species recorded in the study area within 460 hectares were described and classified into life forms according to Raunkair's classification based on height of perennating bud from the ground (Zahran, 1989; Goldsmith and Harrison, 1976).

The biological spectrum for the study area (Table 12) is summarized in the following types as class.

4.2.1- Class I Phanerophytes:

There were 3 species in this class. Where the perennating buds or shoot apices borne on aerial shoot at varying heights at least 25 cm above the ground. They included species: *Nicotiana glauca*, *Retama raetam* and *Thymelaea hirsuta*.

4.2.2- Class II Chamaephytes:

There were 29 species in this class. These are woody or semiwoody perennials buds or shoot apices borne close to the ground but less than 25 cm from the surface. They included species such as: *Matthiola fruticulosa*, *Polygonum equisetiforme*, *Argyrolobium uniflorum*, *Astragalus caprinus*, *Malva sylvestris* , *Convolvulus althaeoides Echium angustifolum* , *Heliotropium ramosissimum* and *Cynara cardunculus* .

4.2.3-Class III Hemicryptophytes:

This smallest classes containing only one species *Cynodon dactylon*.In this class the perennating buds are at the surface of the ground.

4.2.4-Class IV Cryptophytes:

There were 6 species in this class. The perennating buds of this class is below ground level. All species collected from the area were produce rhizome, bulbs or tubers. They included species : *Oxalis pes-carpae, Asphodelus fistulosus, Muscari comosum, Scilla peruviana, Allium subhirsutum* and *Allium nigrum.*

4.2.5-Class V Therophytes:

This is the largest of the five classes, and contains 66 species. Most of the species are annual and completed their life cycle from seed to seed during the favourable season of the year,and survive unfavourable seasons as seeds. They included species such as: *Emex spinosus,Rumex pictus, Lolium rigidum, Bromus rigidus, Cutandia dichotoma, Calendula tripterocarpa, Linaria tenuis, Anagallis arvensis, Pseudorlaya pumila, Papaver hybridum, Vaccaria pyramidata, Adonis dentata, Amaranthus viridis, Sisymbrium irio, Brassica tournefortii, Reseda alba, Melilotus albus, Vicia sativa, Senecio gallicus, Anacyclus monanthos, Malva parviflora, Erodium cicutarium, Trigonella maritima, Salsola kali* and *Solanum nigrum.*

From the results obtained in this study, the biological spectrum of the species is shown in (fig. 6). It shows the presence of 62.86% Therophytes, 27.62% Chamaephytes, 5.71% Cryptophytes, 2.86% Phanerophytes and 0.95% Hemicryptophytes.

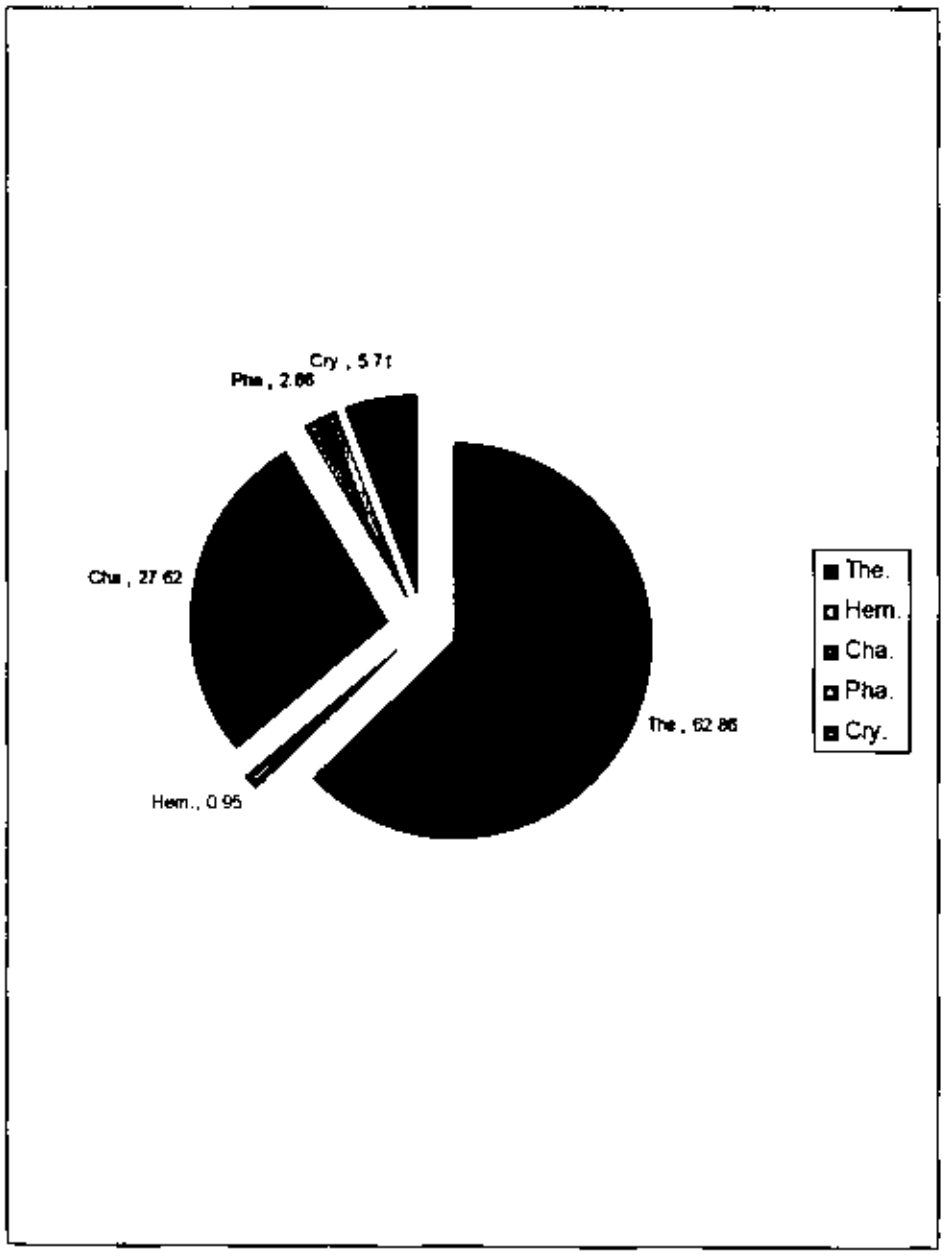


Fig.(6) : diagram shown the biological spectrum of the species in the study area.

Table (5) : Floristic composition of the study area.

Phanerophytes

No	Name of species	Family	Flowering time
1	*Nicotina glauca*	Solanaceae	All the year
2	*Retama raetam*	Fabaceae	Oct .- Mar.
3	*Thymelaea hirsuta*	Thymelacaccae	Oct .- Mar.

Chamaephytes

No	Name of species	Family	Flowering time
1	*Ajuga iva*	Lamiaceae	Mar. – Apr.
2	*Argyrolobium uniflorum*	Fabaceae	Mar. – Apr.
3	*Artemisia monosperma*	Asteraceae	
4	*Astragalus caprinus*	Fabaceae	All most the year round
5	*Centurea dimorpha*	Asteraceae	Mar. – June
6	*Convolvulus althaeoides*	Convolvulaceae	Mar. – June
7	*Convolvulus arvensis*	Convolvulaceae	Mar.-Aug.
8	*Convolvulus supinus*	Convolvulaceae	Mar.- June
9	*Cynara cardunculus*	Asteraceae	Apr. – May
10	*Echinops galalensis*	Asteraceae	May – June
11	*Echium angustifolium*	Boraginaceae	Jan. - Mar.
12	*Echium horridum*	Boraginaceae	Jan. – Mar.
13	*Euphorbia terracina*	Euphorbiaceae	Jan. – Mar.
14	*Helianthemum lippii*	Cistaceae	Feb. – Apr.
15	*Heliotropium ramosissimum*	Boraginaceae	Dec. –Apr.
16	*Kickxia aegyptiaca*	Scrophulariaceae	Nov. – May
17	*Launaea resedifolia*	Asteraceae	Throughout the year
18	*Lotus cytisoides*	Fabaceae	Mar. – June

Table (5): Cont.

19	*Malva sylvestris*	Malvaceae	Mar. – May
20	*Matthiola fruticulosa*	Brassicaceae	Jan. – Apr.
21	*Medicago sativa*	Fabaceae	Mar. – June
22	*Onopordum arenarium*	Asteraceae	Mar.- June
23	*Rhaponticum acaule*	Asteraceae	Feb. – Apr.
24	*Pituranthos tortuosus*	Apiaceae	Feb. – June
25	*Plantago albicans*	Plantaginaceae	Feb. – July
26	*Polygonum equisetiforme*	Polygonaceae	All most through the year
27	*Riechardia tingitana*	Asteraceae	Throught the year
28	*Salvia lanigera*	Lamiaceae	Jan. –Apr.
29	*Teucrium davaeanum*	Lamiaceae	Apr. – July

Hemicryptophytes

No	Name of species	Family	Flowering time
1	*Cynodon dactylon*	Poaceae	July – Oct.

Table (5): Cont.

Cryptophytes

No	Name of species	Family	Flowering time
1	*Allium nigrum*	Alliaceae	Mar. – Apr.
2	*Allium subhirsutum*	Alliaceae	Feb. – May
3	*Asphodelus fistulosus*	Liliaceae	Mar. – May
4	*Muscari comosum*	Liliaceae	Mar. –June
5	*Oxalis pes-caprae*	Oxlidaceae	Jan. – Apr.
6	*Sicilla peruviana*	Liliaceae	Jan. –Apr.

Therophytes

No.	Name of species	Family	Flowering time
1	*Adonis dentata*	Ranunculaceae	Feb. – Apr.
2	*Amaranthus viridis*	Amaranthaceae	Feb. – Nov.
3	*Anacyculus monanthos*	Asteraceae	Feb. – May
4	*Anagallis arvensis*	Primulaceae	Jan. – June
5	*Anthemis secundiramea*	Asteraceae	Mar. – Apr.
6	*Astragalus asterias*	Fabaceae	Jan. – Mar.
7	*Astragalus boeticus*	Fabaceae	Jan.- Mar.
8	*Astragalus peregrnus*	Fabaceae	Feb. – Mar.
9	*Avena barbata*	Poaceae	Feb. – Mar.
10	*Bassia muricata*	Chenopodiaceae	Feb. – Aug.
11	*Brassica tournefortii*	Brassicaceae	Jan. – Mar.
12	*Bromus rigidus*	Poaceae	Mar. – Jan.
13	*Calendula tripterocarpa*	Asteraceae	Apr. – May
14	*Carduus getulus*	Asteraceae	Feb. – May
15	*Centurea alexandarina*	Asteraceae	Apr. – May

Table (5): Cont.

16	*Chenopodium murale*	Chenopodiaceae	Feb. – May
17	*Chrysanthemum coronarium*	Asteraceae	Mar. – June
18	*Conyza aegyptiaca*	Asteraceae	May – Oct.
19	*Conyza bonariensis*	Asteraceae	July – Oct.
20	*Cutandia dichotoma*	Poaceae	Mar. – Apr.
21	*Daucus syrticus*	Apiaceae	Feb. – May
22	*Diplotaxis muralis*	Brassicaceae	Feb. – Mar.
23	*Emex spinosus*	Polygonaceae	Dec. – Apr.
24	*Enarthrocarpus clavatus*	Brassicaceae	Feb. – Apr.
25	*Erodium cicutarium*	Geraniaceae	Mar. – Apr.
26	*Gastrocotyle hispida*	Boraginaceae	Feb. – Apr.
27	*Glaucium corniculatum*	Papaveraceae	Feb. – May
28	*Hordeum murinum*	Poaceae	Feb. – Apr.
29	*Hippocrepis multisiliquosa*	Fabaceae	Feb. – May
30	*Hussonia pinnata*	Brassicaceae	Feb. – May
31	*Hypecoum geslini*	Hypecoaceae	Feb. – may
32	*Lathyrus clymenum*	Fabaceae	Feb. –Apr.
33	*Linaria laxiflora*	Scrophulariaceae	Feb. – Apr.
34	*Linaria tarhunensis*	Scrophulariaceae	Feb. – Apr.
35	*Linaria tenuis*	Scrophulariaceae	Mar. – Apr.
36	*Lobularia libyca*	Brassicaceae	Jan. – Apr.
37	*Lolium rigidum*	Poaceae	Mar. – Apr.
38	*Lotus halophilus*	Fabaceae	Jan. – Apr.
39	*Malva parviflora*	Malvaceae	Mar. – May
40	*Matthiola longipetala*	Brassicaceae	Jan. – Apr.
41	*Medicago disciformis*	Fabaceae	Jan. – Mar.
42	*Medicago littoralis*	Fabaceae	Feb. – May
43	*Medicago minima*	Fabaceae	Feb. – Apr.
44	*Melilotus albus*	Fabaceae	Feb. – May
45	*Melilotus indicus*	Fabaceae	Feb. – May
46	*Mesembryanthemum crystallinum*	Aizoaceae	Apr. – Aug.
47	*Ononis serrata*	Fabaceae	Mar. – May
48	*Orobanche schultzii*	Orobanchaceae	
49	*Papaver hybridum*	Papaveraceae	Feb. – Apr.
50	*Paronychia arabica*	Illecebraceae	Feb. – July
51	*Phalaris minor*	Poaceae	Apr. – July
52	*Pseudorlaya pumila*	Apiaceae	Feb. – Apr.

Table (5): Cont.

53	*Reseda alba*	Resedaceae	Feb. – Apr.
54	*Rumex pictus*	Polygonaceae	Feb. - May
55	*Salsola kali*	Chenopodiaceae	Sep. – Nov.
56	*Senecio gallicus*	Asteraceae	Jan. – Apr.
57	*Silene cerastioides*	Caryophyllaceae	Mar. – May
58	*Sisymbrium irio*	Brassicaceae	Feb. – May
59	*Solanum nigrum*	Solanaceae	Throughout the year
60	*Sonchus oleraceus*	Asteraceae	Throughout the year
61	*Stipa capensis*	Poaceae	Feb. – June
62	*Trigonella maritima*	Fabaceae	Feb. – June
63	*Vaccaria pyramidata*	Caryophyllaceae	Feb. – May
64	*Vicia monantha*	Fabaceae	Mar. – May
65	*Vicia sativa*	Fabaceae	Jan. – Apr.
66	*Vicia villosa*	Fabaceae	Jun. – Apr.

Density:

The highest weed densities in the study area were for *Lolium rigidum, Melilotus indicus, Emex spinosus,Cutandia dichotoma and Bromus rigidus.*

Lolium rigidum (Poaceae) occurred in all the studied fields in much greater density than the other species of weeds in the study area, with densities as high as 52.16 plants/m² (Table 6) , in some fields, and an average of 24.96 plants/m² (Table 7). in the whole area.

Melilotus indicus (Fabaceae) also appeared in all fields at an average density of about 19.29 plants/m² (Table 7). The density varied in different fields, it was between 1.78-46.27 plants/m² (Table 6).

Emex spinosus (Polygonaceae) ranks third in terms of density, it appeared in 21 out of 22 fields at an average density of 5.7 plants/m² (Table 7).The density in the fields range between 0.00-12.32 plants/m² (Table 6).

Cutandia dichotoma (Poaceae) occurred in 13 fields. It comes fourth in density at an average of 3.68 plants/m² (Table 7).The range of density in different fields was between 0.00-14.56 plants/m² (Table 6).

Bromus rigidus (Poaceae) appeared in 15 fields. At an average density of 3.61 plants/m² (Table 7). The range of density was between 0.00- 32.45 plants/m² (Table 6).

The remaining 66 weed species recorded on (Table 7) occurred at average densities less than 1 plant/m². The density of each species varied from one field to another (Table 6).

Frequency:

The most frequently occurring weeds in the study area were *Melilotus indicus* , *Lolium rigidum* ,*Emex spinosus* , *Rhaponticum acaule and Hussonia pinnata.*

Melilotus indicus occurred in all studied fields, with frequency as high as 96% (Table 8). And an average of 62.36% in the whole area (Table 9).

Lolium rigidum appeared in all fields at an average frequency of about 57.27% (Table 9).The frequency varied in different fields, it was between 4-100% (Table 8).

Emex spinosus occurred in 21 fields. It comes third in frequency at an average of 56.18% (Table 9). The range of frequency in different fields was between 0.00-100% (Table 8).

Rhaponticum acaule (Asteraceae) appeared in all studied fields at an average frequency of about 38% (Table 9). The range of frequency in different fields was between 12-64% (Table 8).

Hussonia pinnata (Brassicaceae) appeared in all fields at an average frequency of 33.82% (Table 9). The frequency were different in the fields. The range of frequency was between 8-80% (Table 8).

Distribution :

The highest distribution among the weeds were, *Lolium rigidum, Melilotus indicus, Rhaponticum acaule, Hussonia pinnata, Senecio gallicus* and *Brassica tournefortii* with 100% distribution (present in all fields) (Table 10).

In addition distribution of *Emex spinosus* was 95.45% (it appeared in 21 out of 22 feilds), *Centurea dimorpha* was 90.91% (it appeared in 20 out of 22), *Malva parviflora* was 86.36% (it appeared in 19 out of 22 fields), *Anagallis arvensis*, and *Reichardia tingitana* were 81.82% (they appeared in 18 out of 22 fields), *Launaea resedifolia* and *Chrysanthemum coronarium* were 77.72% (they appeared 17 out of 22 fields). *Astragalus boeticus* was 72.72% (present in 16 fields).

The species with low distribution included; *Oxalis pes-carpae, Lobularia libyca, Mesembryanthemum crystallinum, Carduus getulus, Vicia monantha, Centurea alexandarina, Convolvulus althaeoides, Artemisia monosperma, Salvia lanigera, Erodium*

cicutarium, *Anacyclus monanthos*, and *Bassia muricata* the percent of distribution was 4.55% for each species (each species found in one field only).

Table(6): Density (plant/ m²) of weed species in barley fields in GMR agriculture project (Sirte).

No	Species \ Fields	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	*Lolium rigidum*	37.88	35.61	40.16	7.68	9.8	22.4	30.56	8.8	12.8	52.16	34.90	6	6.65	43.36	34.24	45.92	27.2	22.46	17.61	27.8	26.8	15.36
2	*Meliotus indicus*	16.30	6.16	16.63	6.63	23.36	25.92	20	31.68	39.2	13.28	23.62	4.4	8.12	24.96	27.30	16.08	7.26	28.6	46.27	24.3	1.78	3.48
3	*Emex spinosus*	0.0	4.06	4.6	9.87	10.9	9.29	3.37	12.32	6.7	6.16	4.16	3.27	6.37	1.6	6.16	0.42	6.46	11.64	6.64	4.30	4.6	3.12
4	*Cutandia dichotoma*	7.04	6.37	4.8	0.0	3.2	3.52	0.96	1.12	0.0	0.0	2.66	7.72	0.0	14.06	0.0	8	12.8	0.0	0.0	0.0	0.0	6.44
5	*Bromus rigidus*	7.26	14.80	11.43	0.0	0.0	0.0	0.0	0.64	1.44	0.012	1.62	0.01	0.0	0.68	3.32	3.22	0.0	1.92	0.36	0.0	32.46	0.052
6	*Anagallis arvensis*	1.01	0.0	0.04	2.0	0.03	0.0	0.007	0.03	0.0	0.01	0.0	6.66	6.4	0.017	0.067	0.38	0.56	0.106	0.04	0.16	0.02	0.37
7	*Malva parviflora*	0.36	3.93	0.72	1.13	0.64	1.28	2.16	1.28	1.02	0.84	0.82	0.002	0.24	0.0	0.097	0.0	0.06	0.06	0.06	0.16	0.38	0.0
8	*Astragalus boeticus*	0.0	0.56	1.64	0.0	0.008	0.0	0.035	0.32	0.48	0.0	0.0	0.09	0.01	0.0	0.48	0.1	0.06	0.06	0.1	0.16	0.41	0.14
9	*Avena barbata*	0.0	0.04	1.05	0.0	0.0	0.34	0.125	0.0	0.0	0.06	0.32	0.0	0.0	0.4	0.136	0.03	0.08	0.34	0.19	0.16	0.0	0.3
10	*Pseudorlaya pumila*	2.44	0.003	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.022	0.84	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.16	0.0
11	*Hypecoum geslini*	0.0	0.0	0.0	0.01	0.0	0.006	0.0	0.0	0.01	0.0	3.7	0.0	0.0	0.0	0.02	0.0	0.01	0.0	0.0	0.04	0.0	0.012
12	*Hussonia pinnata*	1.13	0.17	0.26	0.16	0.06	0.18	0.08	0.046	0.02	0.227	0.206	0.1	0.03	0.04	0.06	0.21	0.12	0.205	0.08	0.07	0.092	0.11
13	*Centaurea dimorpha*	0.09	0.29	0.1	0.3	0.32	0.21	0.092	0.29	0.48	0.172	0.117	0.01	0.21	0.17	0.137	0.16	0.09	0.0	0.13	0.08	0.0	0.06
14	*Trigonela maritime*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
15	*Medicago littoralis*	0.08	0.0	0.0	0.64	0.0	0.00	0.48	0.0	0.0	0.0	0.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*Rhaponticum acaule*	0.032	0.0	0.06	0.15	0.095	0.026	0.017	0.077	0.04	0.04	0.04	0.24	0.08	0.08	0.085	0.18	0.11	0.142	0.17	0.08	0.14	0.127
17	*Senecio gallicus*	0.266	0.42	0.12	0.03	0.055	0.06	0.037	0.002	0.04	0.07	0.012	0.03	0.03	0.03	0.04	0.002	0.02	0.14	0.21	0.09	0.12	0.068
18	*Launaea resedifolia*	0.092	0.32	0.11	0.08	0.13	0.032	0.06	0.06	0.08	0.21	0.12	0.04	0.1	0.08	0.03	0.0	0.0	0.012	0.0	0.0	0.012	0.0
19	*Brassica tournefortii*	0.08	0.02	0.06	0.04	0.008	0.046	0.036	0.04	0.02	0.002	0.056	0.04	0.03	0.022	0.13	0.11	0.1	0.007	0.027	0.08	0.26	0.2
20	*Vicia sativa*	0.087	0.09	0.33	0.0	0.0	0.0	0.0	0.07	0.09	0.022	0.112	0.0	0.0	0.0	0.03	0.016	0.0	0.0	0.0	0.13	0.08	0.33
21	*Sisymbrium irio*	0.0	0.0	0.0	0.0	0.0	0.41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	00.0	00.0	0.0	0.0	0.0
22	*Chrysanthemum coronarium*	0.047	0.025	0.003	0.0	0.036	0.17	0.092	0.017	0.0	0.0	0.04	0.0	0.08	0.022	0.01	0.0	0.07	0.002	0.01	0.09	0.05	0.037
23	*Reichardia tingitana*	0.0	0.0	0.045	0.02	0.03	0.032	0.022	0.0	.003	0.04	0.012	0.0	0.01	0.025	0.06	0.102	0.08	0.017	0.06	.002	0.007	0.06
24	*Enarthrocarpus clavatus*	0.0	0.0	0.17	0.04	0.006	0.03	0.14	0.022	0.01	0.0	0.0	0.09	0.0	0.005	0.015	0.0	0.0	0.007	0.0	0.0	0.026	0.0

Table(7): The averuges density of different weed species in barley fields in GMR project (Sirte).

NO.	WEED SPECIES	Average density (plant/m²)
1	*Lolium rigidum*	24.96
2	*Melilotus indicus*	19.29
3	*Emex spinosus*	5.70
4	*Cutandia dichotoma*	3.68
5	*Bromus rigidus*	3.61
6	*Anagallis arvensis*	0.78
7	*Malva parviflora*	0.67
8	*Astragalus boeticus*	0.20
9	*Avena barbata*	0.19
10	*Pseudorlaya pumila*	0.19
11	*Hypecoum geslini*	0.17
12	*Hussonia pinnata*	0.16
13	*Centurea dimorpha*	0.16
14	*Trigonella maritima*	0.12
15	*Medicago littoralis*	0.10
16	*Rhaponticum acaule*	0.09
17	*Senecio gallicus*	0.07
18	*Launaea resedifolia*	0.067
19	*Brassica tournefortii*	0.063
20	*Vicia sativa*	0.061
21	*Sisymbrium irio*	0.037
22	*Chrysanthemum coronarium*	0.036
23	*Reichardia tingitana*	0.028
24	*Enarthrocarpus clavatus*	0.025
25	*Malva sylvestris*	0.022
26	*Linaria tenuis*	0.020
27	*Chenopodium murale*	0.018
28	*Papaver hybridum*	0.014
29	*Lotus cytisoides*	0.014
30	*Hordeum murinum*	0.012
31	*Allium subhirsutum*	0.010
32	*Anthemis secundiramea*	0.0097
33	*Salsola kali*	0.0087

Table (7) : Cont.

34	*Oxalis pes-caprae*	0.0084
35	*Convolvulus supinus*	0.0079
36	*Rumex pictus*	0.0074
37	*Convolvulus arvensis*	0.0073
38	*Phalaris minor*	0.0067
39	*Onopordum arenarium*	0.0052
40	*Polygonum equistiformes*	0.0048
41	*Amaranthus viridis*	0.0038
42	*Adonis dentata*	0.0032
43	*Hippocrepis multisiliquosa*	0.0032
44	*Heliotropium ramosissimum*	0.0031
45	*Silene cerastioides*	0.0031
46	*Orobanche schultzii*	0.0030
47	*Medicago sativa*	0.0029
48	*Mesembryanthemum crystallinum*	0.0027
49	*Vicia monantha*	0.0020
50	*Bassia muricata*	0.0020
51	*Carduus getulus*	0.0017
52	*Kickxia eagyptiaca*	0.0013
53	*Centurea alexandarina*	0.0013
54	*Calendula tripterocarpa*	0.0013
55	*Matthiola fruticulosa*	0.0013
56	*Vaccaria pyramidata*	0.0013
57	*Euphorbia terrancia*	0.0012
58	*Convolvulus althaeoides*	0.0011
59	*Artemisia monosperma*	0.0011
60	*Lathyrus clymenum*	0.0010
61	*Glaucium corniculatum*	0.0010
62	*Salvia lanigera*	0.0010
63	*Diplotaxis muralis*	0.00064
64	*Daucus syrticus*	0.00057
65	*Echium angustifolium*	0.00041
66	*Lobularia libyca*	0.00045
67	*Asphodelus fistulosus*	0.00032
68	*Erodium cicutarium*	0.00032
69	*Pituranthos tortuosus*	0.00032
70	*Echinops galalensis*	0.00018
71	*Anacyclus monanthos*	0.00010

Table(8): Frequency (%) of weed species in barley fields in GMR agriculture project (Sirte).

No.	Species \ Fields	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	*Melilotus indicus*	72	56	64	48	48	56	60	80	96	60	64	48	36	80	84	36	64	68	80	72	24	36
2	*Lolium rigidum*	92	100	92	24	4	56	60	20	32	100	100	24	16	100	64	84	56	60	32	48	44	36
3	*Emex spinosus*	0.0	28	64	64	52	72	56	72	40	56	56	40	44	28	68	28	68	100	40	76	68	96
4	*Rhaponticum acaule*	24	44	32	40	48	12	20	32	32	36	16	56	44	44	20	40	48	48	60	36	40	64
5	*Hussonia pinnata*	80	56	40	36	20	32	16	16	8	36	44	32	16	16	32	68	40	20	28	28	36	44
6	*Launea resedifolia*	28	92	44	36	32	16	40	32	36	64	60	32	60	52	16	0.0	0.0	12	0.0	0.0	12	0.0
7	*Senecio gallicus*	68	60	28	12	20	2 0	20	4	28	20	12	16	20	36	32	4	20	24	56	32	16	40
8	*Brassica tournefortii*	48	20	32	20	4	24	24	4	8	4	32	16	4	16	56	60	56	4	24	56	24	48
9	*Malva parviflora*	72	56	40	44	28	36	60	24	24	20	16	0.0	16	0.0	24	0.0	16	12	20	28	36	0.0
10	*Centurea dimorpha*	12	32	28	40	28	20	8	28	36	28	32	4	12	44	32	24	24	0.0	20	16	0.0	20
11	*Cutandia dichotoma*	52	72	36	0.0	20	20	8	8	0.0	0.0	24	24	0.0	100	0.0	32	60	0.0	0.0	0.0	0.0	20
12	*Bromus rigidus*	48	100	72	0.0	0.0	0.0	0.0	4	8	4	20	4	0.0	8	44	20	0.0	16	16	0.0	88	4
13	*Anagallis arvensis*	24	0.0	16	24	4	0.0	20	12	0.0	8	0.0	48	32	20	20	44	40	8	4	24	16	48
14	*Reichardia tingitana*	0.0	0.0	16	16	16	16	20	0.0	4	8	8	0.0	8	12	48	52	44	16	36	16	8	24
15	*Astragalus boeticus*	0.0	20	28	0 0	4	0.0	8	4	4	0.0	0.0	12	8	0.0	8	20	16	20	20	28	28	32
16	*Avena barbata*	0.0	8	36	0.0	0.0	8	12	0.0	0.0	12	4	0.0	0.0	20	12	4	8	16	20	16	0.0	24
17	*Chrysanthemum coronarium*	24	16	4	0.0	4	48	16	4	0.0	0.0	4	0.0	8	4	4	0.0	24	4	4	28	28	12
18	*Malva sylvestris*	0.0	16	4	0.0	12	16	16	12	0.0	4	0.0	12	0.0	0.0	12	12	16	8	4	0.0	12	4
19	*Allium subhirsutum*	0.0	4	00.0	16	20	12	8	24	0.0	4	0.0	0.0	4	8	8	16	8	0.0	12	4	0.0	16
20	*Vicia sativa*	4	4	32	0.0	0.0	0.0	0.0	8	8	8	8	0.0	0.0	0.0	4	4	0.0	0.0	0.0	20	12	40
21	*Enarthrocarpus clavatus*	0.0	0.0	16	16	4	16	8	16	8	0.0	0.0	16	0.0	4	4	0.0	0.0	4	0.0	0.0	12	0.0
22	*Papaver hybridum*	8	0.0	4	4	0.0	0.0	0.0	0.0	0.0	0.0	4	12	0.0	16	12	0.0	8	0.0	4	12	0.0	12
23	*Onopordum arenarium*	12	0.0	0.0	8	16	4	4	0.0	0.0	0.0	0.0	0.0	12	0.0	0.0	0.0	12	0.0	8	16	0.0	0.0
24	*Pseudorlaya pumila*	28	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	8	20	16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0

Table (8): Cont.

No	Species \ Fields	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
25	*Linaria tenuis*	12	0.0	4	0.0	0.0	4	0.0	4	4	0.0	0.0	20	0.0	4	4	0.0	4	0.0	4	8	0.0	0.0
26	*Hypecoum geslini*	0.0	0.0	0.0	4	0.0	4	0.0	0.0	8	0.0	36	0.0	0.0	0.0	4	0.0	4	0.0	0.0	8	0.0	4
27	*Anthemis secundiramea*	0.0	0.0	4	4	8	4	4	0.0	0.0	0.0	4	0.0	0.0	8	12	0.0	8	4	0.0	0.0	0.0	4
28	*Salsola kali*	4	0.0	0.0	0.0	0.0	24	0.0	0.0	4	0.0	8	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	8
29	*Lotus cystisoides*	24	4	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	4
30	*Adonis dentate*	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	4	0.0	0.0	24	0.0	4	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0
31	*Polygonum equiseliformes*	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	4	8	12	4	0.0	0.0	0.0	0.0
32	*Silene cerastoides*	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	8	0.0	8	0.0	0.0	8	0.0	0.0
33	*Chenopodium murale*	0.0	0.0	0.0	0.0	0.0	8	0.0	4	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	4	4	4	4	4	0.0
34	*Convolvulus supinus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	8	4	0.0	8	0.0	0.0	0.0
35	*Phalaris minor*	0.0	0.0	12	0.0	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	*Orobanche schultzii*	0.0	0.0	0.0	0.0	0.0	4	4	4	4	0.0	4	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	*Vaccaria pyramidata*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	8	0.0	0.0	0.0	0.0	4	4	4	0.0	0.0	0.0	0.0
38	*Rumex pictus*	0.0	8	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	8	0.0
39	*Convolvulus arvensis*	0.0	0.0	0.0	16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	4
40	*Hippocrepis multisiliquose*	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	8	4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
41	*Medicago sativa*	0.0	0.0	0.0	0.0	4	0.0	0.0	4	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.00	0.0	0.0
42	*Matthiola fruticulose*	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0
43	*Medicago littoralis*	12	0.0	0.0	4	0.0	0.0	4	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	*Trigonella maritima*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0
45	*Sisymbrium mo*	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	*Hordeum murinum*	0.0	0.0	12	0.0	0.0	0.0	0.0	0.0	00.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	*Oxalis pes-carpee*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16
48	*Heliotropium ramosissimum*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table (8): Cont.

No	Species \ Fields	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
49	*Glaucium corniculatum*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	4	0.0	0.0	4	0.0	4
50	*Diplotaxis muralis*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	4	0.0	4	0.0	0.0	0.0	0.0
51	*Amaranthus viridis*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	4	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0
52	*Kickxia aegyptica*	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0
53	*Calendula tripterocarpae*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0
54	*Euphorbia terracina*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	*Lobularia libyca*	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	*Pituranthos tortuosus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	4	0.0	0.0	0.0	0.0
57	*Mesembryanthemum crystallinum*	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	*Carduus getulus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	*Lathyrus clymenum*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	4
60	*Daucus syrticus*	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
61	*Echium angustifolium*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
62	*Asphodelus fistulosus*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	*Echinops galalensis*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	*Vicia monantha*	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	*Centurea alexandanna*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12	0.0	0.0	0.0
66	*Convolvulus althaeoides*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	*Artemisia monosperma*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	*Salvia lanigra*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69	*Erodium cicutarium*	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70	*Anacyclus monanthos*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71	*Bassia muncata*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table(9): The averages frequency of different weed species in barley fields in GMR project (Sirte).

NO.	WEED SPECIES	AVAREGE FREQUENCY (%)
1	*Melilotus indicus*	62.36
2	*Lolium rigidum*	57.27
3	*Emex spinosus*	56.18
4	*Rhaponticum acaule*	38
5	*Hussonia pinnata*	33.82
6	*Launaea resedifolia*	30.18
7	*Senecio gallicus*	26.73
8	*Brassica tournefortii*	26.55
9	*Malva parviflora*	26
10	*Centurea dimoroha*	22.18
11	*Cutandia dichotoma*	21.64
12	*Bromus rigidus*	20.73
13	*Anagallis arvensis*	18.73
14	*Reichardia tingitana*	16.73
15	*Astragalus boeticus*	11.82
16	*Chrysanthemum coronarium*	10.73
17	*Avena barbata*	9.09
18	*Allium subhirsutum*	7.45
19	*Malva sylvestris*	7.27
20	*Vicia sativa*	6.91
21	*Enarthrocarpus clavatus*	5.64
22	*Papaver hybridum*	4.36
23	*Onopordum arenarium*	4.18
24	*Pseudorlava pumila*	3.82
25	*Hypecoum geslini*	3.27
26	*Linaria tenuis*	3.09
27	*Anthemus secundiramea*	2.91
28	*Salsola kali*	2.55
29	*Adonis dentata*	2.18
30	*Lotus cytisoides*	1.82
31	*Polygonum equistiformes*	1.64
32	*Chenopodium murale*	1.64
33	*Hippocrepis multisiliquosa*	1.64

Table (9) :Cont.

34	*Silene cerastioides*	1.45
35	*Convolvulus supinus*	1.09
36	*Phalaris minor*	1.09
37	*Orobanche schultzii*	1.09
38	*Vaccaria pyramidata*	1.09
39	*Convolvulus arvensis*	1.09
40	*Medicago littoralis*	1.09
41	*Rumex pictus*	0.91
42	*Medicago sativa*	0.91
43	*Matthiola fruticulosa*	0.91
44	*Trigonella maritima*	0.73
45	*Sisymbrium irio*	0.73
46	*Hordeum murinum*	0.73
47	*Oxalis pes-caprae*	0.73
48	*Heliotropium ramosissimum*	0.73
49	*Glaucium corniculatum*	0.73
50	*Diplotaxis muralis*	0.73
51	*Amaranthus viridis*	0.55
52	*Kickxia aegyptiaca*	0.55
53	*Calendula tripterocarpa*	0.55
54	*Euphorbia terrancia*	0.55
55	*Pituranthos tortuosus*	0.55
56	*Centurea alexandarina*	0.55
57	*Mesembryanthemum crystallinum*	0.36
58	*Lathyrus clemenum*	0.36
59	*Daucus sytricus*	0.36
60	*Echium angustifolium*	0.36
61	*Asphodelus fistulosus*	0.36
62	*Echinops galalensis*	0.36
63	*Vicia monantha*	0.36
64	*Lobularia libyca*	0.18
65	*Carduus getulus*	0.18
66	*Convolvulus althaeoides*	0.18
67	*Artemisia monosperma*	0.18
68	*Salvia lanigera*	0.18
69	*Erodium cicutarium*	0.18
70	*Anacyclus monanthos*	0.18
71	*Bassia muricata*	0.18

Table (10): Distribution of weed species in different fields in the study area.

NO.	WEED SPECIES	%
1	*Melilotus indicus*	100
2	*Lolium rigidum*	100
3	*Rhaponticum acaule*	100
4	*Senecio gallicus*	100
5	*Hussonia pinnata*	100
6	*Brassica tournefortii*	100
7	*Emex spinosus*	95.45
8	*Centurea dimorpha*	90.90
9	*Malva parviflora*	86.36
10	*Anagalis arvensis*	81.81
11	*Reichardia tingitana*	81.81
12	*Launaea resedifolia*	77.27
13	*Chrysanthemum coronarium*	77.27
14	*Astragalus boeticus*	72.72
15	*Bromus rigidus*	68.18
16	*Malva sylvestris*	68.18
17	*Allium subhirsutum*	68.18
18	*Avena barbata*	63.63
19	*Cutandia dichotoma*	59.09
20	*Vicia sativa*	54.54
21	*Enarthrocarpus clavatus*	54.54
22	*Papaver hybridum*	50
23	*Linaria tenuis*	50
24	*Anthemis secundiramea*	50
25	*Onopordum arenarium*	40.90
26	*Hypecoum geslini*	36.36
27	*Chenopodium murale*	36.36
28	*Salsola kali*	31.81
29	*Pseudorlaya pumila*	31.81
30	*Orobanche schultzii*	27.27
31	*Polygonum equistiformes*	27.27
32	*Hippocrepis multisiliquosa*	27.27

Chapter V

Discussion

5.1 Analysis of weed flora:

From this study of a total of 105 species of flowering weed plants representing 83 genera and 31 families have been collected. Dicotyledons were represented by 28 families. 73 genera and 93 species whereas; Monocotyledons were represented by 3 families, 12 genera and 12 species (Table 11).The ratio of Dicotyledons to Monocotyledons is roughly 9: 1

Table (11): Different taxonomic groups present in the study area.

Palnt group	No. of families	No. of Genera	No. species
Dicotyledons	28	71	93
Monocotyledons	3	12	12
Total	31	83	105

Tow families were considered as a largest families with respect to the number of their species , (more than 15 species), Fabaceae with 21 species and Asteraceae with 17 species. The next largest families were Brassicaceae and Poaceae with 8 species each ,

followed by Boraginaceae and Scrophulariaceae with 4 species. Six families, Polygonaceae, Chenopodiaceae , Apiaceae, Convolvulaceae, Lamiaceae and Liliaceae , were represented by 3 species each.

The families which include 2 species were Caryophyllaceae, Papaveraceae, Malvaceae Alliaceae and Solanaceae.

Aizoaceae, Illecebraceae, Amaranthaceae, Ranunculaceae, Hypecoaceae, Resedaceae, Oxalidaceae, Geraniaceeae, Euphorbiaceae, Thymelacaceae, Cistaceae, Primulaceae, Orobanchaceae and Plantaginaceae were represented by only a single species each.

In comparison with the six largest families in the flora of Libya Fabaceae is the largest family in the study area while Asteraceae is the largest in the flora of Libya. The second largest family in the study area was Asterceace whereas poaceae is the largest in the flora of Libya. Poaceae and Brassicaceae have the same number of species represented by 8 species each. They come in third and fourth place in the study area whereas they are at Second and fourth in flora of Libya. Boraginaceae and Scrophulariaceae have the same number of species represented by 4 species occupy fifth and sixth largest families in the study area. Boraginaceae and Scrophulariaceae do not appear among the six largest families in the flora of Libya (Table 12).

Table (12): The six largest families in the flora of the study area and flora of Libya.

Libyan family	No.of species	Study area	No.of species
Asteraceae	237	Fabaceae	21
Poaceae	228	Asteraceae	17
Fabaceae	208	Poaceae	8
Brassicaceae	90	Brassicaceae	8
Apiaceae	80	Boraginaceae	4
Caryophyllaceae	66	Scrophulariaceae	4

According to the number of species in each genera, in study area, *Astragalus* and *Medicago* were the only two genus represented by four species each.

Three genera, *Vicia*, *Linaria* and *Convolvulus* have three species each. Genera, *Malva*, *Conyza* and *Lotus* were represented by two species each in the study area. The rest seventy four genera were represented by only one species each.

The species were found in the study area considered as endemic species to Libya (Table 13).

Table(13): List of endemic species in the study area

1	*Linaria laxiflora* Desf. ssp. *calcarlongum* Qaiser	Scrophulariaceae
2	*Linara tarhunensis* Pamp.	Scrophulariaceae
3	*Teucrium davaenum* Coss.	Lamiaceae

The survey revealed that there were two species of plants found growing in the study area which is not their normal habitat as far as distribution concern.

These species are *Medicago disciformis* which is restricted to Cyrinaica and *Cynara cardunculus* which is restricted to Benghazi plain.

These species could be introduced to the area with crop seed, are of become established as part of the flora of the area.

5.2 Life form spectrum:

When the numbers of species in life forms in a community or geographical area, are converted to percents, these percents form a life- form spectrum (Whittaker, 1975). The life-form spectrum of the study area was calculated from the sample representing the whole vascular weed plant flora of the area. The results (in chapter 4) showed that, therophytes (annual weeds) were dominating the area.

This class of annual weed plants is characteristic of desert climates (Whittaker, 1975).

The second largest class was chamaephytes which is characteristic of cold climatic (Whittaker, 1975). The presence of weed species belonging to this group in the study area indicates that the climate is cold in this area particularly in winter where temperature decreasing to a level that only certain species of plants can survive such low temperature.

Cryptophytes which is characteristic of extreme climate (cold and warm) particularly in Tundra and cold-temperate forests. Cryptophytes represents 5.71% in the study area, that means the climate of the study area lies between mid-temperature and cold temperature climates (Whitteker,1975).

Phanerophytes was the fourth class of community classification of the study area, it represents 2.86 % of total number of species in the area. This group characteristic of tropical rain forest (Whittakr, 1975). The presence of this group in such percent in the study area is clear cut evidence that the climate in this area is different from that of desert and semi desert, despite the fact that the summer in the area is very long. Moreover it indicates that the climate prevailed in GMR agriculture project is similar to that prevailed in cold-temperate forests.

Hemicryptophytes class contained the lowest number of species, it represented by only one species *Cynodon dactylon*.

Hemicryptophytes is characteristic of dry grassland and Tundra climates (Whittaker, 1975). Since the climate of the study area is different from both extreme climates, the species in this class nearly absent. This result shows that climate in the study area more or less than similar to that prevailed in sub-tropical forest.

Deviates of our data from worldwide spectrum pattern (Ph=46, Ch=9, He=26, Cr=6, Th=13) in different directions reflect of effects of environment, and especially climate on plant adaptation in communities (Adam, 1990).

However, Cain (1950) pointed out that in the study of local situations one should guard against assuming that the proportion of species in the different categories is an indicator of climate since edaphic factors and stage in succession greatly influence life form composition (Odum,1971).

Finally one may conclude that the contradictions between classes, in the biological-spectrum of the study area means that the area dose not fall in a particular climate. These contradictions a result of the location of the area between the sea and the desert which are totally different ecosystems.

5.3 Distribution of recorded weed species:

Comparison between distribution of weed species in the study area with that recorded for other regions in Libya, showed that there were 43 species recorded in the study area, were not recorded in the western region of Libya according to Saleh and El-Garbawi (1979). These species included; *Hordeum murinum, Allium nigrum, A. subhirsutum, Conyza aegyptiaca, C. bonariensis, Cynara cardunculus, Anacyclus monanthos, Artemisia monosperma, Echinops galalensis, Carduus getulus, Calendula tripterocarpa, Onopordum arenarium, Anthemis secundiramea, Rhponticum acaule, Orobanche schultzii, Hippocrepis multisiliquosa, Lotus cytisoides, L. halophilus, Lathyrus clymenum, Melilotus albus, Medicago sativa, M. disciformis, M. minima, Asphodelus fisticulosus, Muscari comosum, Scilla preuviana, Hypecoum geslini, Matthiola fruticulosa, Linaria laxiflora* ssp. *calcarlongum, Teucrium davaeanum, Ajuga iva, Paronychia arabica, Amaranthus viridis, Gastrocotyle hispida, Echium angustifolium, Pituranthos tortuosus, Glaucium corniculatum, Nicotiana glauca, Adonis dentata, Echium horridum, Argyrolobium uniflorum, Linaria tarhunensis,* and *Enarthrocarpus clavatus.*

Moreover, 67 weed species were recorded in the study area were not recorded in the eastern region of Libya according to Saleh *et al.* (1979). These species included; *Rumex pictus, Mesembryanthemum crystallinum, Bassia muricata, Salsola kali, Silene cerastioides, Nicotina glauca, Daucus syrticys, Pseudorlaya pumila, Pituranthos*

tortuosus, Convolvulus supinus, Echium angustifolium, E. horridum, Heliotropium ramosissimum, Gastrocotyle hispida, Euphorbium terracina, Amaranthus viridis, Paronychia arabica, Ajuga iva, Salvia lanigera, Teucrium davaeanum, Linaria laxiflora ssp. *calcarlongum, Linaria tarhunensis, L. tenuis, Kickxia aegyptiaca, Helianthemum lippii, Enarthrocarpus clavatus, Sisymbrium irio, Lobularia libyca, Hussonia pinnata, Oxalis pes-carpae, Hypecoum geslini, Scilla preuviana, Asphodelus fistulosus, Muscari comosum, Orobanche schultzii, Thymelea hirsuta, Hippocrepis multisiliquosa, Lotus cytisoides, L. halophilus, Retama raetam, Trigonella maritima, Vicia villosa, Ononis serrata, Melilotus albus, Astragalus asterias, A. boeticus, A. caprimus, A. peregrimus, Allium nigrum, A. subhirsutum, Conyza aegyptiaca, C. bonariensis, Launaea resedifolia, Senecio gallicus, Avena barbata, Stipa capensis, Anacyclus monanthos, Artemisia monosperma, Echinops galalensis, Onopordum arenarium, Chrysanthemum coronarium, Reichardia tingitana, Centurea alexandarina, C. dichotoma, Rhaponticum acaule,* and *Plantago albicans.*

Furthermore, 87 weed species were recorded in the study area were not recorded in the southern region of Libya (Fazan) according to Saleh and El-Garbawi (1981). These species included; *Rumex pictus, Mesembryanthemum crystallinum, Silene cerastioides, Paronychia arabica, Adonis dentata, Glaucium corniculatum, Papaver hybridum, Hypecoum geslini, Diplotaxis muralis, Enarthrocarpus clavatus, Hussonia pinnata, Matthiola fruticulosa, M. longipetala, Reseda alba, Argyrolobium uniflorum, Astragalus asterias, A. boeticus, A. caprimus, A. peregrimus, Hippocrepis*

multisiliquosa, Lathyrus clymenum, Lotus cytisoides, L. halophilus, Medicago disciformis, M. littoralis, M. sativa, M. minima, Melilotus albus, Ononis serrata, Retama raetam, Trigonella maritime, Vicia monantha, V. sativa, V. villosa, Oxalis pes-caprae, Erodium cicutarium, Malva sylvestris, Thymelea hirsuta, Helianthemum lippii, Daucus syrticus, Pituranthos tortuosus, Pesudorlaya pumila, Anagallis arvensis, Convolvulus althaeoides, C. arvensis, C. supinus, Echium angustifolium, E. horridum, Gastrocotyle hispida, Heliotropium ramosissimum, Ajuga iva, Salvia lanigera, Teucrium davaeanum, Solanum nigrum, Nicotiana glauca, Kickxia aegyptiaca, Linaria laxiflora, L. tarhunensis, L. tenuis, Orobanche schultzii, Plantago albicans, Anacyclus monanthos, Anthemis secundiramea, Artimisia monosperma, Calendula tripterocarpa, Carduus getulus, Centurea alexandrina, C. dimorpha, Chrysanthemum coronarium, Conyza bonariensis, C. aegyptiaca, Cynara cardunculus, Echinops galalensis, Launaea resedifolia, Onopordum arenarium, Rhaponticum acaule, Senecio gallicus, Asphodelus fistulosus, Muscari comosum, Scilla preuviana, Allium nigrum, A. subhirsutum, Lolium rigidum, Hordeum murinum, Salsola kali and *Stipa capensis.*

In addition to, 93 weed species were recorded in the study area were not recorded in the El-Kufra agricultural project according to Saleh and El-Garbawi (1983). These species included; *Rumex pictus, Mesembryanthemum crystallinum, Silene cerastioides, Paronychia arabica, Adonis dentata, Glaucium corniculatum, Papaver hybridum, Hypecoum geslini, Diplotaxis muralis, Enarthrocarpus clavatus, Hussonia pinnata, Matthiola fruticulosa, M. longipetala, Reseda alba, Argyrolobium uniflorum, Astragalus asterias, A. boeticus, A.*

caprimus, A. peregrimus, Hippocrepis multisiliquosa, Lathyrus clymenum, Lotus cytisoides, L. halophilus, Medicago disciformis, M. littoralis, M. sativa, M. minima, Melilotus albus, Ononis serrata, Retama raetam, Trigonella maritime, Vicia monantha, V. sativa, V. villosa, Oxalis pes-caprae, Erodium cicutarium, Malva sylvestris, Thymelea hirsuta, Helianthemum lippii, Daucus syrticus, Pituranthos tortuosus, Pesudorlaya pumila, Anagallis arvensis, Convolvulus althaeoides, C. arvensis, C. supimus, Echium angustifolium, E. horridum, Gastrocotyle hispida, Heliotropium ramosissimum, Ajuga iva, Salvia lanigera, Teucrium davaeanum, Nicotiana glauca, Kickxia aegyptiaca, Linaria laxiflora, L. tarhunensis, L. tenuis, Orobanche schultzii, Plantago albicans, Anacychus monanthos, Anthemis secundiramea, Artimisia monosperma, Calendula tripterocarpa, Carduus getulus, Centurea alexandrina, C. dimorpha, Chrysanthemum coronarium, Conyza bonariensis, Cynara cardunculus, Echinops galalensis, Launaea resedifolia, Onopordum arenarium, Rhaponticum acaule, Senecio gallicus, Asphodelus fistulosus, Muscari comosum, Scilla preuviana, Allium nigrum, A. subhirsutum, Lolium rigidum, Hordeum murinum, Stipa capensis, Vaccaria pyramidata, Chenopodium murale, Salsola kali, Amaranthus viridis, Lobularia libyca, Sisymbrium irio, Euphorbia terracnia, Avena barbata, and *Phalaris minor.*

Finally, among 105 weed species which have been recorded 27 weed species were confined to the study area and were not reported in any other region in Libya (Saleh and El-Garbawi,1979; Saleh *et al.*, 1979; Saleh and El-Garbawi, 1981; Saleh and El-Garbawi, 1983; Saleh *et al.*, 1983; and Ghanuni, 1995) these species included;

Paronychia arabica, Enarthrocarpus clavatus, Hippocrepis multisiliquosa, Lotus cytisoides, L. halophilus, Melilotus albus, Pituranthos tortuosus, Echium angustifolium, E. horridum, Gastrocotyle hispida, Ajuga iva, Teucrium davaeanum, Nicotiana glauca, Linaria laxiflora ssp. *calcarlongum, L. tarhunensis, Orobanche schultzii, Anacyclus monanthos, Artemisia monosperma, Conyza bonariensis, Echinops galalensis, Onopordum arenarium, Rhaponticum acaule, Asphodelus fistulosus, Muscari comosum, Scilla preuviana, Allium nigrum* and *A. subhirsutum.*

From the obtained data and the comparison of these data with published surveys one might say that there were seven species considered to be the most dominant in agricultural fields in all parts of Libya. These species were: *Bromus rigidus, Cutandia dichotoma, Lolium rigidum, Anagallis arvensis, Brassica tournefortii, Melilotus indicus,* and *Emex spinosus.*

Recommendations

1- Limitation of introduction and spread of weeds through :

a- the use of clean seeds.
b- the use of clean equipments.
c- the use of clean trapping grain loads.

2- Controlling weeds in deshs and edges of fields.

3- Removing weeds before they have chance to set seeds.

4- Introduction of crop rotation.

5- Introduction of different types of herbicides to control weeds.

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Codes of fields names

Number given to fields In this study	GMRAcode
1	Cp 7
2	Ls 7B
3	Ls 7A
4	Ls 6B
5	Ls 6A
6	Ls 5B
7	Ls 5A
8	Ls 4B
9	Ls 4A
10	Ls 3B
11	Ls 3A
12	Ls 9B
13	Ls 9A
14	Ls 10 A
15	Ls 10B
16	Ls 11A
17	Ls 11B
18	Ls 2B
19	Ls 2A
20	Ls 1B
21	Cp 4
22	Ls 1A

Table (14): Number of individual species in each quadrate in barley field No.1. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	2176	1728	-	704	576	-	1472	832	640	448	768	1024	320	512	1984	256	35	41	192	320	128	39	192	256	512
2	*Melilotus indicus* (L.) All.	-	3	5	-	8	-	-	384	512	128	192	12	704	1024	-	576	-	-	768	1088	128	384	128	192	320
3	*Cutandia dichotoma* (Forsk.) Trabut	-	128	-	-	256	-	-	-	-	-	-	320	128	192	128	128	384	256	-	-	-	320	192	256	128
4	*Bromus rigidus* Roth.	-	-	-	-	192	-	-	-	-	320	128	-	16	9	-	-	-	512	256	-	576	448	128	128	192
5	*Hussonia pinnata* (Viv.) Jatri	39	36	43	9	14	-	-	-	11	25	2	22	-	39	-	28	12	42	20	18	8	47	13	19	5
6	*Pseudorlarya pumila* (L.) Grande	-	3	448	320	-	-	-	-	-	-	3	-	-	-	-	6	-	-	192	-	-	-	-	-	6
7	*Malva parviflora* L.	-	-	-	7	10	-	-	-	12	1	4	7	1	6	3	1	3	6	8	6	5	3	46	-	9
8	*Anagallis arvensis* L.	-	-	-	4	-	-	-	-	4	4	-	-	-	-	6	-	-	-	-	-	384	-	-	4	-
9	*Lotus cytisoides* L.	4	1	18	37	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
10	*Senecio gallicus* Chiax	4	5	3	4	4	-	-	-	-	6	4	-	-	13	6	3	3	15	6	-	6	10	9	-	6
11	*Medicago littoralis* Rohde ex Lois.	-	-	-	256	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
12	*Vicia sativa* L.	-	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	*Brassica tournefortii* Gouan	1	-	3	4	-	-	-	3	1	-	3	-	-	-	-	-	-	3	6	3	-	1	3	2	-
14	*Launaea resedifolia (L.) O.Kuntze*	1	-	-	5	3	-	-	-	-	-	-	3	-	-	3	2	-	-	-	-	-	-	-	-	4
15	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	6	4	-	2	-	-	-	1	5	-
16	*Onopordum arenarium* (Desf.) Pomel	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	6	8	-	-	-	-	-	-	-	-
17	*Rhaponticum acaule* (L.) Dc.	-	1	-	-	1	4	-	-	-	4	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-
18	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	1	3
19	*Centurea dimorpha* (Viv.)	-	-	1	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	22	-	-	-	-
20	*Linaria tenuis* (Viv.) Spreng.	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	11	-	-	-	-	-
21	*Polygonum equisetiforme* Sibth.&Sm.	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-
23	*Erodium cicutarium* (L.) L' Herit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	9	-	-	-	-	-	-
24	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-

Table (15): Number of individual species in each quadrate in barley field No.2. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		1088	2176	1024	896	512	768	704	512	448	192	64	768	512	320	128	256	256	960	384	576	960	448	192	37	64
1	*Lolium rigidum* Gaud.	576	320	448	192	192	64	128	46	320	192	512	34	256	41	192	192	320	448	128	192	320	256	128	448	16
2	*Bromus rigidus* Roth	-	-	-	-	-	448	192	320	64	128	192	64	128	448	320	12	192	23	128	320	192	448	128	-	-
3	*Cutandia dichotoma* (Forsk.)Trabut.	-	-	-	640	320	-	-	576	-	-	-	27	128	34	576	41	38	-	512	47	-	-	704	11	18
4	*Melilotus indicus* (L.)All.	-	-	-	-	128	52	3	128	192	256	128	6	43	320	16	-	-	-	3	-	-	-	258	-	1
5	*Malva parviflora* L.	-	-	-	-	-	-	-	18	192	-	-	-	-	-	-	-	-	-	-	-	320	128	192	448	320
6	*Emex spinosus* (L.)Campd.	-	-	-	-	-	-	-	11	-	-	-	5	-	-	-	192	-	-	-	-	-	13	-	4	-
7	*Astragalus boeticus* L.	8	3	14	2	4	2	1	1	1	-	-	5	1	1	4	20	27	1	7	14	3	2	6	2	2
8	*Launaea resedifolia* (L.)O.Kuntze	15	-	-	-	32	-	-	-	16	-	13	-	-	-	-	-	-	-	-	28	-	4	-	10	1
9	*Centurea dimorpha* Viv.	3	2	1	-	7	-	-	1	-	-	3	6	-	-	2	11	26	-	-	-	1	1	-	1	3
10	*Hussonia pinnata* (Viv.)Jafri	-	-	4	14	-	-	5	3	1	-	1	2	1	1	7	3	2	-	-	-	2	-	-	2	2
11	*Senecio gallicus* Chiax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	39	-	-
12	*Rumex pictus* Forst.	-	1	-	-	-	-	4	-	1	1	1	-	2	1	-	-	-	-	-	1	-	-	3	3	2
14	*Rhaponticum acaule* (L.)Dc.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
15	*Avena barbata* Pott.exLink.	-	-	-	-	-	-	-	-	-	-	-	-	4	7	1	1	-	-	-	-	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	-	1	-	-
17	*Chrysanthemum coronarium* L.	-	-	2	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
18	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
19	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Allium subhirsutum* L.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
21	*Pseudorlaya pumila* (L)Grande	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (16): Number of individual species in each quadrate in barley field No.3. in GMR agriculture project (Sirte).

No	Species \ Quadrat No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		320	128	384	192	128	448	320	640	704	-	128	128	-	704	448	320	576	640	704	1024	896	2304	1152	1728	2048
1	*Lolium rigidum* Gaud.	320	128	384	192	128	448	320	640	704	-	128	128	-	704	448	320	576	640	704	1024	896	2304	1152	1728	2048
2	*Bromus rigidus Roth*	192	18	-	320	256	128	8	-	-	576	320	640	384	192	384	256	128	128	-	-	-	-	128	320	192
3	*Melilotus indicus* (L.)All.	20	640	512	448	576	320	512	896	576	-	448	576	896	-	-	-	-	7	-	-	704	-	256	24	-
4	*Cutandia dichotoma* (Forsk.)Trabut	128	320	384	128	192	128	320	192	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Emex spinosus* (L.)Campd.	384	4	-	-	320	256	256	7	12	-	20	6	-	7	5	-	-	7	-	384	-	-	128	28	21
6	*Avena barbata* Pott ex Link.	-	-	-	-	-	9	-	-	-	256	-	-	192	25	14	9	8	34	192	-	-	-	-	-	-
7	*Astragalus boeticus* L.	192	-	384	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	8	13	8
8	*Malva parviflora* L.	-	6	18	4	-	-	14	-	-	-	-	26	-	128	64	11	-	-	5	-	-	-	12	-	-
9	*Vicia sativa* L.	24	-	-	-	-	-	17	-	4	-	-	-	-	-	-	-	9	31	-	-	-	27	-	6	14
10	*Hussonia pinnata* (Viv.)Jafri	-	-	-	-	-	-	-	2	1	-	7	8	-	8	4	-	4	-	5	20	43	-	-	-	-
11	*Hordeum murinum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	22	41	-	-	-	28	-	-	-	-	-	-
12	*Enarthrocarpus clavatus* Del. ex Godr.	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	27	34	-	-	-	-
13	*Senecio gallicus* Chiax	3	1	-	-	1	2	-	9	-	-	35	-	-	-	1	-	-	-	-	-	-	-	-	-	-
14	*Launaea resedifolia* (L.) O.Kuntze	2	2	3	-	3	4	-	3	5	-	3	-	-	4	9	-	-	-	7	-	-	-	-	-	-
15	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	-	-	-	12	6	-	-	2	9	1	3	11	-	-	-
16	*Phalaris minor* Retz.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	8	-	-	-	-	-	-
17	*Brassica tournefortii* Gouan	-	-	-	-	1	-	-	4	2	-	4	-	-	-	-	4	2	-	-	-	-	4	-	-	3
18	*Rhaponticum acaule* (L.)Dc.	-	-	-	2	1	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-	1	6	7	2	-
19	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	4	2	3	-	-	-	-
20	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	-	7	-	-	4	-	3	-	-	-	-	-	3	-	-	-
21	*Anthemis secundiramea* Bir.	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Rumex pictus* Forst.	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Silene cerastioides* L.	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-
25	*Malva sylvestris* L.	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Linaria tenuis* (Viv.)Spreng	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (17): Number of individual species in each quadrate in barley field No.4. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.)Campd	-	-	128	320	-	384	7	14	128	-	-	-	-	-	4	-	640	256	576	320	192	256	192	320	128
2	*Melilotus indicus* (L.)All.	-	-	512	9	-	-	-	9	-	3	-	576	-	-	4	704	-	64	-	128	7	-	448	192	-
3	*Lolium rigidum* Gaud.	-	-	-	-	-	512	896	320	512	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	768
4	*Malva parviflora* L.	-	-	-	-	-	-	-	-	52	-	-	-	-	-	6	5	-	7	12	4	21	128	64	25	128
5	*Anagallis arvensis* L.	-	-	320	448	192	8	32	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
6	*Centurea dimorpha* Viv.	25	2	-	-	38	10	-	8	1	-	3	24	-	-	-	-	-	1	-	10	-	-	-	-	-
7	*Medicago littoralis* Rohde ex Lois.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	256
8	*Hussonia pinnata* (Viv.)Jafri	-	-	2	-	-	-	-	-	-	-	3	-	-	-	1	-	5	25	5	-	6	8	-	6	-
9	*Rhaponticum acaule* (L.)Dc.	4	5	-	-	6	5	-	-	13	3	-	4	13	-	-	-	1	-	-	6	-	-	-	-	-
10	*Convolvulus arvensis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	17	-	14	3
11	*Launaea resedifolia (L.)O.Kuntze.*	9	2	4	10	3	-	-	-	-	1	-	-	1	-	1	-	2	-	-	-	-	-	-	-	-
12	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6	2	-	-	3	-	-	3
13	*Enarthrocarpus clavatus* Del.ex Godr.	-	-	-	7	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4	-	-	-	-	3	-
14	*Senecio gallicus* Chiax	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	11
15	*Allium subhirsutum* L.	-	-	-	2	-	-	1	-	-	-	-	-	-	-	-	3	-	-	-	1	-	-	-	-	-
16	*Adonis dentata* Delle.	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
17	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	2	1	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	-	-
18	*Hypecoum geslini* Coss. et Kral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
19	*Onopordum arenarium* (Desf.)Pomel.	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
20	*Matthiola fruticulosa* (L.) Mait.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
21	*Anthemis secundiramea* Bir.	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Papaver hybridum* L.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Kickxia aegyptiaca* (L.) Nabelek	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (18): Number of individual species in each quadrate in barley field No.5. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.1Sm²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.)All.	640	192	512	1600	704	832	1024	768	1536	1216	192	-	-	-	128	-	-	-	-	-	-	-	-	-	-
2	*Emex spinosus* (L.)Campd.	384	512	704	384	576	256	128	512	-	-	-	-	128	-	32	26	26	-	-	704	-	-	-	-	-
3	*Cutandia dichotoma* (Forsk.)Trabut	-	-	-	-	-	-	-	-	-	-	-	320	256	320	192	192	-	-	-	-	-	-	-	-	-
4	*Malva parviflora* L.	-	-	-	-	-	-	-	-	-	-	1	2	5	-	3	192	12	-	-	-	-	3	-	-	-
5	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	11	-	3	-	-	-	-	27	-	34	25	-	-	17	9
6	*Lolium rigidum* Gaud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-
7	*Launaea resedifolia (L.)O.Kuntze*	4	4	3	-	1	-	-	3	1	-	-	23	5	7	-	-	-	-	-	-	-	-	-	-	-
8	*Rhaponticum acaule* (L.)Dc.	-	-	-	-	2	-	-	-	-	-	-	1	2	1	2	-	3	4	-	2	2	-	2	10	7
9	*Phalaris minor* Retz.	-	-	-	-	-	-	-	-	-	-	-	-	-	3	28	2	-	-	-	-	-	-	-	-	-
10	*Senecio galicus* Chiax	2	-	-	-	-	-	-	-	-	-	-	1	-	3	9	7	-	-	-	-	-	-	-	-	-
11	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	-	-	7	3	6	-	-
12	*Hussonia pinnata* (Viv)Jafri	-	3	-	-	-	-	-	-	-	-	-	2	-	3	7	6	-	-	-	-	-	-	-	-	-
13	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-
14	*Anthemis secundiramea* Bir.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	7	-	-	-	-	-	-	-	-	-
15	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	7	1	-	1	-	-	-	-	-	-
16	*Medicago sativa* L.	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-
18	*Malva sylvetris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-	4	-
19	*Onopordum arenarium* (Desf.)Pomel	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	1	-	-
20	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
21	*Enarthrocarpus clavatus* Del. ex Godr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
22	*Astragalus boeticus* L.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (19): Number of individual species in each quadrate in barley field No.6. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	-	-	-	-	768	128	256	640	960	384	576	-	-	-	-	-	512	448	320	576	1024	1664	704	-	-
2	*Melilotus indicus* (L.)All.	1152	1024	704	320	448	192	576	-	-	-	-	-	-	-	960	1536	320	832	-	-	-	-	384	704	1216
3	*Emex spinosus* (L.) Campd.	36	192	320	192	-	-	-	256	128	128	320	640	512	512	128	-	-	-	-	6	64	57	14	192	13
4	*Cutandia dichotoma* (Forsk.)Trabut	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	384	512	256	-	128	-	-	-
5	*Malva parviflora* L.	-	-	-	-	-	-	8	8	14	-	-	-	-	-	4	16	-	-	-	128	192	-	128	5	-
6	*Mesembryanthemum crystallinum* L.	-	-	-	-	-	-	-	16	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	*Sisymbrium irio* L.	-	-	-	-	-	-	-	128	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	*Avena barbata* Pott.ex Link.	-	-	-	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
9	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	3	-	-	128	-	-	-	-	-	-	-	-	-	-	-
10	*Centurea dimorpha* Viv.	-	-	-	12	-	-	-	-	-	-	-	-	-	-	10	-	23	11	29	-	-	-	-	-	-
11	*Chrysanthemum coronarium* L.	-	-	7	8	2	9	6	7	8	12	1	5	1	2	-	-	-	-	-	-	-	-	-	-	-
12	*Hussonia pinnata* (Viv.)Jafri	-	-	1	-	-	-	-	-	-	-	-	-	3	4	-	-	-	-	-	10	33	5	7	2	-
13	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	1	2	-	-	4	-	-	-	-	-	-	-	-	9	2	2
14	*Senecio gallicus* Chiax	-	-	6	-	-	-	3	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	6	-	-
15	*Malva sylvestris* L.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	6	7	-	-	-	-	-	4
16	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	1	-	-	3	-	-	3	-	-	-	-	-	6	3	2	-	-	-
17	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	1	-	-	-	-	-	2	4
18	*Launaea resedifolia (L.) O.Kuntze*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	4	-	4	4	-	-	-	-	-
19	*Enarthrocarpus clavatus* Del.ex Godr.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	3	7	-	-	-	-	-
20	*Rhaponticum acaule* (L.)Dc.	-	-	-	-	1	3	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
21	*Linaria tenuis* (Viv.)Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-
22	*Allium subhirsutum* L.	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
23	*Anthemis secundiramea* Bir.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-
24	*Orobanche schultzii Mutel*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
25	*Hypecoum geslini* Coss. et Kral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
26	*Onopordum arenarium* (Desf.)Poml	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Lobularia libyca* (Viv.)Meisner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-

Table (20): Number of individual species in each quadrate in barley field No.7. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium ngidum* Gaud.	1216	1024	832	512	256	-	448	320	896	576	-	-	-	704	512	192	320	448	128	192	1024	896	768	960	-
2	*Melilotus indicus* (L.) All.	-	256	128	448	-	960	704	832	576	320	-	1024	-	-	128	128	256	320	704	1152	24	10	11	14	8
3	*Malva parviflora* L.	-	-	-	35	128	256	17	24	37	66	14	-	192	51	12	5	19	-	-	6	-	14	-	-	-
4	*Emex spinosus* (L.) Campd.	256	128	320	128	-	-	-	-	-	58	35	28	64	192	-	-	-	-	-	25	34	12	68	-	14
5	*Malva sylvestris* L.	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-	19	27	-	-	-	-	-	-
6	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	128	-	-	-	-	-	-	-	-	-	256	-	-	-	-	-	-	-	-	-	-
7	*Enarthrocarpus clavatus* Del. ex Gode	-	-	-	-	-	-	-	-	-	-	-	-	21	35	-	-	-	-	-	-	-	-	-	-	-
8	*Avena barbata* Pott ex Link.	-	-	16	23	-	12	-	-	-	-	-	-	-	192	-	-	-	-	-	-	-	-	-	-	-
9	*Medicago littoralis* Rode. ex Lois.	-	-	-	-	-	-	-	-	-	-	-	-	3	7	-	-	-	-	-	-	-	-	-	-	-
10	*Hussonia pinnata* (Viv.) Jatri	13	9	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	4	8	3	8	-	-	-
11	*Anagallis arvensis* L.	-	-	-	-	4	-	-	-	-	-	-	+	-	-	-	-	16	-	-	-	-	-	-	-	-
12	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	*Launaea resedifolia* (L.) O. Kuntze	+	-	-	-	7	-	1	-	-	1	-	2	2	-	3	-	3	1	2	-	1	-	-	-	-
14	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	4
15	*Vicia monantha* Retz.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	6
16	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	4	-	14	6	-
17	*Senecio gallicus* Chiax	4	1	1	-	-	-	-	-	-	-	-	+	3	-	-	-	-	-	6	-	-	+	+	-	-
18	*Brassica tournefortii* Goan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	3	4	1
19	*Reichardia tingitana* (L.) Roth	-	-	-	-	-	-	-	-	-	-	+	+	2	1	-	-	-	-	-	1	2	3	-	-	-
20	*Rhaponticum acaule* (L.) Dc.	-	-	1	3	-	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Orobanche schultzii* Mutel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	+	-	-	-
23	*Anthemis secundirama* Biv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
24	*Daucus sytricus* Murb.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
25	*Onopordum arenarium* (Desf.) Pomel	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (21): Number of individual species in each quadrate in barley field No.8. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	-	704	576	384	-	-	960	512	448	896	640	512	320	384	576	1024	960	320	1216	640	512	704	-	384	-
2	*Emex spinosus* (L.) Campd.	192	128	320	256	768	576	-	320	-	-	128	128	256	192	256	128	-	-	-	-	320	192	192	448	128
3	*Lolium rigidum* Gaud.	-	-	-	-	-	-	-	-	640	-	-	-	384	-	-	-	-	-	-	-	-	-	512	960	1024
4	*Malva parviflora* L.	192	64	-	-	-	-	-	72	-	128	-	-	3	-	-	55	-	-	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	-	-	-	-	-	-	-	128	320	-	-	-	-	-	-	-	-	-	-	-	-
6	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	9	-
7	*Centurea dimorpha* Viv.	-	-	-	-	-	3	-	-	-	39	14	9	-	-	-	-	46	-	-	-	-	5	-	3	-
8	*Convolvulus althaeoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-
9	*Astragalus boeticus* L.	-	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	256
10	*Bromus rigidus* Roth	-	-	-	-	-	-	-	-	-	-	3	-	-	-	1	10	-	1	-	-	9	2	2	3	-
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	2	7	-	-	4	-	1	-	1	-	-	-	-	-
12	*Launaea resedifolia* (L.) O.Kuntze.	2	-	-	3	-	-	3	-	-	-	-	5	2	-	-	-	-	-	-	-	-	-	-	-	8
13	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	-	3	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	3
14	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
15	*Allium subhirsutum* L.	-	-	-	-	1	-	-	1	7	-	1	-	-	-	-	-	-	-	-	-	-	-	-	6	-
16	*Anagallis arvensis* L.	-	-	-	-	-	-	-	2	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Orobanche schultzii* Mutel	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Enarthrocarpus clavatus* Del.exGoder	1	-	-	-	-	-	-	-	-	-	-	3	4	-	-	1	-	-	-	-	-	-	-	-	7
19	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
20	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Chenopodium murale* L.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Vaccaria pyramidata Medik*	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Asphodelus fistulosus* L.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
24	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
25	*Medicago sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Launaea resedifolia* (L.) O.Kuntze.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

Table (22): Number of individual species in each quadrate in barley field No.9. in GMR agriculture project (Sirte).

No	Species / Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		320	256	576	384	192	704	512	-	320	192	1024	192	960	1216	704	1600	320	960	1152	1024	896	256	512	320	1088
1	*Melilotus indicus* (L.) All.	-	-	-	-	320	-	-	256	-	-	-	-	-	-	-	-	-	-	-	192	320	384	192	512	-
2	*Emex spinosus* (L.) Campd.	128	192	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	*Lolium rigidum* Gaud.	512	448	704	1024	576	-	640	448	768	-	-	-	-	-	-	-	6	-	-	-	4	-	12	128	256
4	*Malva parviflora* L.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Vicia sativa* L.	21	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	*Bromus rigidus* Roth	-	-	-	-	-	-	-	320	256	-	-	-	-	-	-	-	-	-	-	32	5	1	-	-	-
7	*Centurea dimorpha* Viv.	-	25	-	12	-	-	-	15	23	28	-	44	-	-	-	-	-	-	192	-	-	-	-	-	-
8	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	1	2	4	1	-	1	1	5	-	-
9	*Launaea resedifolia (L.) O.Kuntze*	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
10	*Heliotropium ramosissimum* (Lehm.)	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	1	1	-	2	-	-	-	-	-	-
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	4	4	1	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	-	1	-
12	*Senecio gallicus Chiax*	7	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	**Orobanche schultzii** Mutel	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	*Hussonia pinnata* (Viv.) Jafri	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Brassica toureforti* Gouan	-	-	-	6	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-
16	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-	-
17	*Enarthrocarpus clavatus* Del exGoder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Hypecoum geslini* Coss. et Kral	-	-	-	-	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
19	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Pseudorlaya pumila* (L.) Grande	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Salsola kali* L.	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Pituranthos tortuosus* (Dest.) Benth.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
24	*Adonis dentata* Delile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (23): Number of individual species in each quadrate in barley field No.10. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		1344	1600	1216	960	1664	576	320	512	960	704	1088	256	704	1600	640	768	1216	1024	896	192	768	256	704	576	320
1	*Lolium rigidum* Gaud.	-	-	-	-	128	384	448	320	192	384	320	576	512	-	-	-	-	-	192	576	320	192	512	256	-
2	*Melilotus indicus* (L.) All.	128	-	192	128	-	-	-	-	2	-	-	-	61	448	192	384	11	3	-	2	-	-	128	128	256
3	*Emex spinosus* (L.) Campd.	9	1	-	-	-	-	128	192	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	*Malva parviflora* L.	3	-	4	-	-	-	-	-	32	-	-	-	18	5	13	5	9	-	-	2	-	-	-	-	-
5	*Hussonia pinnata* (Viv.) Jafri	4	-	11	1	4	2	1	-	-	1	10	-	4	4	1	-	1	-	8	5	1	-	-	25	-
6	*Launaea resedifolia (L.) O.kuntze*	-	-	-	-	-	-	-	-	-	-	7	-	-	10	-	5	3	-	32	10	-	-	-	-	2
7	*Centurea dimorpha* (Viv.)	7	-	-	-	-	2	-	-	3	-	-	-	16	-	-	-	-	-	-	-	-	-	1	-	-
8	*Senecio gallicus* Chiax	-	-	-	-	2	14	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	*Avena barbata* Pott ex Link	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
10	*Hurdeum murinum* L.	-	-	-	-	1	-	4	-	2	2	2	-	-	-	-	3	2	-	-	-	-	1	-	-	14
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
12	*Reichardia tingitana* (L.) Roth.	10	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	*Medicago sativa* L.	-	-	-	-	-	-	-	-	3	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-
14	*Vicia sativa* L.	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Polygonum equistiforme* Sibth.& Sm.	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	-	-	-	-	-	-	-
17	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-
18	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
19	*Silene cerastioides* L.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
20	*Euphorbia terracina* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Echinops galalensis* Schweif	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Brassica tournefortii* Gouan	-	-																							

Table (24): Number of individual species in each quadrate in barley field No.11. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		576	448	384	640	320	384	512	1280	192	320	128	128	1088	832	1216	192	1152	960	192	384	128	320	448	512	1216
1	*Lolium rigidum* Gaud.	-	512	448	192	448	192	320	384	576	960	384	192	-	-	128	320	640	384	1088	704	320	512	128	576	-
2	*Melilotus indicus* (L.) All.	256	-	-	-	-	-	-	-	-	-	29	59	256	128	1	-	-	6	13	192	256	128	192	128	18
3	*Emex spinosus* (L.) Campd.	-	8	128	64	192	320	256	192	320	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
4	*Hypecoum geslini* Coss. et Kral	-	128	64	-	320	256	-	-	128	-	-	-	-	-	-	128	-	-	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	11	128	-	-	-	-	-	-	-	-	-	128	256	-	-	-	-	-	-	-	128	-	-	-
6	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	19	-
7	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-
8	*Malva parviflora* L.	3	-	-	-	192	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	*Medicago littoralis* Rohde ex Lois.	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	-	-	-	-	-
10	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	4	1	-	1	-
11	*Hussonia pinnata* (Viv) Jafri	41	13	8	3	4	-	-	3	-	-	-	-	-	-	3	4	1	-	-	-	-	2	4	4	1
12	*Launaea resedifolia (L.) O.Kuntze*	16	-	5	1	1	1	-	1	-	-	2	2	-	-	-	-	3	8	-	-	-	-	-	7	3
13	*Centurea dimorpha* Viv.	-	-	-	3	-	-	6	-	6	-	-	-	-	11	4	6	3	-	-	-	2	1	-	-	5
14	*Brassica tournefortii* Gouan	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-
15	*Rhaponticum acaule* (L.) Dc.	-	8	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Pseudorlaya pumila* (L.) Grande	-	-	5	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Salvia lanigera* Poir.	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Kickxia aegyptiaca*	9	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	5	-
19	*Euphorbia terracina* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Calendula tripterocarpa* Rupr.	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
21	*Senecio gallicus* Chiax	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
22	*Reichardia tingitana* L.	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Papaver hybridum* L.	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Amaranthus viridis* L.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-
25	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	4	-	-	-
26	*Salsola kali* L.	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	*Echinops galalensis* Schweif	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	*Orobanche schultzii* Mutel	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
30	*Vaccaria pyramidata* Medik.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
31	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (25): Number of individual species in each quadrate in barley field No.12. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	-	-	5	2	-	-	-	-	-	256	-	-	75	576	320	-	-	-	-	34	20	192	15	256	16
2	*Emex spinosus* (L.) Campd.	-	-	-	-	-	40	-	320	128	192	192	-	4	384	12	-	-	-	23	-	-	-	-	-	14
3	*Anagallis arvensis* L.	-	-	-	-	320	384	768	128	576	-	21	3	11	-	-	-	2	-	4	-	2	-	-	3	-
4	*Lolium rigidum* Gaud.	-	-	-	-	704	-	-	-	13	448	-	-	-	-	256	-	576	3	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	11	1280	1152	640	-	-	-
6	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	12	128	-	192	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
7	*Rhaponticum acaule* (L.) Dc.	1	-	-	-	17	20	16	2	2	4	6	16	-	1	-	-	6	2	-	-	2	-	-	-	1
8	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	2	2	-	-	-	4	-	-	-	-	27	1	-	2	-	2	-	1	-	-	-
9	*Papaver hybridum* L.	-	-	-	-	-	1	38	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Enarthrocarpus clavatus* Del. ex Gode	-	-	-	-	-	-	13	3	-	-	-	-	2	-	16	-	-	-	-	-	-	-	-	-	+
11	*Launaea resedifolia* (L.) O. Kuntze	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	1	1	-	5	1	2
12	*Brassica tournefortii* Gouan	-	-	2	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
13	*Adonis dentata* Delile	-	-	-	-	-	-	-	1	-	1	-	-	4	3	4	-	-	-	1	-	-	-	-	-	-
14	*Carduus getulus* Pomel	-	-	-	-	-	-	-	+	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-
15	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	10	-	1	-	1	-	-	-	4	-	-	-	-	-	2	-	-	-	-
16	*Senecio gallicus* Chiax	-	-	-	1	-	-	-	1	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
17	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	3	-	-
18	*Malva sylvestris* L.	-	-	-	-	4	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	1	-	-
19	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	7
20	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-
21	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
22	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-
23	*Amarathus viridis* L.	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	+
24	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Calendula tripterocarpa* Rupr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-
26	*Glaucium corniculatum* (L.) J.H. Rud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (26): Number of individual species in each quadrate in barley field No.13. in GMR agriculture project (Sirte).

No	Species \ Quadrat No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	192	448	256	64	-	384	576	-	-	-	64	-	-	-	-	-	192	-	320	-	-	-	-	24	27
2	*Anagallis arvensis* L.	256	704	6	-	-	192	448	512	320	-	-	128	-	-	-	-	-	-	-	-	-	-	-	18	32
3	*Melilotus indicus* (L.) All.	12	192	704	576	384	512	-	1216	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
4	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	-	-	-	4	192	-	-	128	-	-	-	-	-	-	-	15	-	-	-	3	-
5	*Malva parviflora* L.	-	-	-	-	-	-	12	-	-	-	-	64	-	-	-	-	-	-	-	192	-	-	-	-	-
6	*Lolium rigidum* Gaud.	-	-	-	-	-	-	7	-	-	-	8	13	-	-	-	-	-	-	-	28	-	-	-	-	-
7	*Centurea dimorpha* Viv.	-	-	-	-	-	-	24	-	-	-	34	-	-	-	-	-	-	-	-	3	-	1	-	-	-
8	*Launaea resedifolia* (L.) O. Kuntze	4	5	-	-	-	2	1	2	-	3	3	3	6	1	1	2	-	3	-	3	-	6	7	-	2
9	*Rhaponticum acaule* (L.) Dc.	2	1	-	-	-	1	-	3	4	4	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
10	*Heliotropium ramosissimum* (Lehm.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	9	-	-	-	-	1	-	-	-	-
11	*Senecio gallicus* Chiax	3	-	2	1	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	1	-	-	-	-
12	*Hussonia pinnata* (L.) Jafri	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	2
13	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	14
14	*Astragalus boeticus* L.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
15	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-
16	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-
18	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
19	*Orobanche schultzii* Mutel	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
21	*Anacyclus monanthos* (L.) Thell.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-

Table (27): Number of individual species in each quadrate in barley field No.14. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		1088	832	576	448	704	768	1280	448	1024	768	832	640	576	832	192	1664	256	448	192	384	576	704	832	256	1024
1	*Lolium rigidum* Gaud.	320	192	128	320	256	192	128	576	384	512	128	256	192	192	128	192	64	128	320	128	192	256	128	320	192
2	*Cutandia dichotoma* (Forsk.) Trabut	-	384	448	576	448	320	-	-	-	256	320	384	448	640	576	-	704	320	704	640	448	576	256	1152	384
3	*Melilotus indicus* (L.) All.	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	128	320	17	256	-	-	-	6
4	*Emex spinosus* (L.) Campd.	-	-	-	-	-	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41	-
5	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	9	128	-	-	-	-	-	-	4	-	-	-	-	-	-	9	-	12
6	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	4	-	-	8	-	-	-	-	-
7	*Centurea dimorpha* Viv.	-	5	4	8	1	-	8	4	1	16	-	-	-	-	-	-	6	12	-	-	7	-	-	-	-
8	*Anagallis arvensis* L.	-	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	1	1	3	-	2	-	-	-	-
9	*Rhaponticum acaule* (L.) Dc.	6	2	12	-	2	-	1	1	1	-	-	-	-	-	-	-	5	3	-	-	-	-	-	2	-
10	*Launaea resedifolia* (L.) O Kuntze	2	-	2	1	1	-	4	2	-	-	1	-	2	3	4	-	5	3	-	-	13	-	-	-	-
11	*Papaver hybridum* L.	-	-	-	-	-	2	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-
12	*Bassia muricata* (L.) Aschers.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-
13	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3	4	-	4	-	-
14	*Convolvulus supinus* Coss. et Kral.	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Senecio gallicus* Chlax	1	-	-	-	-	1	-	-	1	1	-	1	-	-	-	-	2	1	-	-	-	1	-	2	-
16	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	2	-	4	-
17	*Brassica tournefortii* Gouan	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	4
18	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
19	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
20	*Matthiola fruticulosa* (L.) Maire.	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	23
22	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Enarthrocarpus clavatus* Del. ex Godet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	2	-	-	-	-	-	+	-	-
24	*Adonis dentata* Delile.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Hippocrepis multisiliquosa* L.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Echium angustifolium* Mill.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Table (28): Number of individual species in each quadrate in barley field No.15. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	384	678	640	704	256	896	640	384	704	512	576	448	512	18	21	14	11	14	1472	960	1216	-	-	-	-
2	*Lolium rigidum* Gaud.	832	768	1152	-	640	384	512	576	448	576	1088	704	960	-	-	-	-	-	-	-	-	1664	960	1152	1280
3	*Emex spinosus* (L.) Campd.	128	5	-	192	17	256	128	256	34	192	14	256	27	576	34	17	-	10	4	-	7	12	18	448	640
4	*Bromus rigidus* Roth.	256	192	-	384	256	64	24	13	32	17	64	25	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Sisymbrium irio* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	34	-	-
6	*Astragalus boeticus* L.	-	-	-	2	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	*Centurea dimorpha* Viv.	1	-	-	-	-	6	8	-	-	-	-	-	-	7	8	3	-	-	-	-	-	17	-	-	5
8	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	12	31	-
9	*Brassica tournefortii* Gouan	-	-	-	2	-	3	2	-	-	3	-	-	2	4	4	2	3	3	-	-	7	7	-	4	6
10	*Malva parviflora* L.	-	-	-	8	8	-	5	-	-	-	8	-	-	6	4	-	-	-	-	-	-	-	-	-	-
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	7	-	-	-	-	6	7	-	-	16
12	*Reichardia tingitana* (L.) Roth.	2	-	8	1	2	3	-	3	-	-	3	2	-	-	-	4	2	-	-	2	-	-	-	-	3
13	*Anagallis arvensis* L.	-	8	4	-	-	-	-	-	-	-	-	6	-	-	-	9	-	-	-	-	-	-	-	2	-
14	*Hussonia pinnata* (Viv.) Jatri	-	-	-	4	3	-	-	-	-	4	-	3	-	-	-	2	-	-	4	-	-	-	-	2	2
15	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	2	-	-	-	-	6
16	*Senecio gallicus* Chiax	1	1	-	-	-	3	3	-	-	-	1	4	-	-	-	-	-	-	1	-	-	-	-	2	-
17	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-
18	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-
19	*Launaea resedifolia* (L.) O.Kuntze	-	3	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	4
20	*Papaver hybridum* L.	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	4	-	-
21	*Artemisia monosperma* Delile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-
22	*Hypecoum geslini* Coss. et Kral	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Enarthrocarpus clavatus* Del.ex Godr	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-
24	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
25	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Silene cerastioides* L.	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Anthemis secundiramea* Biv.	1	11	-	-	-	-	-	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	*Polygonum equisetiforme* Sibth.& Sm.	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
29	*Asphodelus fistulosus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (29): Number of individual species in each quadrate in barley field No.16. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	1664	1344	1216	960	704	1088	1536	512	1024	640	512	832	704	384	192	960	-	-	-	704	1024	576	512	1280	-
2	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	-	-	-	-	320	256	384	832	320	512	192	384	-	-	-	-	-	-	-	-	-
3	*Melilotus indicus* (L.) All.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	34	1472	832	384	1024	1088	704	1664
4	*Bromus rigidus* Roth.	-	-	-	-	256	-	-	384	-	-	-	-	10	256	384	-	-	-	-	+	-	-	-	-	-
5	*Emex spinosus* (L.) Campd.	-	-	3	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	21	22	37	41	37	-
6	*Anagallis arvensis* L.	-	-	-	6	-	-	2	4	-	-	-	-	-	-	-	-	14	8	12	11	25	28	31	17	-
7	*Hussonia pinnata* (Viv.) Jafri	8	3	-	2	-	4	-	2	2	2	2	1	-	2	2	5	8	-	-	7	11	-	7	-	14
8	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	6	17	-	-	2	-	-	-	-	-	-	-	9	5	4	3	18	4	2	-
9	*Centurea dimorpha* Viv.	11	-	3	28	3	-	14	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
10	*Brassica tournefortii* Gouan	1	-	-	-	2	-	-	2	1	2	-	-	-	4	-	-	5	6	3	4	3	2	4	4	2
11	*Reichardia tingitana* (L.) Roth.	2	2	2	7	4	10	5	1	3	1	-	1	-	-	-	1	2	-	-	-	-	-	-	-	-
12	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	9	13	9	7	-	-	-	-	-
13	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	10	7	-	-	-	-	-
14	*Convolvulus supinus* Coss. et Kral.	-	-	-	-	-	22	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Allium subhirsutum* L.	-	-	-	-	-	6	-	-	2	-	-	-	-	-	-	3	-	-	-	-	-	-	-	2	-
16	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Polygonum equisetiforme* Sibth &Sm.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	3	-	-
18	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-
19	*Adonis dentata* Delile	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
20	*Lathyrus clymenum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
21	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
22	*Vaccaria pyramidata* Medik.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
23	*Pituranthos tortuosus* (Desf.) Benth	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Senecio gallicus* Chiax	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (30): Number of individual species in each quadrate in barley field No.17. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.1m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Cutandia dichotoma* (Forsk.) Trabut	320	128	192	320	192	320	448	512	704	-	256	448	192	320	256	448	-	-	-	-	-	-	-	-	-
2	*Lolium rigidum* Gaud.	576	448	640	896	448	128	768	1472	-	-	448	1088	960	1280	896	832	-	-	-	-	-	-	-	-	-
3	*Emex spinosus* (L.) Campd.	128	64	-	6	-	192	320	-	-	4	512	-	68	15	8	18	27	35	41	29	704	11	-	-	-
4	*Melilotus indicus* (L.) All.	320	320	704	384	960	-	-	-	-	-	-	-	12	9	-	-	13	26	34	18	32	18	12	27	15
5	*Anagallis arvensis* L.	9	6	-	-	12	-	-	7	-	-	-	-	-	-	-	7	14	31	37	-	17	-	-	4	-
6	*Hussonia pinnata* (Viv.) Jafri	3	-	-	-	2	-	4	-	3	4	2	3	8	-	-	-	13	7	-	-	-	-	-	-	-
7	*Rhaponticum acaule* (L.) Dc.	2	-	3	-	-	-	-	-	3	2	-	-	-	6	-	-	-	-	3	7	2	1	7	2	4
8	*Brassica tournefortii* Gouan	3	2	-	-	3	-	1	-	-	-	3	-	4	3	1	2	4	6	3	2	-	3	-	-	-
9	*Centurea dimorpha* Viv.	8	-	4	-	-	-	-	11	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	7
10	*Astragalus boeticus* L.	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	14	-	-	-	-
11	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6	3	4	-	-	10	-	-	1	-
12	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	14	-	-	-	-	-
13	*Malva parviflora* L.	-	-	-	-	-	12	8	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
14	*Reichardia tingitana* (L.) Roth.	2	3	-	2	-	-	2	1	2	2	-	2	1	1	-	-	2	-	-	-	-	-	-	-	-
15	*Polygonum equisetiforme* Sibth.&Sm.	-	-	-	11	-	-	-	-	-	-	6	-	-	-	-	-	-	-	2	-	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6	3	-	-	-	3	-	-	-	-
17	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	-	-
18	*Senecio gallicus* Chiax	-	-	2	-	-	1	-	-	-	-	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-
19	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
20	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	2	-
21	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	2
22	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
23	*Silene cerastioides* L.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
24	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Glacium corniculatum* (L.) J.H Rud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
26	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
27	*Convolvulus supinus* Coss et Kral.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
28	*Hypecoum geslini* Coss.et Kral.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-
29	*Carduus getulus* Pomel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
30	*Vaccaria pyramidata* Medik.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (31): Number of individual species in each quadrate in barley field No.18. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	58	43	14	128	320	64	192	12	23	576	832	704	320	64	5	12	128	13	11	24	448	256	16	320	192
2	*Melilotus indicus* (L.) All.	-	-	-	-	24	16	256	-	-	13	12	-	576	1216	1664	1472	896	448	960	1152	768	320	1600	-	448
3	*Lolium rigidum* Gaud.	1600	1408	192	1088	832	576	704	640	1024	-	-	-	-	-	-	18	8	64	384	-	-	-	9	512	-
4	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	256	-	-	-	-	-	-	-	-	-	-	-	-	-	128	-	64	320
5	*Avena barbata* Pott.ex Link	-	-	-	38	52	-	-	11	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	-	-	-	6	48	13	-	-	-	-	6	-	9	-	-	-	-	-	-
7	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	3	-	-	-	3	-	22	8	2	1	2	1	-	-	3	6	-	-	3	2
8	*Senecio gallicus Chiax*	3	-	-	-	-	-	-	-	-	4	-	8	-	-	-	-	14	-	22	-	-	-	-	5	-
9	*Trigonella maritima* Delile ex Poiret	-	-	-	-	-	-	-	-	-	384	256	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Anagallis arvensis* L.	-	-	-	-	-	-	33	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	9	6	12	-	6
12	*Amaranthus viridis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-
13	*Malva parviflora* L.	-	-	-	-	-	-	-	-	-	-	18	-	-	-	1	-	-	-	-	-	-	-	2	-	-
14	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	1	-	3	-	-	-
15	*Matthiola fruticulosa* (L.) Maire	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
17	*Chenopodium murale* L.	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Launaea resedifolia* (L.) O.Kuntze	-	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	-	-	-	-	3	-	-	-	-
19	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Enarthrocarpus clavatus* Del.ex Godet	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Polygonum equisetiforme Sibth.&Sm.*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
22	*Vaccaria pyramidata Medik*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
23	*Kickxia aegyptiaca*	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Pituanthos tortuosus* (Desf.) Benth.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

Table (32): Number of individual species in each quadrate in barley field No.19. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		1088	320	1216	192	76	1088	1536	1408	640	1856	832	384	512	1600	704	1216	576	1024	1344	-	-	896	-	-	-
1	*Melilotus indicus* (L.) All.	-	-	-	-	768	-	-	-	-	-	-	-	-	-	68	-	-	-	-	128	576	1280	1472	1088	1664
2	*Lolium rigidum* Gaud.	-	-	-	7	-	-	-	8	-	-	-	14	-	-	-	-	12	-	-	34	576	4	384	704	512
3	*Emex spinosus* (L.) Campd.	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	6	128	-
4	*Bromus rigidus* Roth.	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	1	-	-	5	-
5	*Senecio gallicus Chiax*	1	2	1	27	9	-	-	3	1	-	-	2	3	1	24	-	-	-	-	6	1	-	-	5	-
6	*Avena barbata* Pott ex Link	-	-	-	-	-	-	14	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	6	24	26
7	*Rhaponticum acaule* (L.) Dc.	-	8	1	3	11	6	2	-	8	-	4	5	7	5	-	2	-	-	4	-	3	-	1	-	-
8	*Centurea dimorpha* Viv.	3	9	-	-	-	2	-	-	-	-	6	-	-	-	-	32	-	-	-	-	-	-	-	-	-
9	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	21	5	-	-	4	3	-	-	-
10	*Malva parviflora* L.	-	-	-	-	-	-	-	6	8	-	-	-	-	4	5	-	-	-	-	-	-	-	14	-	-
11	*Hussonia pinnata* (Viv.) Jafri	-	-	-	4	-	-	-	3	-	-	-	-	-	-	2	-	4	-	-	2	-	-	-	1	8
12	*Convolvulus supinus* Coss.ex Kral	-	-	-	-	-	-	-	-	-	-	-	8	16	-	-	-	-	-	-	-	-	-	-	-	-
13	*Linaria tenuis* (Viv.) Spreng.	-	-	-	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	*Reichardia tingitana* (L.) Roth.	2	3	1	-	-	-	1	4	-	-	-	-	3	-	-	-	-	-	3	-	2	1	-	-	-
15	*Anagallis arvensis* L.	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Centurea alexandrina* Delile	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	4	-	-	-	-
17	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	2	-	3	-	-	-	-	1	1
18	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
19	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
20	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
22	*Allium subhirsutum* L.	-	-	-	2	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Papaver hybridum* L.	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
24	*Medicago sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (33): Number of individual species in each quadrate in barley field No.20. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	-	-	768	896	704	576	1216	960	768	-	-	-	-	-	-	-	-	512	1472	832	1088	1344	-	-	-
2	*Melilotus indicus* (L.) All.	-	-	-	-	18	-	1344	832	448	-	-	16	320	192	512	1152	35	38	1472	17	128	384	1152	16	1664
3	*Emex spinosus* (L.) Campd.	512	28	24	17	22	19	8	13	17	320	23	384	64	192	12	24	-	-	-	-	-	-	13	21	27
4	*Anagallis arvensis* L.	-	-	-	-	-	12	4	-	-	-	13	-	-	-	-	-	7	-	-	-	-	-	-	13	24
5	*Malva parviflora* L.	-	-	-	-	-	2	-	4	-	-	-	-	-	9	-	-	14	18	7	-	-	-	-	-	17
6	*Astragalus boeticus* L.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	8	12	-	-	12	8	-	-	8	14	-
7	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	10	-	11	23	-	-	-	-	-	-
8	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	16	8	12	-	-	-	-	-	-	6
9	*Senecio gallicus* Chiax	3	3	4	6	-	15	5	-	-	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
10	*Brassica tournefortii* Gouan	2	3	1	-	-	-	-	-	2	-	3	-	4	1	1	-	3	-	3	2	4	-	2	-	2
11	*Rhaponticum acaule* (L.) Dc.	4	-	3	-	-	-	-	-	4	1	-	4	8	-	-	-	-	4	2	2	-	-	-	-	-
12	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	6	2	4	-	11	-	4	3	2	-	-	-	-
13	*Centurea dimoroha* Viv.	-	-	-	14	-	-	-	-	3	-	-	-	-	-	6	-	-	8	-	-	-	-	-	-	-
14	*Hussonia pinnata* (Viv.) Jafri	-	-	2	-	-	7	-	4	-	4	-	-	3	-	-	-	-	-	-	-	-	6	3	-	-
15	*Hypecoum geslini* Coss.et Kral	-	-	-	11	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Silene cerastioides* L.	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	2	-
17	*Chenopodium murale* L.	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-	-	-	-	-	-	-	4	-	-	-
19	*Reichardia tingitana* (L.) Roth.	-	3	-	1	1	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Linaria tenuis* (Viv.) Spreng.	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	3	-	-	-	-	-	-	-	-	-
21	*Salsola kali* L.	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	1	-	-	-	-	-	2	-	1	-	1	-	-	-	-	-	-	-	3	-
23	*Glaucium corniculatum* (L.) J.H.Rud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
24	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (34): Number of individual species in each quadrate in barley field No.21. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Bromus rigidus* Roth.	-	-	-	192	28	19	64	128	4	512	64	1088	512	640	1024	768	1920	1664	448	448	896	896	576	640	448
2	*Emex spinosus* (L.) Campd.	-	40	128	384	128	192	7	-	3	2	-	3	10	25	192	23	64	256	128	-	-	-	-	256	-
3	*Lolium rigidum* Gaud.	1344	1664	896	1920	960	576	2048	192	-	256	448	-	-	-	-	-	-	2	-	-	-	-	-	-	-
4	*Malva parviflora* L.	64	-	-	-	-	-	-	7	-	8	8	6	4	-	-	-	-	14	-	-	-	31	17	-	-
5	*Melilotus indicus* (L.) All.	64	6	-	-	-	-	-	-	320	192	3	-	-	-	-	-	-	-	-	-	-	128	-	-	-
6	*Astragalus boeticus* L.	11	-	-	-	-	-	-	-	-	-	5	-	-	4	128	-	-	-	-	-	-	-	7	1	8
7	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64
8	*Rhaponticum acaule* (L.) Dc.	-	-	2	-	-	8	-	4	-	7	12	8	3	1	-	-	1	-	-	-	8	-	-	-	-
9	*Senecio gallicus* Chiax	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	13	24
10	*Hussonia pinnata (Viv.) Jafri*	-	5	3	-	-	-	4	-	-	-	-	-	1	-	1	-	2	-	3	-	-	-	-	5	14
11	*Vicia sativa* L.	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	2	-	-	11	-	-	-
12	*Rumex pictus* Forst	-	17	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	*Chrysanthemum coronarium* L.	4	3	-	-	-	-	-	-	-	-	-	-	1	4	2	-	-	-	4	-	-	-	1	-	-
14	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	14	-	-	21	-	26	-	19	-	-	-	-	-	-	9	13
15	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	2	-	-	-	-	-	-	-
16	*Enarthrocarpus clavatus* Del.exGoder.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	5	-	-	-	-	-	-	4	-	-
17	*Anagallis arvensis* L.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	3	-
18	*Launaea resedifolia* (L.) O. Kuntze	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-
19	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3	-	-
20	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Calendula tripterocarpa* Rupr.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table (35): Number of individual species in each quadrate in barley field No.22. in GMR agriculture project (Sirte).

No	Species \ Quadrat No.16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	192	64	21	35	256	128	11	14	23	-	12	17	21	12	43	37	31	17	23	19	8	12	192	41	17
2	*Lolium rigidum* Gaud.	-	-	704	1216	1344	64	320	1088	192	-	1024	192	-	-	-	-	-	-	-	-	-	-	-	-	-
3	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	448	-	-	-	-	256	-	-	64	512	896	-	-	-	-	-	-	-	-	-	-	-
4	*Melilotus indicus* (L.) Dc.	-	-	-	4	-	-	18	9	-	192	640	128	-	-	-	-	7	-	-	-	-	-	-	13	384
5	*Anagallis arvensis* L.	9	24	-	-	4	-	15	8	12	-	-	-	-	-	-	-	14	-	7	11	17	21	-	7	-
6	*Vicia sativa* L.	-	-	-	3	27	-	28	22	13	-	9	-	-	-	-	6	8	-	12	3	-	-	-	-	-
7	*Avena barbata* Pott.ex Link	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	14	26	-	-	-	-	-	17	21	14
8	*Convolvulus arvensis* L.	-	-	-	-	-	-	-	-	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	*Oxalis pes -caprae* L.	-	14	45	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
10	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	4	7	6	-	-	-	2	8	11	-	-	-	-	12	-	7	-
11	*Rhaponticum acaule* (L.) Dc.	-	1	2	-	7	-	2	2	4	3	4	4	1	2	7	-	3	-	2	-	-	8	3	-	-
12	*Hussonia pinnata* (Viv.) Jafri	4	-	-	-	-	4	-	-	1	-	1	-	8	2	4	7	3	-	-	-	-	3	-	-	-
13	*Centurea dimorpha* Viv.	-	-	-	-	6	-	-	-	-	11	4	-	8	-	-	-	-	-	-	-	-	-	-	3	13
14	*Brassica tournefortii* Gouan	-	-	3	-	-	3	-	23	1	12	-	-	2	2	6	12	-	1	-	-	-	-	-	-	-
15	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	4	7	4	2	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Senecio gallicus* Chiax	3	4	-	-	-	-	-	-	2	-	3	-	-	-	-	1	4	1	-	1	-	2	1	-	-
17	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	16	5	-	-	-	-	-	-	-	-	-	-	-
18	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	-	-	-	-	-
19	*Chrysanthemum coronarium* L.	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	3	4	-	-	-	-	-	-	-
20	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	-	-	3	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	1	-	-
22	*Hypecoum geslini* Coss.ex Kral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
23	*Lathyrus clymenum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
24	*Daucus syrticus* Murb.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Echium angustifolium* Mill.	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
27	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
28	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
29	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	*Glaucium corniculatum* (L.) J.H Rud	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(36):Weed species present (+) or absent (-) in each quadrate in barley field No. 1. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Melilotus indicus* (L.) All.	-	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+
3	*Cutandia dichotoma* (Forsk.) Trabut	-	+	-	-	+	-	-	-	+	-	-	+	+	+	+	+	+	+	-	-	-	+	+	+	+
4	*Bromus rigidus* Roth.	-	-	-	-	+	-	-	-	-	+	+	-	+	+	-	-	-	+	+	-	+	+	+	+	+
5	*Hussonia pinnata* (Viv.) Jafri	+	+	+	+	+	-	-	-	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+
6	*Pseudorlaya pumila* (L.) Grande	-	+	+	+	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	+
7	*Malva parviflora* L.	-	-	-	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
8	*Anagallis arvensis* L.	-	-	-	+	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-
9	*Lotus cytisoides* L.	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
10	*Senecio gallicus* Chiax	+	+	+	+	+	-	-	-	-	+	+	-	-	+	+	+	+	+	+	-	+	+	+	-	+
11	*Medicago littoralis* Rohde ex Lois.	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
12	*Vicia sativa* L.	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	*Brassica tournefortii* Gouan	+	-	+	+	-	-	-	+	+	-	+	-	-	-	-	-	-	+	+	+	-	+	+	+	-
14	*Launaea resedifolia (L.) O.Kuntze*	+	-	-	+	+	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+
15	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	-	+	+	-
16	*Onopordum arenarium* (Desf.) Pomel	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-
17	*Rhaponticum acaule* (L.) Dc.	-	+	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+
18	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+
19	*Centurea dimorpha* Viv.	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
20	*Linaria tenuis* (Viv.) Spreng.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-
21	*Polygonum equisetiforme* Sibth.&Sm.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
22	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Erodium cicutarium* (L.) L' Hert	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
24	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-

Table(37):Weed species present (+) or absent (-) in each quadrate in barley field No. 2. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Bromus rigidus* Roth.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	*Cutandia dichotoma* (Forsk.)Trabut.	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-
4	*Melilotus indicus* (L.)All.	-	-	-	+	+	-	-	+	-	-	-	+	+	+	+	+	+	-	+	+	-	-	+	+	+
5	*Malva parviflora* L.	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	-	+	-	+
6	*Emex spinosus* (L.)Campd	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+
7	*Astragalus boeticus* L.	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	+	-
8	*Launaea resedifolia* (L.)O.Kuntze	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
9	*Centurea dimorpha* Viv.	+	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	+	-	+	-	+	+
10	*Hussonia pinnata* (Viv.)Jafri	+	+	+	-	+	-	-	+	-	-	+	+	-	-	+	+	+	-	-	-	+	+	-	+	+
11	*Senecio gallicus* Chiax	-	-	+	+	-	-	+	+	+	-	+	+	+	+	+	+	+	-	-	-	+	-	-	+	+
12	*Rumex pictus* Forst.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-	-
13	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
14	*Rhaponticum acaule* (L.)Dc.	-	+	-	-	-	-	+	-	+	+	+	-	+	+	-	-	-	-	-	+	-	-	+	+	+
15	*Avena barbata* Pott.ex Link.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-
17	*Chrysanthemum coronarium* L.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-
18	*Brassica tournefortii* Gouan	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+
19	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
20	*Allium subhirsutum* L.	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Pseudorlaya pumila* (L.)Grande	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+

Table(38):Weed species present (+) or absent (-) in each quadrate in barley field No. 3. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
2	*Bromus rigidus* Roth.	+	+	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-	+	+	+
3	*Melilotus indicus* (L.)All.	+	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	+	-	-	+	-	+	+	-
4	*Cutandia dichotoma* (Forsk.)Trabut	+	+	+	+	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Emex spinosus* (L.)Campd.	+	+	-	-	+	+	+	+	+	-	+	+	-	+	+	-	-	+	-	+	-	-	+	+	+
6	*Avena barbata* Pott ex Link.	-	-	-	-	-	+	-	-	-	+	-	-	+	+	+	+	+	+	+	-	-	-	-	-	-
7	*Astragalus boeticus* L.	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-
8	*Malva parviflora* L.	-	+	+	+	-	-	+	-	-	-	-	+	-	+	+	+	-	-	+	-	-	-	+	-	-
9	*Vicia sativa* L.	+	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	+	+	-	-	-	+	-	+	+
10	*Hussonia pinnata* (Viv.)Jafri	-	-	-	-	-	-	-	+	+	-	+	-	-	+	+	-	+	-	+	+	+	-	-	-	-
11	*Hordeum murinum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-
12	*Enarthrocarpus clavatus* Del. ex Godr	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	-	-	+	-
13	*Senecio gallicu* Chiax	+	+	-	-	+	+	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-
14	*Launaea resedifolia* (L.)O.Kuntze	+	+	+	-	+	+	-	+	+	-	+	-	-	+	+	-	-	-	+	-	-	-	-	-	-
15	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	+	+	+	+	-	-	-
16	*Phalaris minor* Retz.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-
17	*Brassica tournefortii* Gouan	-	-	-	-	+	-	-	+	+	-	+	-	-	-	-	+	+	-	-	-	-	+	-	-	+
18	*Rhaponticum acaule* (L.)Dc.	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	+	+	-
19	*Reichardia tingitana* (L.) Roth.	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-
20	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
21	*Anthemis secundiramea* Bir.	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
22	*Rumex pictus* Forst.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Silene cerastioides* L.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Papaver hybridum* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
25	*Malva sylvestris* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Linaria tenuis* (Viv.)Spreng	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-
27	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(39):Weed species present (+) or absent (-) in each quadrate in barley field No. 4. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.)Campd.	-	-	+	+	-	+	+	+	+	-	-	-	-	-	+	-	+	+	+	+	+	+	+	+	+
2	*Melilotus indicus* (L.)All.	-	-	+	+	-	-	+	+	-	+	-	+	-	-	+	+	-	+	-	+	+	-	+	+	-
3	*Lolium rigidum* Gaud.	-	-	-	-	-	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+
4	*Malva parviflora* L.	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+	+	-	+	+	+	+	+	+	+	+
5	*Anagallis arvensis* L.	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
6	*Centurea dimorpha* Viv.	+	+	-	-	+	+	-	+	+	-	+	+	-	-	-	-	-	+	-	+	-	-	-	-	-
7	*Medicago littoralis* Rohde ex Lois.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
8	*Hussonia pinnata* (Viv.)Jafri	-	-	+	-	-	-	-	-	-	-	+	-	-	-	+	-	+	+	+	-	+	+	-	+	-
9	*Rhaponticum acaule* (L.)Dc.	+	+	-	-	+	+	-	-	+	+	-	+	+	-	-	-	+	-	-	+	-	-	-	-	-
10	*Convolvulus arvensis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+
11	*Launnea resedifolia* (L.)O.Kuntze	+	+	+	+	+	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-
12	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	+	-	+	+
13	*Enarthrocarpus clavatus* Del.ex Godr.	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-
14	*Senecio gallicus* Chiax	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	+
15	*Allium subhirsutum* L.	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-
16	*Adonis dentata* Delle.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
17	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-
18	*Hypecoum geslini* Coss. et Kral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
19	*Onopordum arenarium* (Desf.)Pomel.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
20	*Matthiola fruticulosa* (L.) Mair.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
21	*Anthemis secundiramea* Blr.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Papaver hybridum* L.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Kickxia aegyptiaca*	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(40):Weed species present (+) or absent (-) in each quadrate in barley field No. 5. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.)All.	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-
2	*Emex spinosus* (L.)Campd.	+	+	+	+	+	+	+	+	-	-	-	-	+	-	+	+	+	-	-	+	-	-	-	-	-
3	*Cutandia dichotoma* (Forsk.)Trabut	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-
4	*Malva parviflora* L.	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	+	+	-	-	-	-	+	-	-	-
5	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	+	-	-	+	+
6	*Lolium rigidum* Gaud.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
7	*Launaea resedifolia* (L.)O.Kuntze	+	+	+	-	+	-	+	+	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-
8	*Rhaponticum acaule* (L.)Dc.	-	-	-	-	+	-	-	-	-	-	-	+	+	+	+	-	+	+	-	+	+	-	+	+	+
9	*Phalaris minor* Retz.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-
10	*Senecio gallicus* Chiax	+	-	-	-	-	+	-	-	-	-	-	+	-	+	+	+	-	-	-	-	-	-	-	-	-
11	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	+	-	+	+	-	-
12	*Hussonia pinnata* (Viv)Jafri	-	+	-	-	-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-	-	-	-	-	-
13	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
14	*Anthemis secundiramea* Bir.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-
15	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	-	-	-	-	-	-
16	*Medicago sativa* L.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
18	*Malva sylvetris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	+	-
19	*Onopordum arenarium* (Desf.)Pomel	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-	-
20	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-
21	*Enarthrocarpus clavatus* Del. ex Godr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Astragalus boeticus* L.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(41):Weed species present (+) or absent (-) in each quadrate in barley field No. 6. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	-	-	-	-	+	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	+	+	-	-
2	*Melilotus indicus* (L.)All.	+	+	+	+	+	+	+	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	+	+	+
3	*Emex spinosus* (L.) Campd.	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	-	-	-	-	+	+	+	+	+	+
4	*Cutendia dichotoma* (Forsk.)Trabut	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	+	+	+	-	+	-	-	-
5	*Malva parviflora* L.	-	-	-	-	-	-	+	+	+	-	-	-	-	-	+	+	-	-	-	+	+	-	+	+	-
6	*Mesembryanthemum crystallinum* L.	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	*Sisymbrium irio* L.	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	*Avena barbata* Pott.ex Link.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
9	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-
10	*Centurea dimorpha* Viv.	-	-	-	+	-	-	-	-	+	-	-	-	-	-	+	-	+	+	+	-	-	-	-	-	-
11	*Chrysanthemum coronarium* L.	-	-	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
12	*Hussonia pinnata* (Viv.)Jafri	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	+	+	+	+	+
13	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	+	-	-	+	-	-
14	*Senecio gallicus* Chiax	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-	+
15	*Malva sylvestris* L.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
16	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	+	+	+	-	-	-
17	*Reichardia tingitana* (L.)Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	+
18	*Launaea resedifolia* (L.)O.Kuntze	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	+	-	-	-	-	-
19	*Enarthrocarpus clavatus* Del.ex Godr.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-
20	*Rhaponticum acaule* (L.)Dc.	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-
21	*Linaria tenuis* (Viv.)Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+
22	*Allium subhirsutum* L.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-
23	*Anthemis secundiramea* Bir.	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-
24	*Orobanche schultzii* Mutel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
25	*Hypecoum geslini* Coss et Kral.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Onopordum arenarium* (Desf.)Pomi	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Lobularia libyca* (Viv.)Meisner	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-

Table(42):Weed species present (+) or absent (-) in each quadrate in barley field No. 7. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	-	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	-
2	*Melilotus indicus* (L.) All.	-	+	+	+	-	+	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	+	-	+	+
3	*Malva parviflora* L.	-	-	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	+	-	+	-	-	-
4	*Emex spinosus* (L.) Campd.	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	+	+	+	+	-	+
5	*Malva sylvestris* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-
6	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
7	*Enarthrocarpus clavatus* Del. ex Gode	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-
8	*Avena barbata* Pott ex Link.	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	*Medicago littoralis* Rode. ex Lois.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
10	*Hussonia pinnata* (Viv.) Jafri	+	+	-	-	-	-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
11	*Anagallis arvensis* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
12	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
13	*Launaea resedifolia* (L.) O. Kuntze	-	-	-	-	+	-	+	-	-	+	-	+	+	-	+	-	+	+	+	-	+	-	-	-	-
14	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
15	*Vicia monantha* Retz.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
16	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	+	-
17	*Senecio gallicus* Chiax	+	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-
18	*Brassica tournefortii* Goan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
19	*Reichardia tingitana* (L.) Roth	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	+	+	-	-	-
20	*Rhaponticum acaule* (L.) Dc.	-	-	+	+	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Orobanche schultzii* Mutel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
23	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
24	*Daucus sytricus* Murb.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
25	*Onopordum arenarium* (Desf.) Pomel	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(43):Weed species present (+) or absent (-) in each quadrate in barley field No. 8. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	-	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-
2	*Emex spinosus* (L.) Campd.	+	+	+	+	+	+	-	+	-	-	+	+	+	+	+	+	-	-	-	-	+	+	+	+	+
3	*Lolium rigidum* Gaud.	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	+	+	+
4	*Malva parviflora* L.	+	+	-	-	-	-	-	+	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
6	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
7	*Centurea dimorpha* Viv.	-	-	-	-	-	+	-	-	-	+	+	+	-	-	-	-	+	-	-	-	-	+	-	+	-
8	*Convolvulus althaeoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
9	*Astragalus boeticus* L.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Bromus rigidus* Roth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	+	+	+	+	-
12	*Launaea resedifolia* (L.) O.Kuntze.	+	-	-	+	-	-	+	-	-	-	-	+	+	-	-	+	-	+	-	+	-	-	-	+	-
13	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+
14	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+
15	*Allium subhirsutum* L.	-	-	-	-	+	-	-	+	+	-	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-
16	*Anagallis arvensis* L.	-	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	+	-
17	*Orobanche schultzii Mutel*	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Enarthrocarpus clavatus* Del. ex Gode	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-
19	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
20	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
21	*Chenopodium murale* L.	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Vaccaria pyramidata Medik*	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Asphodelus fistulosus* L.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
25	*Medicago sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
26	*Senecio gallicus* Chaix	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-

Table(44):Weed species present (+) or absent (-) in each quadrate in barley field No. 9. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Emex spinosus* (L.) Campd.	+	+	+	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	-
3	*Lolium rigidum* Gaud.	+	+	+	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	*Malva parviflora* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	+	+	+
5	*Vicia sativa* L.	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	*Bromus rigidus* Roth	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	*Centurea dimorpha* Viv.	-	+	-	+	-	-	-	+	+	+	-	+	-	-	-	-	-	-	-	+	+	+	-	-	-
8	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
9	*Launaea resedifolia* (L.) O.Kuntze	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	+	+	+	-	+	+	+	-	-
10	*Heliotropium ramosissium* (Lehm.) DC	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	+
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	+	+	+	-	-	-	+	-	-	-	+	-	+	+	-	+	-	-	-	-	-	-
12	*Senecio gallicus* Chiax	+	-	+	-	-	-	-	+	-	-	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-
13	*Orobanche schultzii* Mutel	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	*Hussonia pinnata* (Viv.) Jafri	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Brassica tournefortii* Gouan	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
17	*Enarthrocarpus clavatus* Del. ex Gode	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
18	*Hypecoum geslini* Coss. et Kral	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
20	*Pseudorlaya pumila* (L.) Grande	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Salsola kali* L.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Pituranthos tortuosus* (Desf.) Benth.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Adonis dentata* Delile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-

Table(45):Weed species present (+) or absent (-) in each quadrate in barley field No. 10. in GMR agriculture project (Sirte).

No	Species \ Quadrate No.:16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Melilotus indicus* (L.) All.	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	+	-
3	*Emex spinosus* (L.) Campd.	+	-	+	+	-	-	-	-	+	-	-	-	+	+	+	+	+	+	-	+	-	-	+	+	+
4	*Malva parviflora* L.	+	+	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Hussonia pinnata* (Viv.) Jafri	+	-	+	-	-	-	-	-	+	-	-	-	+	+	+	+	+	-	-	+	-	-	-	-	-
6	*Launaea resedifolia* (L.) O.kuntze	+	-	+	+	+	+	+	-	-	+	+	-	+	+	+	-	+	-	+	+	+	-	-	+	-
7	*Centurea dimorpha* (Viv.)	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	+	-	+	+	-	-	-	-	+
8	*Senecio gallicus* Chiax	+	-	-	-	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
9	*Avena barbata* Pott ex Link	-	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Hurdeum murinum* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
11	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	+	-	+	-	+	+	+	-	-	-	-	+	+	-	-	-	+	-	-	-	+
12	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	+
13	*Medicago sativa* L.	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-
14	*Vicia sativa* L.	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
15	*Polygonum equistiforme* Sibth.& Sm.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
16	*Bromus rigidus* Roth.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
17	*Anagallis arvensis* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
18	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-
19	*Silne cerastioides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Euphorbia terracina* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
21	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
22	*Echinops galalensis* Schweif	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-
23	*Brassica tournefortii* Gouan	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(46):Weed species present (+) or absent (-) in each quadrate in barley field No. 11. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Mollotus indicus* (L.) All.	-	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	-
3	*Emex spinosus* (L.) Campd.	+	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+
4	*Hypecoum gestini* Coss. et Kral	-	+	+	+	+	+	+	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	+	+	-	+	+	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
6	*Bromus rigidus* Roth.	-	+	+	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-
7	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
8	*Malva parviflora* L.	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
9	*Medicago littoralis* Rohde ex Lois	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-
11	*Hussonia pinnata* (Viv) Jafri	+	+	+	+	+	-	-	+	-	-	-	-	+	-	-	-	-	-	-	+	+	+	-	+	-
12	*Launaea resedifolia* (L.) O.Kuntze	+	-	+	+	+	+	-	+	-	-	+	+	-	-	+	+	+	-	-	-	-	+	+	+	+
13	*Centurea dimorpha* Viv.	-	-	-	+	-	-	+	-	+	-	-	-	-	+	-	-	+	+	-	-	-	-	-	+	+
14	*Brassica tournefortii* Gouan	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	+	+	-	-	+
15	*Rhaponticum acaule* (L.) Dc.	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
16	*Pseudorlaya pumila* (L.) Grande	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Salvia lanigera* Poir.	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Kickxia aegypliaca*	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	*Euphorbia terracina* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-
20	*Calendula tripterocarpa* Rupr.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	*Senecio gallicus* Chiax	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
22	*Reichardia tingitana* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Papaver hybridum* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Amaranthus viridis* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-
26	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-
27	*Chenopodium murale* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	*Echinops galalensis* Schweif	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	*Orobanche schultzii* Mutel	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
30	*Vaccaria pyramidata* Medik.	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
31	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-

Table(47):Weed species present (+) or absent (-) in each quadrate in barley field No. 12. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	-	-	+	+	-	-	-	-	-	+	-	-	+	+	+	-	-	-	-	+	+	+	+	+	+
2	*Emex spinosus* (L.) Campd.	-	-	-	-	-	+	-	+	+	+	+	-	-	-	-	+	+	+	+	-	-	-	-	+	-
3	*Anagallis arvensis* L.	-	-	-	-	+	+	+	+	+	-	+	+	+	-	-	-	+	-	+	-	+	-	-	+	-
4	*Lolium rigidum* Gaud.	-	-	-	-	+	-	-	-	+	+	-	-	-	-	+	-	+	+	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-	+	+	+	+	-	-	-
6	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	+	+	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
7	*Rhaponticum acaule* (L.) Dc.	+	-	-	-	+	+	+	+	+	+	+	+	-	+	-	-	+	+	-	-	+	-	-	-	-
8	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	+	+	-	-	-	+	-	-	-	-	+	+	-	+	-	+	-	+	-	-	-
9	*Papaver hybridum* L.	-	-	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Enarthrocarpus clavatus* Del. ex Gode	-	-	-	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-
11	*Launaea resedifolia* (L.) O. Kuntze	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	+	+	+
12	*Brassica tournefortii* Gouan	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
13	*Adonis dentata* Delile.	-	-	-	-	-	-	-	+	-	+	-	-	+	+	+	-	-	-	+	-	-	-	-	-	-
14	*Carduus getulus* Pomel	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
15	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	+	-	+	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-
16	*Senecio gallicus* Chiax	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
17	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
18	*Malva sylvestris* L.	-	-	-	-	+	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
19	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+
20	*Centurea dimorpha* Viv.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
21	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-
22	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
23	*Amarathus viridis* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
24	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
25	*Calendula tripterocarpa* Rupr.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-
26	*Glaucium corniculatum* (L.) J.H. Rud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(48):Weed species present (+) or absent (-) in each quadrate in barley field No. 13. in GMR agriculture project (Sirte).

No	Species \ Quadrate No.×16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	+	+	+	+	-	+	+	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	+
2	*Anagalis arvensis* L.	+	+	+	-	-	+	+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+
3	*Melilotus indicus* (L.) All.	+	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
4	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	+	-
5	*Malva parviflora* L.	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
6	*Lollum rigidum* Gaud.	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
7	*Centuree dimorpha* Viv.	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	+	-	+	-	-	-
8	*Launaea resedifolia (L.) O. Kuntze*	+	+	-	-	-	+	+	+	-	+	+	+	+	+	+	+	-	+	-	+	-	+	+	-	+
9	*Rhaponticum acaule* (L.) Dc.	+	+	-	-	-	+	-	+	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	-	-
10	*Heliotropium ramosissimum* (Lehm.) Dc.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	+	-
11	*Senecio gallicus* Chiax	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+
12	*Hussonia pinnata* (L.) Jafri	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
13	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
14	*Astragalus boeticus* L.	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
15	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
16	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
17	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
18	*Reicherdia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
19	*Orobanche schultzii* Mutel	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
21	*Anacyclus monanthos* (L.) Thell.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-

Table(49):Weed species present (+) or absent (-) in each quadrate in barley field No. 14. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Cutandia dichotoma* (Forsk.) Trabut	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	*Melilotus indicus* (L.) All.	-	+	+	+	+	+	-	-	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
4	*Emex spinosus* (L.) Campd.	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-	+
5	*Bromus rigidus* Roth.	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-
6	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+
7	*Centurea dimorpha* Viv.	-	+	+	+	+	-	+	+	+	+	-	-	-	-	+	-	+	-	-	+	-	-	-	-	-
8	*Anagallis arvensis* L.	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	+	+	-	-	+	-	-	-	-
9	*Rhaponticum acaule* (L.) Dc.	+	+	+	-	+	-	+	+	+	-	-	-	-	-	-	-	+	+	+	-	+	-	-	-	-
10	*Leunaea resedifolia* (L.) O.Kuntze	+	-	+	+	+	-	+	+	-	-	+	-	+	+	+	-	+	+	-	-	-	-	-	+	-
11	*Papaver hybridum* L.	-	-	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-
12	*Bassia muricata* (L.) Aschers.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
13	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-
14	*Convolvulus supinus* Coss. et Kral.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Senecio gallicus* Chiax	+	-	-	-	-	+	-	-	+	+	-	+	-	-	-	-	+	+	-	-	-	+	-	+	-
16	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-
17	*Brassica tournefortii* Gouan	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+
18	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
19	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
20	*Matthiola fruticulosa* (L.) Maire.	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
21	*Allium subhirsutum* L.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
22	*Linaria tenuis* (Viv.) Spreng	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	+
23	*Enarthrocarpus clavatus* Del. ex Godet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
24	*Adonis dentata* Delile.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Hippocrepis multisiliquosa* L.	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Echium angustifolium* Mill.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-

Table(50):Weed species present (+) or absent (-) in each quadrate in barley field No. 15. in GMR agriculture project (Sirte).

No	Species / Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
2	*Lolium ngidum* Gaud.	+	+	+	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	+	+	+	+
3	*Emex spinosus* (L.) Campd.	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+
4	*Bromus rigidus* Roth.	+	+	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
5	*Cutandia dichotoma* (Forsk.) Trabut	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
6	*Sisymbrium irio* L.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	*Astragalus boeticus* L.	-	-	-	+	+	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	+	-	-	+
8	*Centurea dimorpha* Viv.	+	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-
9	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	-	+	+
10	*Brassica tournefortii* Gouan	-	-	-	+	-	+	+	-	-	+	-	-	+	+	+	+	+	+	-	-	+	+	-	+	-
11	*Malva parviflora* L.	-	-	-	+	+	-	+	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	+
12	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	+	+	-	-	+
13	*Reichardia tingitana* (L.) Roth.	+	-	+	+	+	+	-	+	-	-	+	+	-	-	-	+	+	-	-	+	-	-	-	+	-
14	*Anagallis arvensis* L.	-	+	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+	+
15	*Hussonia pinnata* (Viv.) Jafri	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	-	-	-	+	+	-	-	-	-	+
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-
17	*Senecio gallicus* Chiax	+	+	-	-	-	+	+	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	-	-	-
18	*Linaria lenuis* (Viv.) Spreng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	+
20	*Launeea resedifolia* (L.) O.Kuntze	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
21	*Papaver hybridum* L.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
22	*Artemisia monosperma* Delile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Hypecoum geslini* Coss. et Kral	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Enarthrocarpus clavatus* Del.ex Goder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-	-	-
25	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-
26	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	*Silene cerastioides* L.	+	-	-	-	+	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	*Anthemis secundiramea* Biv.	+	+	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	*Polygonum equiseliforme* Sibth.& Sm.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
30	*Asphodelus fistulosus* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(51):Weed species present (+) or absent (-) in each quadrate in barley field No. 16. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	-
2	*Cutandia dichotoma* (Forsk) Trabut	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	*Melilotus indicus* (L.) All.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
4	*Bromus rigidus* Roth.	-	-	-	-	+	-	-	+	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-
5	*Emex spinosus* (L.) Campd.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	+	+	-
6	*Anagallis arvensis* L.	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-
7	*Hussonia pinnata* (Viv.) Jafri	+	+	-	+	-	+	-	+	+	+	+	+	-	+	+	+	+	-	-	+	+	-	+	-	+
8	*Rhaponticum aceule* (L.) Dc.	-	-	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	-
9	*Centurea dimorpha* Viv.	+	-	+	+	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
10	*Brassica tournefortii* Gouan	+	-	-	-	+	-	-	+	+	+	-	-	-	+	-	-	+	+	+	+	+	+	+	+	+
11	*Reichardia tingitana* (L.) Roth.	+	+	+	+	+	+	+	+	+	+	-	+	-	-	-	+	+	-	-	-	-	-	-	-	-
12	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	+	+	-	-	-	-	-
13	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-
14	*Convolvulus supinus* Coss. et Kral.	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
15	*Allium subhirsutum* L.	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-
16	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	*Polygonum equisetiforme Sibth.&Sm.*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-
18	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
19	*Adonis dentata* Delile	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
20	*Lathyrus clymenum* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
21	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
22	*Vaccaria pyramidata* Medik.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
23	*Pituranthos tortousus* (Desf.) Benth.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Senecio gallicus* Chiax	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(52):Weed species present (+) or absent (-) in each quadrate in barley field No. 17. in GMR agriculture project (Sirte).

No	Species / Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Cutandia dichotoma* (Forsk.) Trabut	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-
2	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-
3	*Emex spinosus* (L.) Campd.	+	+	-	+	-	+	+	-	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
4	*Melilotus indicus* (L.) All.	+	+	+	+	+	-	-	-	-	-	-	-	+	+	-	-	+	+	+	+	+	-	-	+	-
5	*Anagallis arvensis* L.	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
6	*Hussonia pinnata* (Viv.) Jafri	+	-	-	-	+	-	+	-	+	+	+	+	+	-	-	-	+	+	-	-	-	-	-	-	-
7	*Rhaponticum acaule* (L.) Dc.	+	-	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	-	+	+	-	+	-	-	-
8	*Brassica tournefortii* Gouan	+	+	-	-	+	-	+	-	-	-	+	-	+	+	+	+	+	+	+	+	-	-	-	-	+
9	*Centurea dimorpha* Viv.	+	-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-
10	*Astragalus boeticus* L.	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	+	-
11	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+	+	-	+	-	-	-	-	-
12	*Avena barbata* Pott. ex Link.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
13	*Malva parviflora* L.	-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
14	*Reichardia tingitana* (L.) Roth.	+	+	-	+	-	-	+	+	+	+	-	+	+	+	-	-	+	-	-	-	-	-	-	-	-
15	*Polygonum equisetiforme* Sibth.&Sm.	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	+	-	-	-	+	-	+	+	-
17	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-	-	-	-	-
18	*Senecio gallicus* Chiax	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
19	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-
20	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+
21	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
22	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
23	*Silne cerastioides* L.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Glacium corniculatum* (L.) J.H.Rud.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	+	-	-	-	-	-
26	*Linaria tenuis* (Viv.) Spreng	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
27	*Convolvulus supinus* Coss.et Kral.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
28	*Hypecoum geslini* Coss et Kral.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
29	*Carduus getulus* Pomel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
30	*Vaccaria pyramidata* Medik.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(53):Weed species present (+) or absent (-) in each quadrate in barley field No. 18. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
2	*Melilotus indicus* (L.) All.	-	-	-	-	+	+	+	-	-	+	+	-	+	+	+	+	+	+	+	-	-	-	+	+	-
3	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	-	-	-	+	+
4	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
5	*Avena barbata* Pott.ex Link	-	-	-	+	+	-	-	+	+	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-
6	*Hussonia pinnata* (Viv.) Jafri	-	-	-	-	-	-	+	-	-	+	+	+	-	-	-	-	+	-	-	+	+	-	-	+	+
7	*Rhaponticum acaule* (L.) Dc.	-	-	-	-	-	+	-	-	-	+	-	+	+	+	+	+	+	-	+	-	-	-	-	+	-
8	*Senecio gallicus* Chiax	+	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	-	-	-
9	*Trigonella maritima* Delile ex Poiret	-	-	-	-	+	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	*Anagallis arvensis* L.	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	+	+	+	-	+
11	*Astragalus boeticus* L.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
12	*Amaranthus viridis* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-
13	*Malva parviflora* L.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-	+	-	-	-
14	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
15	*Matthiola fruticulosa* (L.) Maire	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
17	*Chenopodium murale* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Launaea resedifolia* (L.) O.Kuntze	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-
19	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
20	*Enarthrocarpus clavatus* Del.ex Godet	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-
21	*Polygonum equisetiforme Sibth.&Sm.*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
22	*Vaccaria pyramidata Medik*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Kickxia aegypliaca*	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	*Anthemis secundramea* Biv.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	*Diplotaxis muralis* (L.) Dc.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	*Pituanthos tortuosus* (Desf.) Benth.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
27	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(54):Weed species present (+) or absent (-) in each quadrate in barley field No. 19. in GMR agriculture project (Sirte).

No	Species / Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Melilotus indicus* (L.) All.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	-	-
2	*Lolium rigidum* Gaud.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	+	+	+	+	+
3	*Emex spinosus* (L.) Campd.	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+	-	-	+	+	+	+	+	+
4	*Bromus rigidus* Roth.	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-
5	*Senecio gallicus* Chiax	+	+	+	+	+	-	-	+	+	-	-	+	+	+	+	-	-	-	-	+	+	-	-	+	-
6	*Avena barbata* Pott ex Link	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-
7	*Rhaponticum acaule* (L.) Dc.	-	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	-	-	+	-	+	-	+	-	-
8	*Centurea dimorpha* Viv.	+	+	-	-	-	+	-	-	-	-	+	-	-	-	-	+	+	+	-	-	+	+	-	-	-
9	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-
10	*Malva parviflora* L.	-	-	-	-	-	-	-	+	+	-	-	-	-	+	+	-	+	-	-	+	-	-	-	+	+
11	*Hussonia pinnata* (Viv.) Jafri	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
12	*Convolvulus supinus* Coss.ex Kral	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
13	*Linaria tenuis* (Viv.) Spreng.	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	-	-	-
14	*Reichardia tingitana* (L.) Roth.	+	+	+	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	*Anagallis arvensis* L.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
16	*Centurea alexandrina* Delile	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	+	-	+	-	-	-	-	+	+
17	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
18	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
19	*Chenopodium murale* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
20	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
21	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	*Allium subhirsutum* L.	-	-	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	*Papaver hybridum* L.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
24	*Medicago sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(55):Weed species present (+) or absent (-) in each quadrate in barley field No. 20. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Lolium rigidum* Gaud.	-	-	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	+	+	+	+	+	-	-	-
2	*Melilotus indicus* (L.) All.	-	-	+	-	+	-	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	*Emex spinosus* (L.) Campd.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	+	+	+
4	*Anagallis arvensis* L.	-	-	-	-	-	+	+	-	-	-	+	-	-	-	-	-	+	-	-	-	-	-	-	+	+
5	*Malva parviflora* L.	-	-	-	-	-	+	-	+	-	-	-	-	-	+	-	-	+	+	+	-	-	-	-	-	+
6	*Astragalus boeticus* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	+	-	-	+	+	-	-	+	+	-
7	*Avena barbata* Pott ex Link	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	+	+	-	-	-	-	-	-
8	*Vicia sativa* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	+
9	*Senecio gallicus* Chiax	+	+	+	+	-	+	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	*Brassica tournefortii* Gouan	+	+	+	-	-	-	-	-	+	-	+	-	+	+	+	-	+	-	+	+	+	-	+	-	+
11	*Rhaponticum acaule* (L.) Dc.	+	-	+	-	-	-	-	-	+	+	-	+	+	-	-	-	-	+	+	+	-	-	-	-	-
12	*Chrysanthemum coronarium* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	+	-	+	+	+	-	-	-	-
13	*Centurea dimoroha* Viv.	-	-	-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-
14	*Hussonia pinnata* (Viv.) Jafri	-	-	+	-	-	+	-	+	-	+	-	-	+	-	-	-	-	-	-	-	-	+	+	-	-
15	*Hypecoum geslini* Coss.et Kral	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	*Silene cerastioides* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-
17	*Chenopodium murale* L.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-
19	*Reichardia tingitana* (L.) Roth.	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	*Linaria tenuis* (Viv.) Spreng.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-
21	*Salsola kali* L.	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
22	*Onopordum arenarium* (Desf.) Pomel	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
23	*Glaucium corniculatum* (L.) J.H.Rud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
24	*Allium subhirsutum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-

Table(56):Weed species present (+) or absent (-) in each quadrate in barley field No. 21. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Bromus rigidus* Roth.	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Emex spinosus* (L.) Campd.	-	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	-	-	-	-	+	-
3	*Lolium rigidum* Gaud.	+	+	+	+	+	+	+	+	-	+	+	-	-	-	-	-	-	+	-	-	-	+	+	-	-
4	*Malva parviflora* L.	+	-	-	-	-	-	-	+	-	+	+	+	+	-	-	-	-	+	-	-	-	+	-	-	-
5	*Melilotus indicus* (L.) All.	+	+	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	+	+	+	+
6	*Astragalus boeticus* L.	+	-	-	-	-	-	-	-	-	-	+	-	-	+	+	-	-	-	-	-	-	-	-	-	+
7	*Pseudorlaya pumila* (L.) Grande	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
8	*Rhaponticum acaule* (L.) Dc.	-	-	+	-	-	+	-	+	-	+	+	+	+	+	-	-	+	-	-	-	-	-	-	+	+
9	*Senecio gallicus* Chiax	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	-	+	-	+	-	-	-	-	+	+
10	*Hussonia pinnata (Viv.) Jafri*	-	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	-	-
11	*Vicia sativa* L.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	*Rumex pictus* Forst	-	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-	-
13	*Chrysanthemum coronarium* L.	+	+	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	+	-	-	-	-	+	+
14	*Brassica tournefortii* Gouan	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	+	+
15	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-
16	*Enarthrocarpus clavatus* Del.ex Godet	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	+	+	-
17	*Anagallis arvensis* L.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-
18	*Launaea resedifolia (L.)* O. Kuntze	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
19	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
20	*Chenopodium murale* L.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
21	*Calendula tripterocarpa* Rupr.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table(57):Weed species present (+) or absent (-) in each quadrate in barley field No. 22. in GMR agriculture project (Sirte).

No	Species \ Quadrate No. 16m²	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	*Emex spinosus* (L.) Campd.	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	*Lolium rigidum* Gaud.	-	-	+	+	+	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
3	*Cutandia dichotoma* (Forsk.) Trabut	-	-	-	+	-	-	-	-	+	-	-	+	+	+	-	-	-	-	-	-	-	-	-	+	+
4	*Melilotus indicus* (L.) Dc.	-	-	-	+	-	-	+	+	-	+	+	+	-	-	-	-	+	-	+	+	+	+	-	+	-
5	*Anagallis arvensis* L.	+	+	-	-	+	-	+	+	+	-	-	-	-	-	-	-	+	-	+	+	-	-	-	-	-
6	*Vicia sativa* L.	-	-	-	+	+	-	+	+	+	-	+	-	-	-	-	+	+	-	-	-	-	-	+	+	+
7	*Avena barbata* Pott.ex Link	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	*Convolvulus arvensis* L.	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
9	*Oxalis pes -caprae* L.	-	+	+	+	-	-	-	-	+	+	+	-	-	-	+	+	+	-	-	-	-	+	-	+	-
10	*Astragalus boeticus* L.	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	-	+	-	+	-	-	+	+	-	-
11	*Rhaponticum acaule* (L.) Dc.	-	+	+	-	+	-	+	+	+	-	+	-	+	+	+	+	+	-	-	-	-	-	-	+	+
12	*Hussonia pinnata* (Viv.) Jafri	+	-	-	-	-	+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-
13	*Centurea dimorpha* Viv.	-	-	-	-	+	-	-	-	-	+	+	-	+	-	-	+	-	+	-	-	-	-	-	+	+
14	*Brassica tournefortii* Gouan	-	-	+	-	-	+	-	+	+	+	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-
15	*Reichardia tingitana* (L.) Roth.	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	+	+	-	-
16	*Senecio gallicus* Chiax	+	+	-	-	-	-	-	-	+	-	+	-	-	-	-	+	+	-	-	+	-	-	-	-	-
17	*Salsola kali* L.	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
18	*Bromus rigidus* Roth.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-
19	*Chrysanthemum coronarium* L.	-	-	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-
20	*Papaver hybridum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	+	-	-
21	*Allium subhirsutum* L.	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
22	*Hypecoum geslini* Coss.ex Kral	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
23	*Lathyrus clymenum* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
24	*Daucus syrticus* Murb.	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
25	*Echium angustifolium* Mill.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
26	*Malva sylvestris* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
27	*Lotus cytisoides* L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
28	*Anthemis secundiramea* Biv.	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	*Hippocrepis multisiliquosa* L.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
30	*Glaucium corniculatum* (L.) J.H.Rud.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

A

B

Plate 1 A .*Astragalus boeticus* population.
B . *Bromus rigidus* population.

A

B

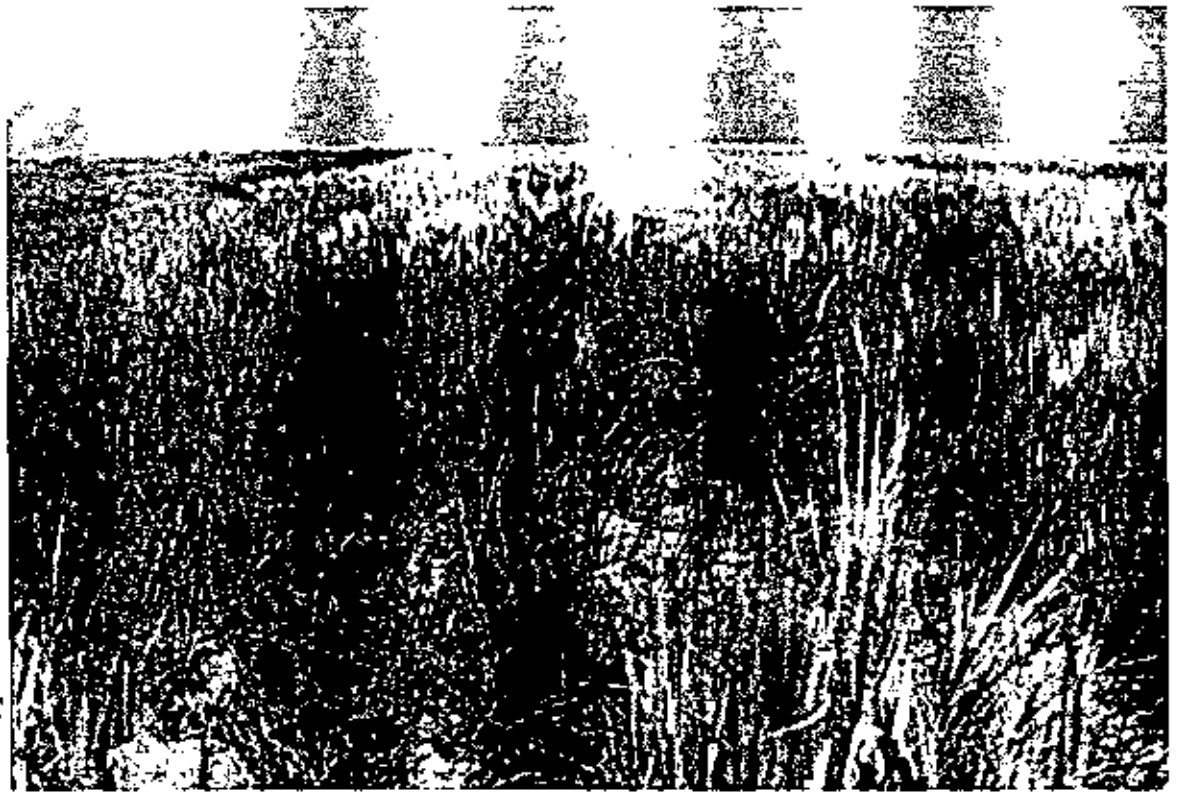
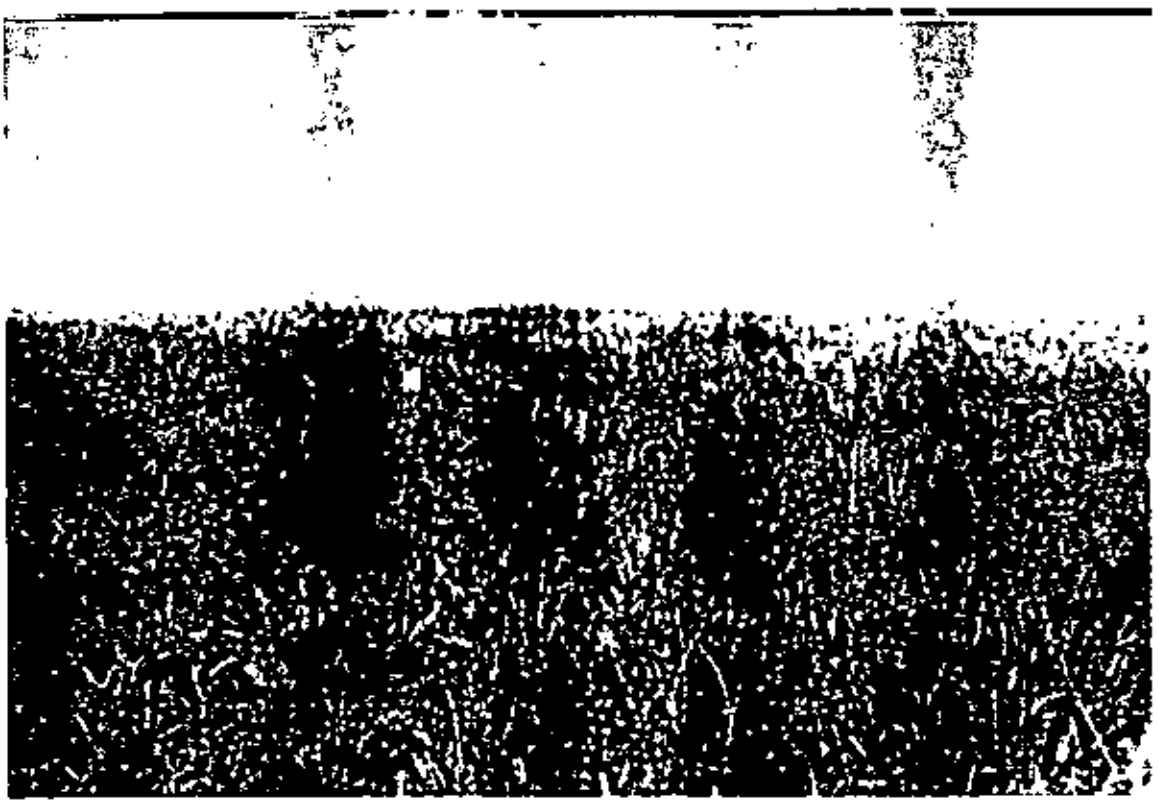


Plate 2 A *Malva parviflora* population.
B . *Lolium rigidum* population.

A



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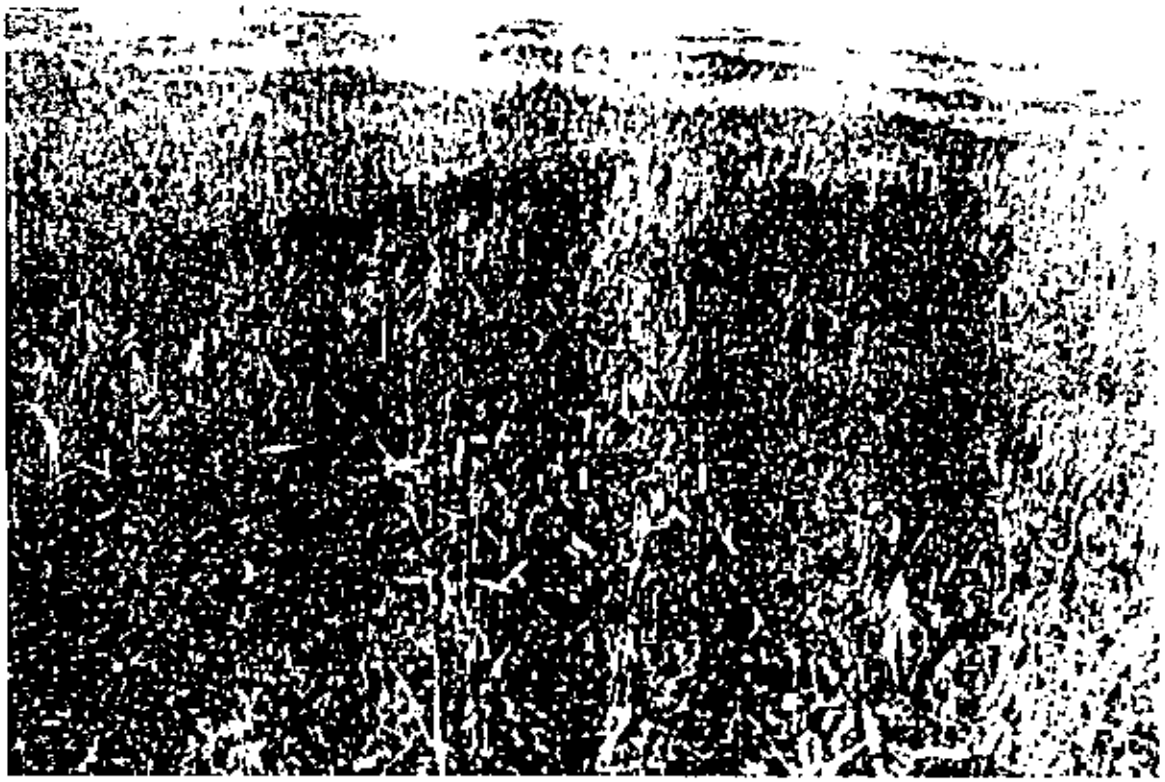


Plate 3 A *Melilotus indicus* population.
B . *Emex spinosus* population.

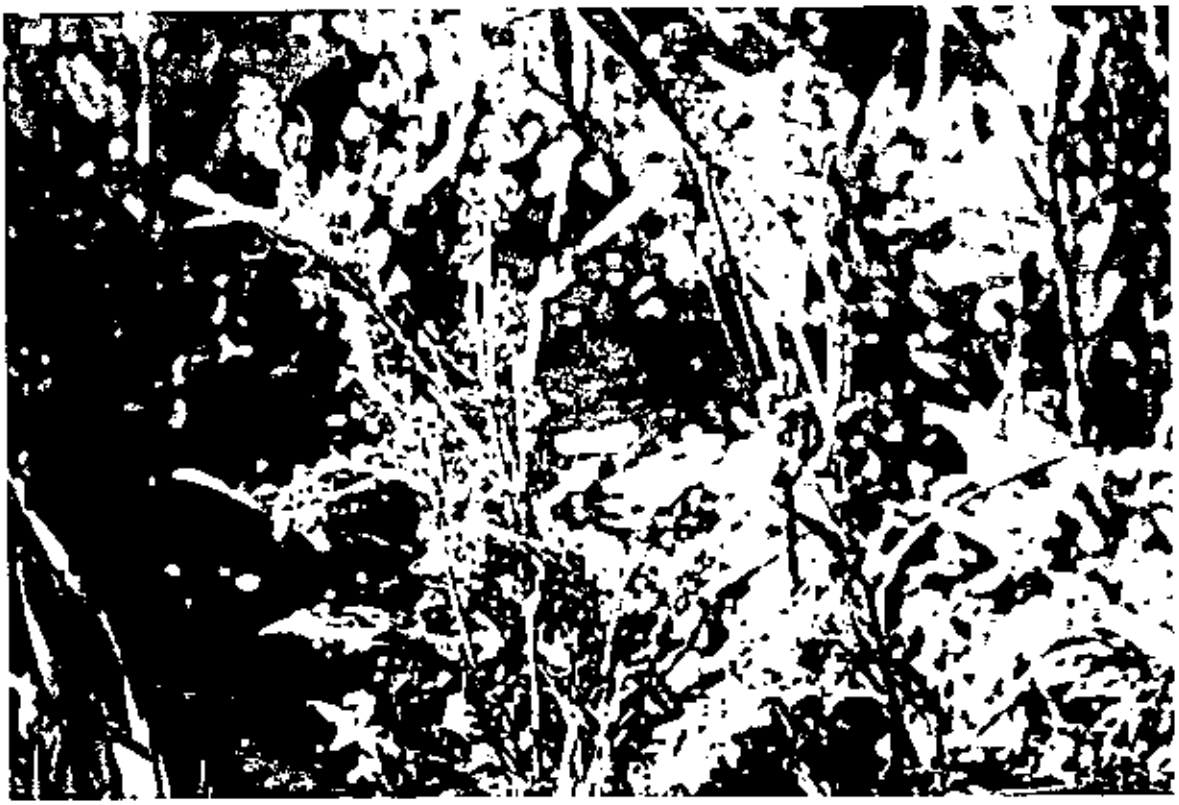
Plate 4. *Convolvulus althaeoides* population.

A

B

PLate 5. A. *Emex spinosus* (L.) Campd. (Polygonaceae).
B. *Polygonum equisetiforme* Sibth. & Sm. (Polygonaceae).

A



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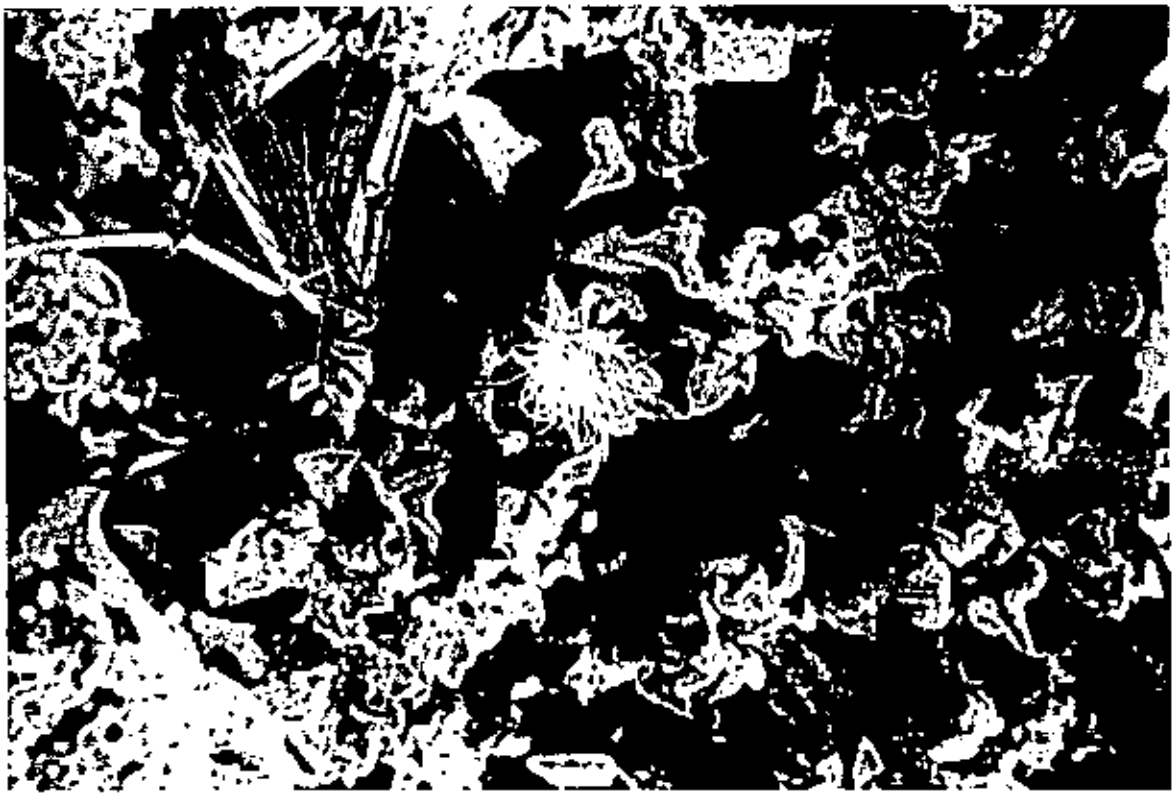


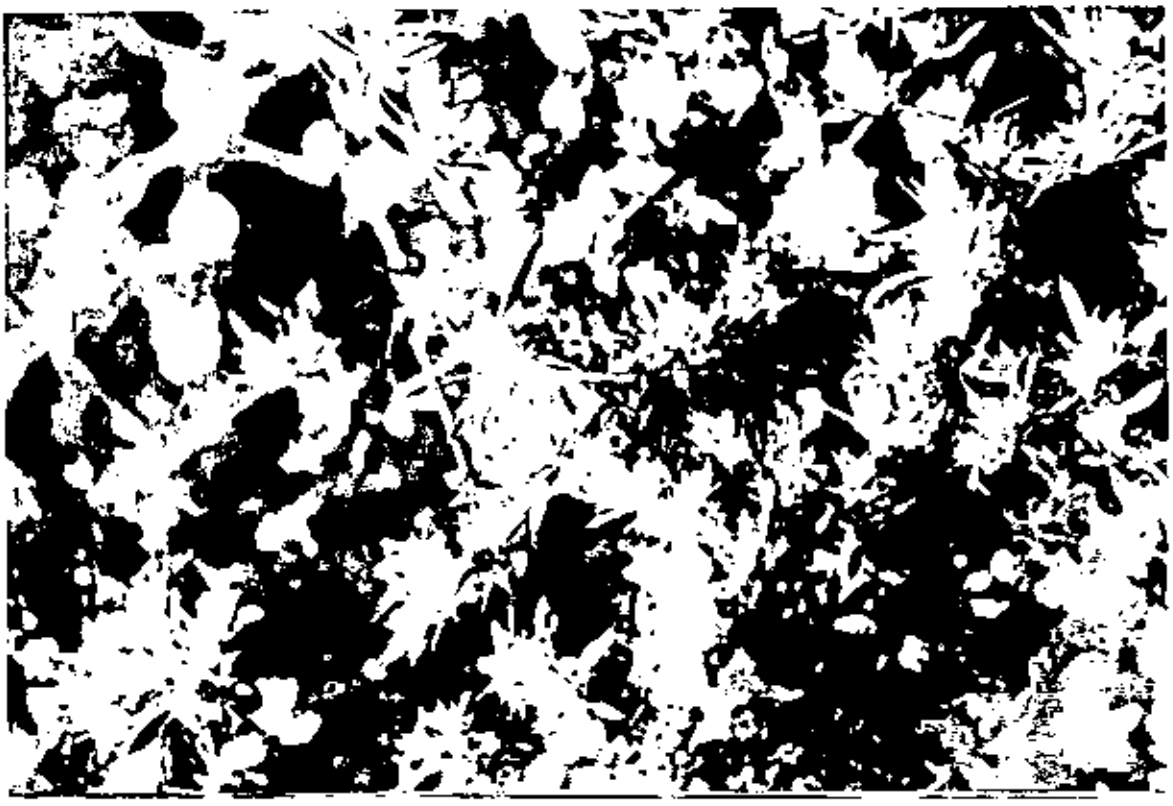
Plate 6 A .*Rumex pictus* Forsk. (Polygonaceae).
B . *Mesembryanthemum crystallinum* L. (Aizoaceae).

A

B

Plate 7 A .*Silene cerastioides* L. (Caryophyllaceae).
B . *Vaccaria pyramidata* Medk. (Caryophyllaceae).

A



B

Plate 8 A .*Paronychia Arabica* (L.) Dc. (Illecebraceae).
B . *Salsola kali* L. (Chenopodiaceae).

A

B

Plate 9 A. *Adonis dentate* Delile (Ranunculaceae).
B . *Glaucium corniculatum* (L.) Rud. (Papaveraceae).

A

B

Plate 10 A. *Papaver hybridum* L. (Papaveraceae).
B . *Hypecoum geslini* Coss.et Kral (Hypecoaceae).

A

B

Plate 11 A. *Brassica tournefortii* Gouan (Brassicaceae).
B . *Diplotaxis muralis* (L.) Dc. (Brassicaceae).

A

B

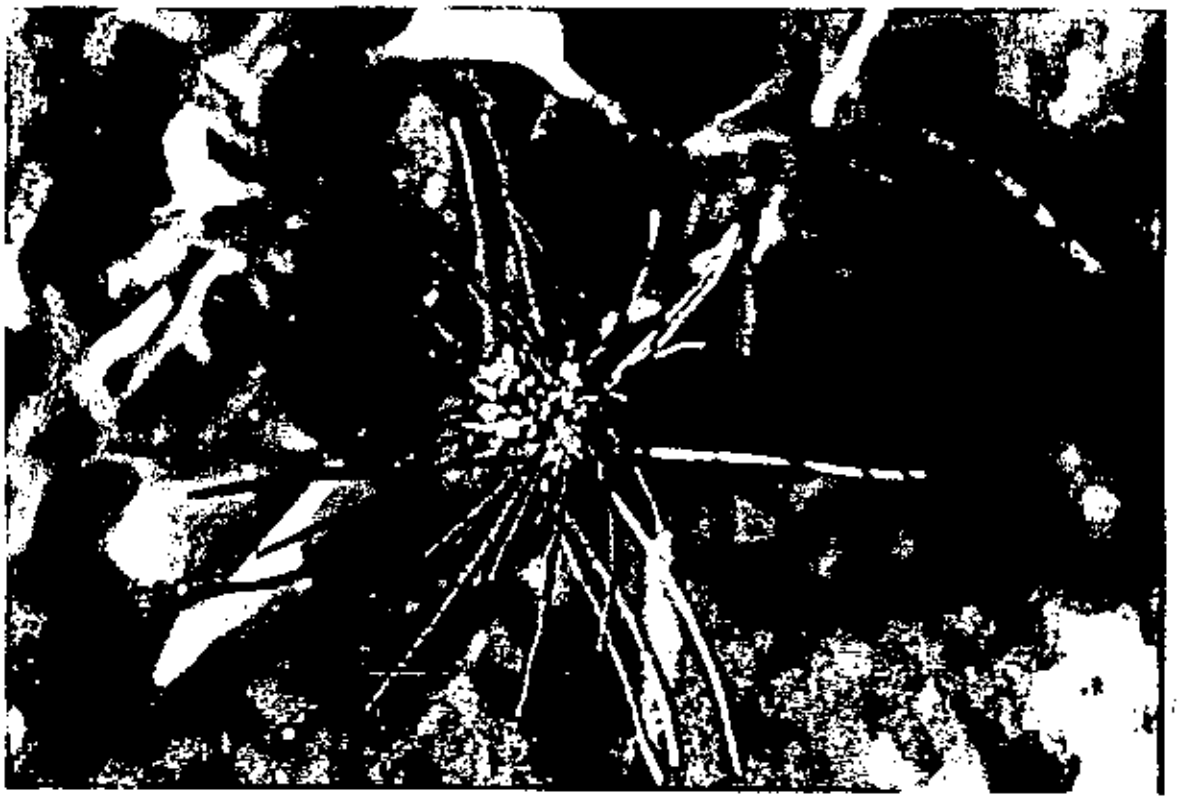


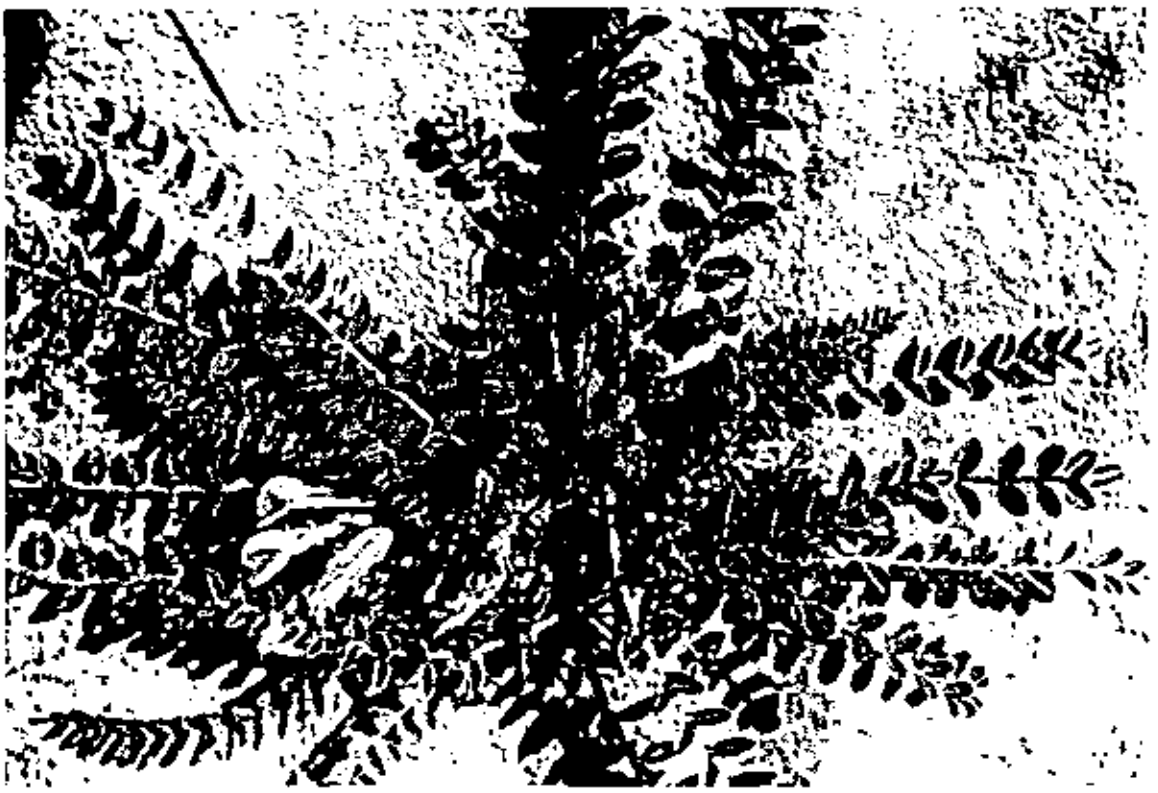
Plate 12 A. *Hussonia pinnata* (Viv.) Jafri (Brassicaceae).
B . *Sisymbrium irio* L. (Brassicaceae).

A

B

Plate 13 A. *Enarthrocarpus clavatus* Del.ex Goder (Brassicaceae).
B . *Astragalus boeticus* L. (Fabaceae).

A



B

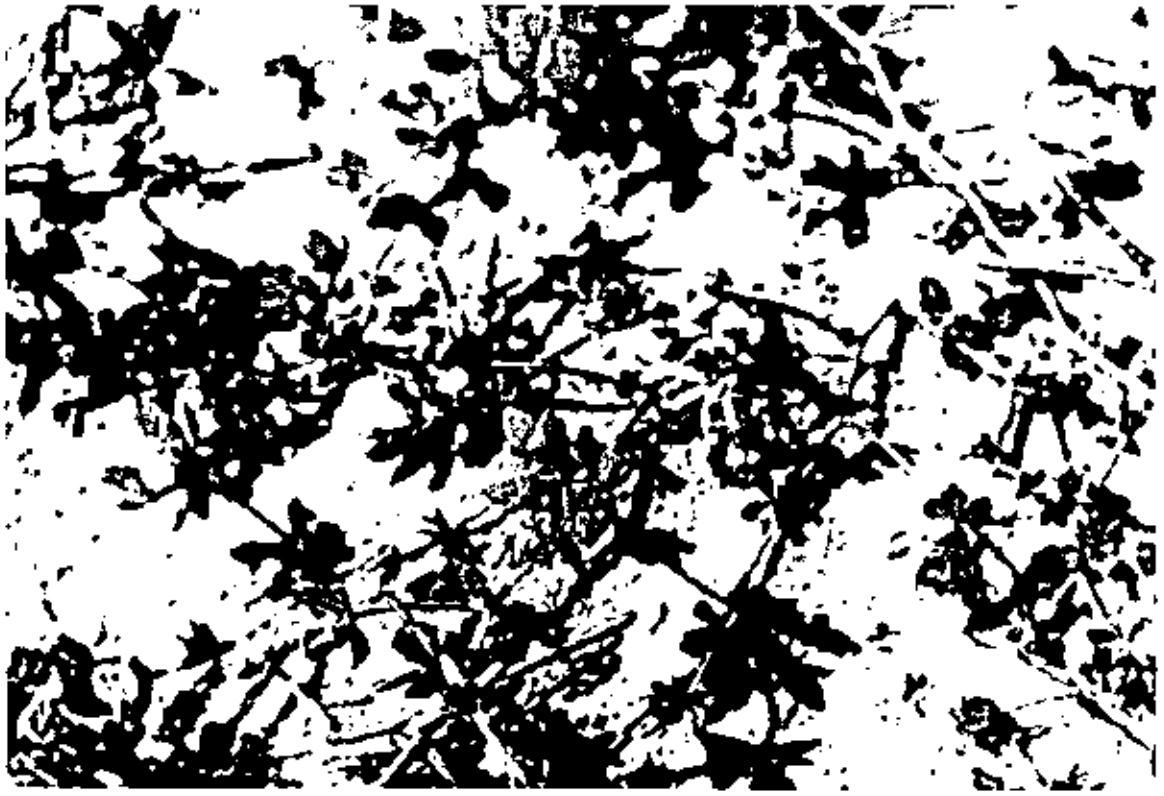


Plate 14 A. *Astragalus caprinus* L. (Fabaceae).
B . *Lotus cytisoides* L. (Fabaceae).

A

B

Plate 15 A. *Melilotus indicus* (L.) All. (Fabaceae).
B . *Retama raetam* (Forsk.) Webb. (Fabaceae).

A

B

Plate 16 A. *Medicago sativa* L. (Fabaceae).
B . *Lathyrus clymenum* L. (Fabaceae).

A

B

Plate 17 A. *Vicia sativa* L. (Fabaceae).
B . *Oxalis pes-caprae* L. (Oxalidaceae).

A

B

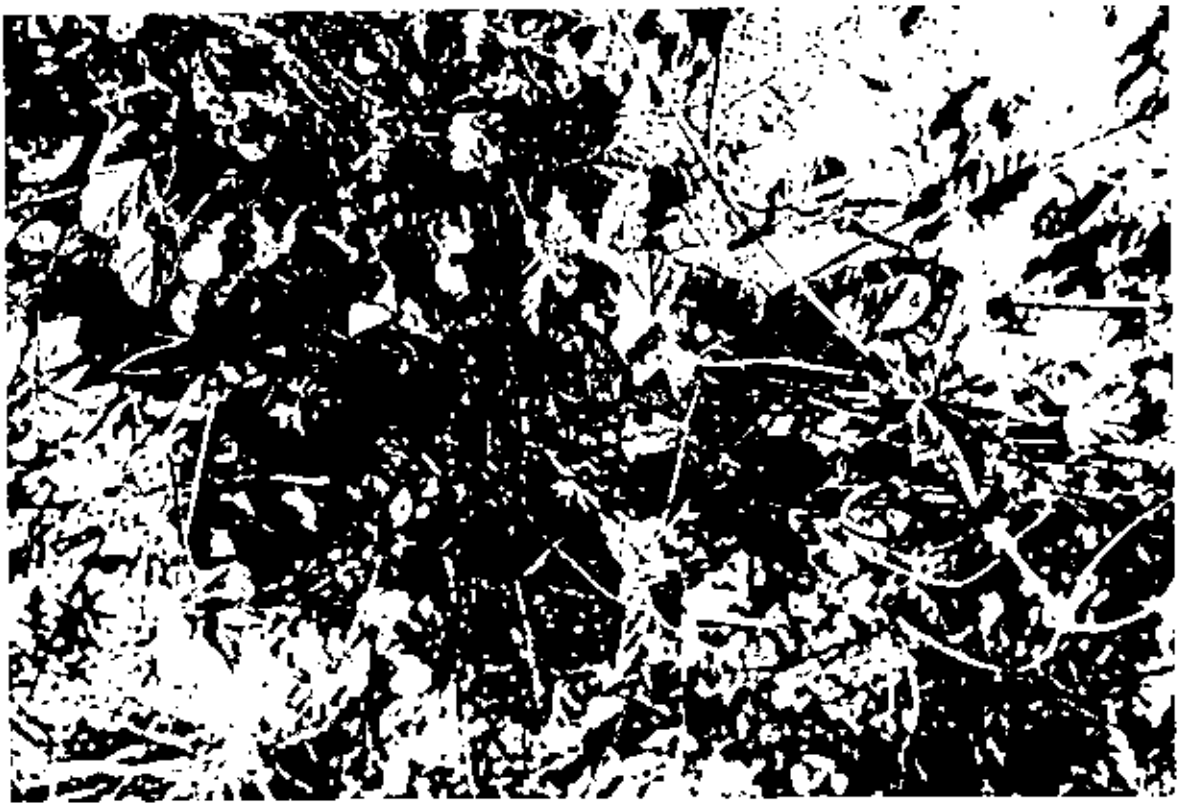
Plate 18 A. *Malva parviflora* L. (Malvaceae).
B . *Malva sylvestris* L. (Malvaceae).

A

B

Plate 19 A. *Pituranthos tortuosus* (Desf.) Benth. (Apiaceae).
B. *Anagallis arvensis* var. *caerulea* (L.) Gouan. (Primulaceae).

A



B

Plate 20 A. *Convolvulus althaeoides* L. (Convolvulaceae).
B. *Convolvulus arvensis* L. (Convolvulaceae).

A

B

Plate 21 A. *Convolvulus supinus* Coss. et Kral (Convolvulaceae).
B. *Echium horridum* Batt. (Boraginaceae).

A

B

Plate 22 A. *Solanum nigrum* L. var. *nigrum* (Solanaceae).
B. *Kickxia aegyptiaca* (L.) Nabelek (Sacrophulariaceae).

A

B

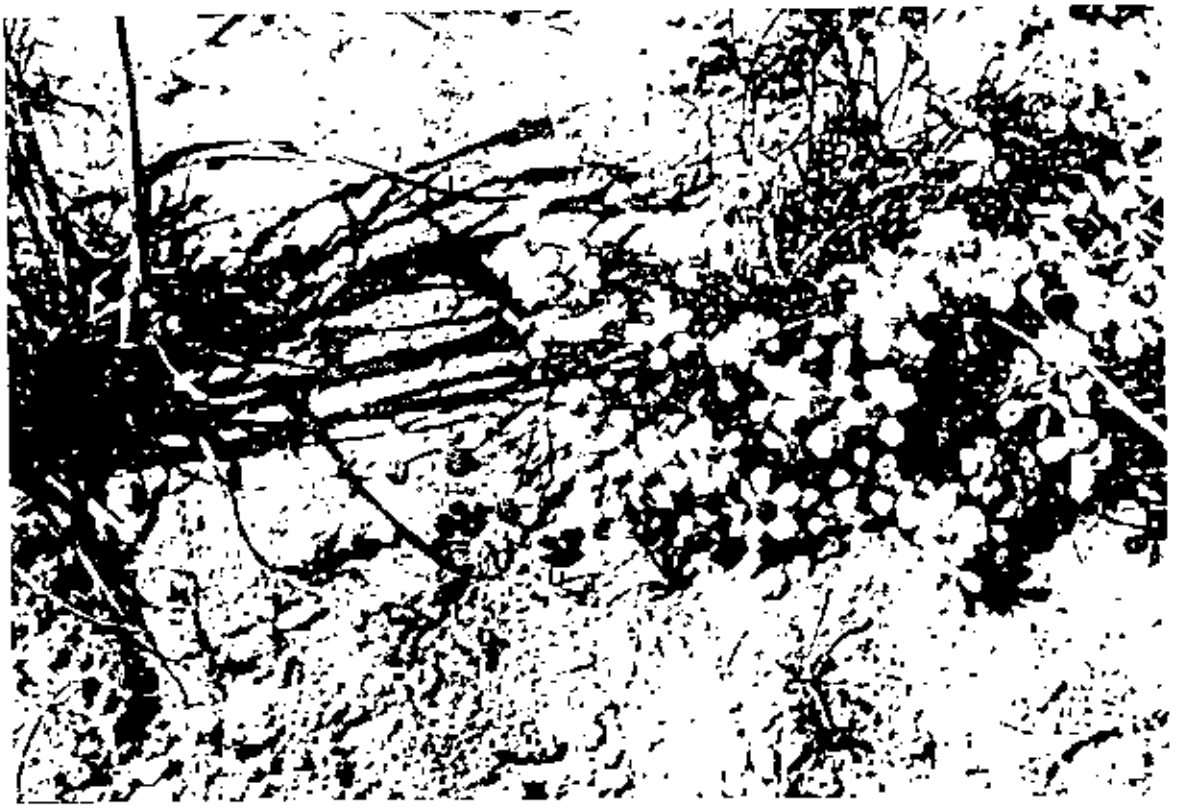
Plate 23 A. *Linaria tenuis* (Viv.) Spreng (Sacrophulariaceae).
B. *Orobanche schultzii* Mutel (Orobanchaceae).

A

B

Plate 24 A. *Plantago albicans* L. (Plantaginaceae).
B. *Anacyclus monanthos* (L.) Thell. (Asteraceae).

A



B

Plate 25 A. *Anthemis secundiramea* Biv. (Asteraceae).
B. *Carduus getulus* Pomel. (Asteraceae).

A

B

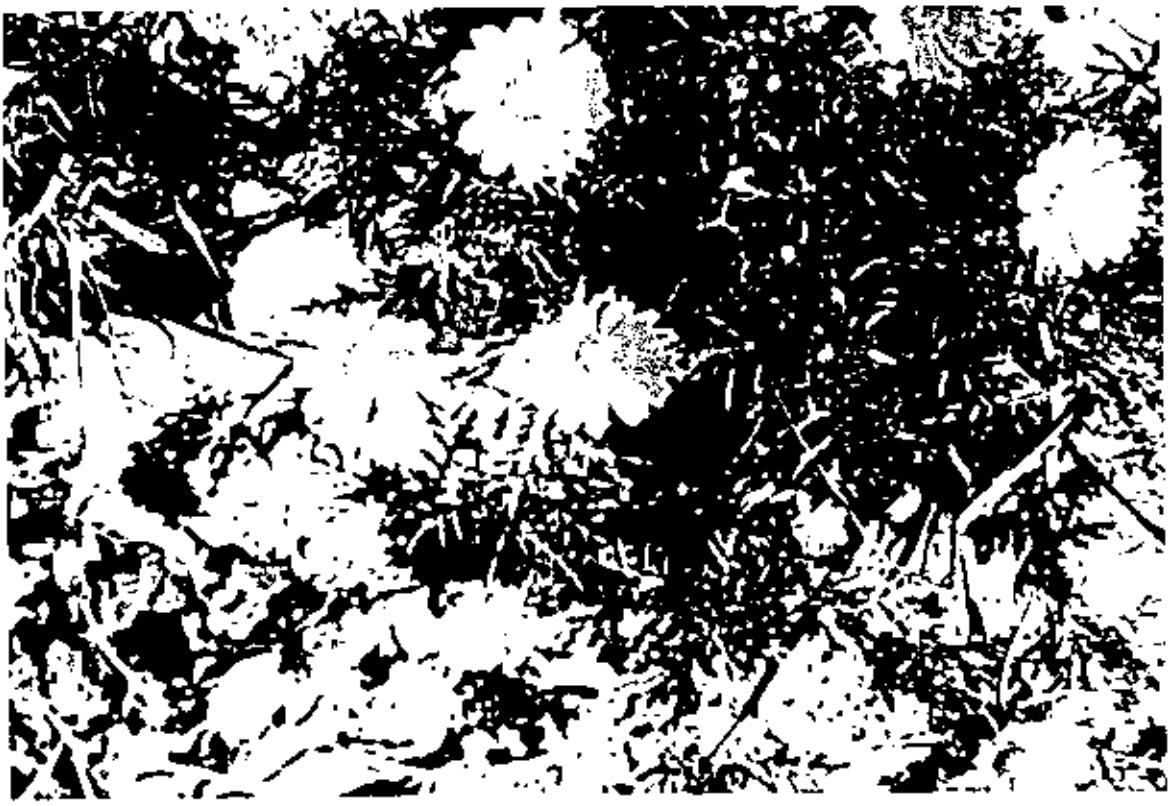
Plate 26 A. *Conyza bonariensis* (L.) Cornq. (Asteraceae).
B. *Launaea resedifolia* (L.) O.Kuntze (Asteraceae).

A

B

Plate 27 A. *Rhaponticum acaule* (L.) Dc. (Asteraceae).
B. *Senecio gallicus* Chiax (Asteraceae).

A



B

Plate 28 A. *Chrysanthmum coronarium* L. (Asteraceae).
B. *Reichardia tingitana* (L.) Roth. (Asteraceae).

A

B

Plate 29 A. *Asphodelus fistulosus* L. (Liliaceae).
B. *Scilla preuviana* L. (Liliaceae).

A

B

Plate 30 A. *Avena barbata* Pott ex Link (Poaceae).
B. *Bromus rigidus* Roth. (Poaceae).

A

B

Plate 31 A. *Cutandia dichotoma* (Forsk.) Tarbut (Poaceae).
B. *Phalaris minor* Retz. (Poaceae).

Plate 32. *Hordeum murinum* L. (Poaceae).

الملخـــص

تهدف هذه الدراسة لتسجيل أنواع الحشائش وحساب كثافة وتكرار وتوزيـع أفـراد هـذه الأنواع في حقول الشعير التابع لجهاز استثمار مياه النهر الصناعي العظيم (سرت) لتوفير قاعـدة بيانات يمكن استخدامها في تقدير الخسائر التي تسببها الحشائش , بالإضافة الى لفت الانتبـاه إلـى الأهمية الاقتصادية للحشائش في المشروع الزراعي بجهاز استثمار مياه النهر الصـناعي العظـيم وتطوير طرق مقاومتها .

وفي هذه الدراسة تم أجراء حصر للحشائش النامية طبيعياً في حقول الشعير للتعرف علـى أنواعها . تم إعداد قائمة تضمنت 105 نوعاً من الحشائش , منهـا 27 نوعـاً سـجلت لأول مـرة كحشائش في ليبيا كما تضمنت الاسم العلمي والمحلي لكل نوع , الأنواع المسجلة تنتمـي إلـى 83 جنساً و 31 عائلة من مغطاة البذور , ذوات الفلقتين تمثلت بـ 93 نوعاً و71 جنساً و28 عائلة , اما ذوات الفلقة الواحدة تمثلت بـ 12 نوعاً و12 جنساً و 3 عائلات .

الصور الحيوية لهذه المنطقة تشير الى وجود الأشكال الحيوية الاتية : ـ

النباتات الحولية (Therophytes) 62.86 % , نباتـات قصـيرة معمـرة (Chamaephytes) 27.62 % , نباتات الرويزومات والابصال (Cryptophytes) 5.71 % , نباتات طويلة معمرة (Phanerophytes) 2.86 %,اعشاب ذات جذور معمرة (Hemicryptophytes) 0.95 %

بناء على عدد الانواع النباتية تم حصر ست عائلات سائدة في المنطقة هي : ـ

العائلة البقولية (Fabaceae) 21 نوعاً , العائلة المركبة (Asteraceae) 17 نوعـاً , العائلـة النجيلية (Poaceae) 8 انواع , والعائلة الصليبية (Brassicaceae) 8 انـواع , العائلـة العقربية (Boraginaceae) 4 انواع , عائلة حنك السبع (Sacrophulariaceae) 4 انواع

بالاضافة الى الانواع الاكثر سيادة فـي منطقـة الدراسـة بنـاء علـى كثافـة الانـواع (عدد افراد النوع لكل متر مربـع) كانـت : ـــ (*Lolium rigidnm*) 24.96 نبـات / م^2 , (*Melilotus indicus*) 19.29 نبـات / م^2 (*Emex spinosus*) 5.70 نبـات / م^2,(*Cutamdi dichotoma*) 3.67 نبات / م^2 , (*Bromus rigidus*) 3.61 نبات / م^2 .

علاوة على ذلك ، انواع الحشائش الاكثر تكراراً التي ظهرت في منطقة الدراسة كانت : ــ

(*Emex spinosus*) % 57.27 (*Lolium rgidum*) , % 62.36 (*Melilotus indicus*) . % 33.82 (*Hassonia pinnata*) , % 38 (*Rhaponticum acaule*) , % 56.18

كذلك الحشائش الاكثر انتشاراً وهي : ــ

Rhaponticum , Hussonia pinnata , Senecio gallicus ,Brassica tournefortii) *Cutandia*) ، % 95.45 (*Emex spinosus*) , % 100 (*Melilotus indicus, acaule* .%90.91(*dichotoma*

اخيراً اظهر الحصر نوعين من الحشائش في منطقة الدراسة ليست موطنها الاصلي هذه الانواع هي (*Medicago disciformis*) التي تكون مقتصرة على منطقة برقة و (*Cynara cardunculus*) التي يقتصره وجوده على منطقة سهل بنغازي .

جامعة التحدي

كلية العلوم

قسم علوم الحياة

عنوان البحث

((فلورا الحشائش (الحشائش الطبيعية) لمزارع النهر الصناعي العظيم . سرت))

سرت / ليبيا

مقدمة من الطالب

ناصر عمر حسين الشيخي

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(مشرف الرسالة)

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