## Introduction

Regional climatic, topographic and geographic condition have caused the formation of deserts and semidesertic areas in Iran(Zohary 1966-1986). In the hot southern parts of Iran, with relatively high winter and summer temperatures and scant amount of rain,climatic regimen similar to that of the tropical northeast African and the hot Sindian desert dominates, with occasionally more severe temperature maxima and minima (Rachingor, 1963-1997; Zohary, 1966-1986 and Assadi, 1984). Human activities and natural destructive factors have caused profound changes in natural ecosystems of Iran, threatening survival of the natural vegetation including some rare plant species. Ecological research could propose solutions for many of the human induced environmental problems. The ecological capability of environment must be evaluated to understand the dynamism of natural ecosystems (Freitag 1986). Further more, oil field areas in SW. Iran have economic importance, which supplementary information, concerning ecological aspects of plant communities, their floristic composition and habitats would be useful in many different respects.

The following plant lists is mainly based on collected specimens during Feb. 20$^{th}$ 1997 to the 2$^{nd}$ half of 1998. The habitats of the plant specimens, are listed in table 1. These oil fields have a great potential for desert ecological investigations in both fields of botany and the environmental science. Basic necessities for such studies is a good knowledge of the flora. So far most Iranian florestic research has been simple enumerations of species collected during field studies of different region of the country. No scientific paper seems to have been devoted to the flora of this area, yet.Hopefully this list will further the interest in botanical aspects of Saharo – Sindian regions of SW. Iran, and it will be useful as a base line for more profound field work concerning ecology, environment, plant sociology, and vegetation mapping, as well as, for wildlife feeding habits in the area. It is also hoped that this inventory would be useful as a general popular guide to the flora of the area.

## Material and methods

No scientific paper seem to have been devoted to the flora and plant sociology of oil field areas, it is our hope that the prepared list will be of interest to botanical studies of the oil field areas(Alaie 1997-1999). The Braun – Blanquet approach with 5 or 6 grade cover / abundance scale (+,1,2,3,4,5 or 1,2,3,4,5) was used to classify vegetation. Attention was focused on characteristic species (species that possess fidelity and relative restriction) of each association. The key ideas behind the Braun – Blanquet treatment method are: (i) Plant communities should be studies based on fundamental units, comparable to the species.

(ii) These units should be associations, defined by possession of character – species. (iii) Each association consists (like a species) of "individuals", and associations (like the species) can be described from samples of their individuals. (iv) Each sample (releve) should be chosen so as to represent adequately such an individual, while it should also include analysis of the complete species assemblage. (v) Associations should be grouped into higher main units not by their physiognomy, but by their floristic composition (Zohary, 1973; David, 1982 and Mobayan, 1996). After visiting all parts of each area, association individuals as well as their minimal areas were determined. Minimal area and plot size is largely dependent on the structure of the vegetation under study, but may be affected also by the size of the stand (Robert 1980). The size decision in this case involves not merely the stand itself but the normal composition of the stand, representing a phytocoenon (Zohary, 1973 and Robert, 1980). Plant collectin and identification have started also in the coastal plains as well as the higher terrain by 420 different releves (Tregubov and Mobayan, 1970; Breckle, 1986).Finally, chorotype, life form and the habitat for each plant are cited by Raunkier system (Mueller-Dombais and Ellenber), 1974; Townsend, 1974-1980; White, 1983 and Mobayan, 1996).

**Geographic situation, Lithology and Climate**

The study area covers about 20,000Km$^2$ is situated on the southwest of Iran, at the margin of Persian Gulf. Extending from an extensive lowland in Khuzistan and N.W Busher to the highlands of SW. Kohkiloyeh. The study area comprises the coast lands of the Persian Gulf; a rather flat alluvial plain at 0-20m elevation it rises gradually towards a small mountains range with about 850m of elevation. The coast land is fairly narrow and consists of salines land, sand dunes and alluvial plains. Further inward the somewhat elevated terraces of the Tertiarry chalk and marl in the margin of Zagros mountain system comprises the highlands of the study area (Fig.1).

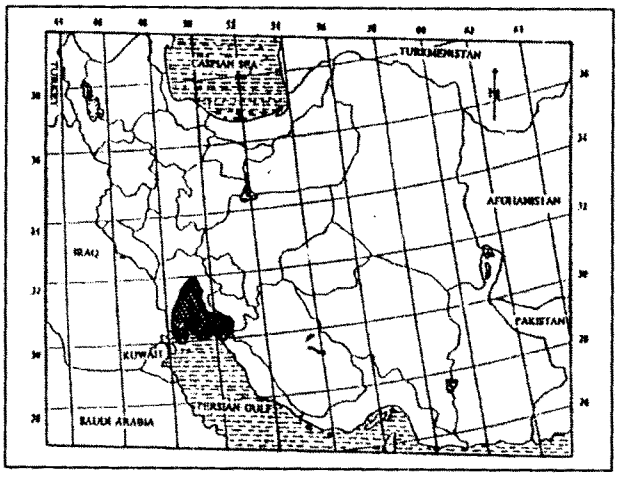


**Fig. 1: Geograhic situation of oil field areas**

Although a fairly large body of information is available on the soils, there has not yet been any conclusive research on the relations between the soil and vegetation of this area. The geobotanical approach does not consider soils independently, but only as one of the many ecological factors of the very complex plant habitat. For the purpose of soil classification most of the areas can be

Research Paper

# *Floristic Studies in the Oil field areas, S.W. Iran*

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**Key words:**
Floristic composition, SW. Iran, Oil field.

## Abstract:

In this research, the extensive lowland of the Khuzistan in SW. Iran has been studied floristically. Brief information on climatic, topographic and lithologic aspects of the area are presented. Plants encountered in the area, based on collecting 1300 specimens are listed using the alphabetic system. The oil field areas, SW. Iran comprise three habitats: salt deserts and saline coasts, dunes and sandy soils, and finally marls, gypseous and calcareous places. Altogether 531 species from 351 genera belonging to 81 families were recognized in the study areas. For each species it's collecting places and habitat, life-form and phytogeographical region is cited.

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categorized as heavy saline and solonchak soils in coastal plains, alluvial-colluvial variety of soils, ususally cultivated and calcareous-gypseous lithosols and marls in highland. Moving sand dunes are also present in north of the coastal plains. The coastal belt of Persian Gulf and the salt lands of Khuzistan are characterized by high soluble salt content; NaCl as well as other soluble salts such as $Na_2So_4, MgSo_4, CaCl_2, MgCl_2$. Sodium chloride and gypsum salines are by far the most common among salines of the region (David, 1982 and Breckle 1986). The alluvial soils usually with high ground-water table, are cultivated by irrigated cultures. These are usually deep, fine textured and water-logged soils, often without clearly differentiated profils. Under arid condition, these soils tend towards salinization (Zohary, 1973 and 1966-1986). There are six main soil type in the oil field deserts: Sandy of various origin; gravel desert, rocky terrain with calcareous and gypseous lithosols, loessy alluvial plains, wadi beds, and salines. Each of these types are differentiated into number of soil varieties according to certain physical and physiographical properties such as texture, structure, microtopography, slope and other physical characteristics (Zohary 1966-1988; Freitag, 1986; Fahn, 1992 and Bybordi 1993).

The hot southern gulf region with its high winter and summer temperature and scant amount of rain displays climatic regimens similar to those of the tropical northeast African and hot Sindian deserts, but occasionally with more extreme maxima and minima (Sabeti, 1971; Guinochet and Vilmorin 1973 and Assadi, 1984). For instance the absolute minimum and maximum temperature of Aghajari are 0.9, and 51°c; the mean minimum of January is 8.3°c, and the mean maximum of July is 45.5 °c. These climatic variants dominate a large belts which extends further estwards to the omni-sindian regions. Very few rainfall are recorded for the gulf region, but presence of arboreal components in the natural vegetation cover of this areas, shows that the amount of rainfall is greater than those of the central plateau, although it does not probably exceed 250 mm. The relative humidity does not change throughout the study areas, and shows a mean 48% (Rechinger 1963- 1997; Tregubov and Mobayan, 1970 and Kunkel, 1977). Therefore, the hot desertic climate is characterised by high temperatures and erratic, often scanty rainfalls (Fig.2).

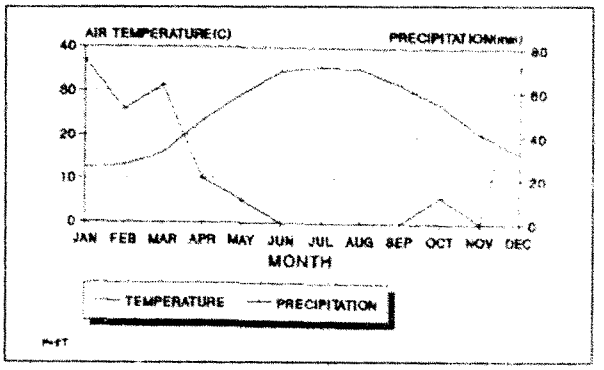


**Fig.2: Hydrothermic diagram for selected site (Aghajari)**

**List of species:**

According to our studies, the vegetation of oil field areas contains about 531 species; 1 fern, 2 gymnosperms and 528 angiosperms. These 531 species belong to 81 families and 351 genera. The largest family is Graminae (64 species). Other large families are: Compositae (58 species), Papilionaceae (49 species), Cruciferae (35 species), Umbeliferae (26 species), Chenopodiaceae (23 species) and Boraginaceae (22 species). Specimens are listed, using the alphabetic order (1). Habitats, phytogeographic regions and life-form, for all species are also cited (Tab.1).[1]

There are several striking general characteristics concerning the f lora of these

lands (Ghahreman, 1994-1996 and 1994). As in all severe habitats, plant species growing in the oil field areas of SW. Iran are highly adapted to their (special) environment. Particular stresses causing dye off of plant seedling are rapid upper soil layer desiccation or extermely high temperatures, desiccation by outblow of roots, burial by sand, alkalinity and salinity of soils. Much less known are the adventages of the existing comparatively high amounts of water stored in the subsoil and the absence of high salt contents. It is not surprising that most species are highly adapted as xerophytes and halophytes. Plant communities of oil field areas are made up of halophytes and many several species of extreme xerophytes and psammophytes. Under natural conditions, without strong human pressure, they form open shrublands and littoral salt marshes. Besides a growing number of more ubiquitous species occur, but they remain subordinate. There are also few plant species adapted to grow in gypsum and marls soil habitats.

Some annual and perennial species, adapted to environmental extremes, are found in restricted sites, for instance: ***Astragalus obtusifolius, Allium jesdianum, Silene wendelbol, Limonium thouinii, Fagonia glutinosa, Lasiopogon muscoides, Helianthemum sessiliflorum, Acanthophyllum khuzistanicum, Centaurea khuzistanica.***

Some other species playing a dominant role in environmental extremes are: ***Erodium glaucophyllum, Stipa capensis, Erucaria hispanica, Teucrium polium, Anagalis arvensis, Plantage ovata, Medicago laciniata, Ziziphus spina-christi, Lycium shawii, Astragalus fasiculifolius, Zygophyllum eurypterum, Helianthemum salicifolium.***

Legend to table (1):

Ph: Phanerophytes
Par: Parasites
ES: Euro-siberian
T: Tropical
Ch: Chamaephytes
Hy: hydrophytes
Pal: Paleotropic
T: Therophytes
COSM: Cosmopolitan
OS: Omni-Sindian
SA: Saharo-Arabian
Hm: Hemicryptophytes
SS: Saharo-Sindian
Pan: Pantropic
Cult: Cultivated
Ge: Geophytes
IT: Irano-Touranian
SM: Somalo-Masai
Hel: Helophytes
M: Mediterranean
AS: Arabi-Sindian

**Table 1. List of Species**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| 1.Acanthaceae | | | |
| -Blepharis persica Juss. | T | SA-OS | mountains, W. of nafte-sefid |
| 2.Adianthaceae | | | |
| -Adianathum capillus-veneris L. | Hm | OS-M | wetland in north area |
| 3.Aizoaceae | | | |
| -Aizoon hispanicum L. | T | SS-SM | saline in coastal plain |
| -Mesembryanthemum nodiflorum L. | T | AS-M- SA | Saline soil in Bandar-Iman |
| 4.Alismataceae | | | |
| -Alisma plantago-aquatica L. | Hy | COSM | wetland, riverside |
| 5.Amaranthaceae | | | |
| -Aerva lanata Juss. | Ch | SS | wadis, E. of area |
| -Alternanthera sessilis(L.) R.Br | T | IT | distributed in wetland |
| -Amaranthus albus (L.) | T | IT | distribted in ruderal vegetation |
| -Amaranthus graecizans (L.) | T | Trop | weed in fields and garden |
| -Amaranthus viridis (L.) | T | COSM | weed in fields and roadside |
| 6.Amaryllidaceae | | | |
| -Ixiolirion tataricum (Pall.) | G | IT | margin of cultivated lands |
| -Narcisus tazetta L. | G | IT | mountains N. of Bahbahan |
| 7.Anacardiaceae | | | |
| -Pistacia atlantica Desf. | Ph | IT,M | mountains W. of Gachsaran |
| -Pistacia khinjuk Stocks. | Ph | IT,OS | scattered tree in lower altitude |
| 8.Apocynaceae | | | |
| -Nerium oleandr L. | Ch | SS,IT,M | cultivated |
| -Trachomitum venetum (L.)Woods. | Ch | | wetland and riverside |
| -Vinca rosea L. | Ch | Cult | cultivated |
| 9.Aristolochiaceae | | | |
| -Aristolochia bottae Jaub. | T | SS | mountains N. of areas |
| 10. Asclepiadaceae | | | |
| -Calotropis procera (Willd.) R. Br. | Ph | OS-I | sand dunes W. of Ahwaz |
| -Cynanchum acutum L. | Hm | | lowlands and salines |
| -Leptadenia pyrotechnica DC. | Ph | SA,SS,SM | mountains, N. of areas |
| -Marsdenia erecta (L.) R. Br. | Ch | SS,M | mountains, NW. of areas |
| -Pergularia tomentosa L. | Ch | SA,SS,Sm | distributed in middle altitude |
| -Periploca aphylla Decne. | Ph | AS-SM | sandy, gravelly soil |
| 11.Boraginaceae | | | |

**Table 1. (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Alkanna orientalis (L.) Boiss. | T | IT | very rare in hills |
| -Anchusa hispidissima (Lehm.) DC | T | OS | rare in compact soil |
| -Anchusa italica Retz. Var. italica | T | IT-OS | gypseous soil |
| -Anchusa strigosa Labill. | Hm | OS | marls and gypseous soil |
| -Arnebia decumbens (Vent.) Coss. & Kral | T | SA-IT,SS | sandy soil in many places |
| -Cordia mixa L. | Ph | S | cultivated |
| -Gastrocotyle hispida (Forssk.) C.B.Clarke | T | SS-SA-IT | rare in sandy compact soil |
| -Heliotropium digynum (Frossk.) Aschers. ex C. Christ | Ch | SA | sand dunes in Aghajari |
| -Heliotropium europaeum L. | T | AS,IT | scattered in many place |
| -Heliotropium noeanum Boiss. | T | SS,IT | weed in ruderal vegetation |
| -Heliotropium ramosissimum(Lehm)DC. | Ch | SS-IT | distributed in heavy and soline |
| -Heliotropium supinum L. | T | IT,SS | margin of rivers |
| -Heterocaryum szovitsianum (Fisch. & C.A.Mey) A.DC | T | IT | weed in field |
| -Heterocaryum macrocarpum Zak. | T | IT | weed in cultivated land |
| -Moltkiopsis ciliata (Forssk.) L.M.Johnst | Ch | SS-SA,TT | sand dunes |
| -Lappula spinocarpus (Forssk.) Ascherson | T | SA,IT | margin of cultivated land |
| -Nonnea caspica (Willd.) G. Don | T | IT | rare in sandy soil |
| -Onosma bulbotrichum DC. | Hm | IT | marls in middle altitude |
| -Onosma dasytrichum Boiss. | Ch | SS | gypseous and clacareous soils |
| -Onosma rostellatum Lehm. | Hm | IT | cliff and calcareous lithosols |
| -Rindera bungei(Boiss.) Gurcke. | Hm | IT | marls in middle altitude |
| -Rindera lanata (Lam.) Bge. | Hm | IT | mountains, N. of areas |
| 12.Caesalpiniaceae | | | |
| -Bauhinia purpurea L. | Ph | SubT | Cultivated |
| -Caesalpinia gilliesii (Hook.)Dieter | Ph | SubT | Cultivated |
| -Cassia fistula L. | Ph | SubT | Cultivated |
| -Cercis siliquastrum L. | Ph | SubT | Cultivated |
| -Parkinsonia aculeata L. | Ph | SubT | Cultivated |
| 13.Cannaceae | | | |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| - Canna indica L. | Hm | Cult | cultivated |
| 14.Capparidaceae | | | |
| - Capparis spinosa L. | Ch | OS | ruderal vegetation and soils |
| -Cleome noeana Boiss. | Hm | OS | gypseous soil, N. of Ramhormoz |
| -Cleome oxypetala Boiss. | Hm | OS | gypseous soil, in middle altitude |
| -Dipterygium glaucum Decne. | Ch | OS | rare in higher terrain |
| 15.Caryophyllaceae | | | |
| -Acanthophyllum khuzistanicum Rech.f. | Ch | SA | marls and gypseous soil |
| -Arenaria serpyllifolia L. var. leptocladus Reichenb. | T | IT | in cultivated land |
| -Gymnocarpus decander Forssk. | Ch | SA,OS | marls and gypseous soil |
| -Gypsophila obconica Barkoudah | T | IT | sandy soils, near Ahwaz |
| -Gypsophila pilosa Huds | T | IT | weed in cultivated land |
| -Minuartia hybrida (Vill.)Schischk. | T | IT,ES | higher terrain, N. of areas |
| -Minuartia picta (Sibth. Sm.)Bornm. | T | IT,ES | sandy desert, Sovireh |
| -Paronychia arabica(L.) DC. | T | SS-M,AS | sandy soil, in steppe |
| -Paronychia kurdica Boiss. | Hm | M-IT | sandy soil, S. of Ramhormoz |
| -Pteranthus dichotomus Forssk. | T | SA,M,S | marls and sandy soil |
| -Silene arabica Boiss. | T | SA | sandy soil |
| -Silene conoidea L. | T | IT,M,SA | scattered in cultivated land |
| -Silene lagenocalyx Fenzl. ex. Boiss. | SA | SS | calcareous soil, higher terrain |
| -Silene wendelboi Assadi | T | SA | sandy dunes, S, of Ramhormoz |
| -Spergula fallax (Lowe.) E.H.L.Krause | T | SA-M | coasted plain, saline |
| -Spergularia bocconi(Scheele.)Asch. | T | M-ES | scattered weed |
| -Spergularia diandra L. | T | M-IT,AS | sandy soil |
| -Spergularia marina (L.) Griseb | T | M,IT,SS | coastal plain |
| -Vaccaria pyramidata Medicus (L.) Griseb | T | IT,M | scattered in cultivated land |
| 16.Chenopodiaceae | | | |
| -Atriplex leucoclada Boiss. | Ch | SS,SA,IT | heavy, saline |
| -Bassia eriophora (Schrad.) Asch. | T | SA,S,IT | saline soils |
| -Beta vulgaris L.ssp. maritima | Hm | COSM | coastal plain, saline |
| -Bienertia cycloptera Bge. | T | SS | saline, alkaline soil |
| -Chenopodium album L. | T | Pl | scattered weed |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Chenopodium murale L. | T | Pl | scattered weed |
| -Cornulaca leucacantha Aell. | T | SA | sandy deperssion soil |
| -Cornulaca monacantha Delile | Ch | SS | sandy dunes |
| -Halocharis sulphurea Moq | T | IT | scattered anywhere |
| -Halocnemum strobilaceum (Pall.)M.B. | Ch | SA,SS,M,IT | heavy saline soil |
| -Hammada salicornica (Moq.)lljin. | Ch | SS | marls and sandy desert plains |
| -Londesia eriantha Fisch | T | SA | saline and semi-saline soil |
| -Noea mucronata Forssk. | T | IT, SA | scattered in lowland |
| -Salicornia europaea L. | T | SA,M,IT | saline, in Abadan |
| -Salsola baryosma (Roem.et schult.) Dandy | Ch | SA,S | saline and semi-saline |
| -Salsola crassa C.A.Mey | T | IT | scattered weed |
| -Salsola incanescens C.A.Mey. | T | OS-IT | scattered anywhere in autumn |
| -Salsola jordanicaola Eig | T | SA | saline and semi-saline soil |
| -Seidlitzia cinerea Moq. | T | SS | saline, in Hendijan |
| -Seidlitzia rosmarinus Beg. ex. Boiss. | Ch | SA-SS,M | saline soil of Deylam |
| -Suaeda acuminata (C.A.Mey.)Maq. | T | SS,M | saline soil of Shadgan |
| -Suaeda aegyptiaca (Hasselq.) Zoh. | T | AS-SS,SA | heavy saline of lowland. |
| -Suaeda fruticosa Forssk. ex J.F.Gmel. | Ch | SA,M,IT | heavy saline of lowland |
| 17.Cistaceae | | | |
| -Helianthemum ledifolium (L.) Mill. | T | M,IT | mountaion of higher terrain |
| -Helianthemum lippi (L.)Pers. | Ch | SS-SA,S | marls and gypseous lithosols |
| -Helianthemum salicifolium(L.) Miller | T | M,ES,IT,SA | marls and gypseous lithosols |
| -Helianthemum sessiliflorum (Desf.) | Ch | SA,M | marls, E. of Haft-Gel |
| 18.Combretaceae | | | |
| -Terminalia arjuna Wight. Arn. | Ph | Pal | cultivated |
| 19.Compositae | | | |
| -Achillea eriophora DC. | Hm | OS | sandy soil and wadi beds |
| -Achillea tenuifolia Lam. | Hm | OS,IT | on gypeseous and sand soil |
| -Achillea wilhelmsii C.Kock. | Hm | IT | weed in Ahwaz |
| -Anthemis pseudocotula Boiss. | T | IT,SS | mountain, N. of areas |
| -Anthemis scariosa DC. | T | IT,SS | scattered weed in cultivatedland |
| -Anthemis susiana Nab. | T | IT,SS | marls and calcareous soil |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Lasiopogon muscoides (Desf.)DC. | T | SA | sandy and calcareous soil |
| -Launaea mucronata (Forssk.) Muschl. | Hm | SS,SA | sandy places |
| -Launaea procumbens(Roxb.) Ramayya | Hm | SS,SA | irrigated habitats |
| -Matricaria aurea(Loefl.) Schultz-Bip. | T | IT,SS | semi-saline soil |
| -Matricaria recuita L. | T | IT,ES | weed on field |
| -Notobasis syriaca(L.)Cass. | T | SA | weed on farmland |
| -Onopordon leptolepis DC. | Hm | IT | higher terrain, mountations |
| -Outreya carduiformis Jaub & Spach | Hm | IT | mountains of Ramhormoz |
| -Pentanema divaricatum Cass. | T | IT | scattered weed |
| -Picnomon acarna (L.) Cass. | T | IT | scattered weed on ruderal |
| -Platychaete mucronifolia (Boiss.) & Hausskn. | Ch | SS,IT | slope of marls, gypseous lithosol |
| -Postia puberule Boiss. & Hausskn. | Ch | IT | cliff and lithosols |
| -Pulicaria arabica(L.) Cass. | T | SA,M,IT | weed on the roadside |
| -Reichardia orientalis(L.) Hochreutiner | T | IT | slopes of higher sltiude |
| -Scariola orientalis L. | Ch | IT | higher terrain |
| -Scolymus hispanicus L. | T | SS | margin of water channel |
| -Sensecio vulgaris L. | T | COSM | vernaly scattered weed |
| -Silybum marianum L. | Hm | IT,ES,SA | weed, margin of cultiuated land |
| -Sonchus asper (L.) Hill | T | M,IT | weed on cultivated land |
| -Sonchus oleraceus L. | T | ES,M,IT | scattere weed |
| -Urospermum picroides (L.) Desf. | T | M,IT | scattered weed |
| -Xanthium strumarium L. | T | IT | weed on ruderal soil |
| -Zoegea leptaurea L. | T | IT,SS | marls and gypseous soil |
| 20.Convolvulaceae | | | |
| -Convolvulus argyracanthus Rech.f | Ch | SS,IT | sandy and gravely place |
| -Convolvulus arvensis L. | T | PI | weed on ruderal land |
| -Convolvulus buschiricus Bornm. | Hm | SA,IT | gypseous, marls places |
| -Convolvulus gonocladus Boiss | Hm | SA,OS | sandy soil |
| -Convolvulus oxyphyllus Boiss | Ch | SA,IT | sandy, calcareous soil |
| -Convolvulus pilosellaefolius Desf. | Hm | AS,IT | sand and gypseous soil |
| -Convolvulus reticulatus Choisy | Hm | IT,SS | gypseous soil |
| -Convolvulus stachydifolius Choisy | Hm | IT,SS | higher terrain, N. of areas |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Cressa Cretica L. | T | SA,IT,Pan | saline, alkaline soil |
| 21.Cruciferae | | | |
| -Alyssum desertorum Stapf. | T | IT | sandy soil |
| -Alyssum szovitsianum Fisch | T | IT | sandy soil |
| -Anastatica hierochuntica L. | T | S,SA,SS | firm, sandy ground |
| -Biscutella didyma L. | T | M | sandy ground, S. of Behbahan |
| -Brassica nigra (L.) Koch | T | IT,SS | weed on cultivated land |
| -Brassica elongata Ehrh.-Beitr. | T | IT,SS | weed on ruderal land |
| -Cakile arabica Velen. | T | M,ES,AS | sandy soil |
| -Calepina irregularis (Asso)Tell. | | IT | rare on sandy floor of wadi |
| -Capsella bursa-pastoris (L.) Medicus | T | IT,M,SA | scattered weed |
| -Carrichtera annua (L.) DC. | T | SA | on ruderal land |
| -Cardaria draba (L.) Desv. | T | IT,M | on waste soil |
| -Diplotaxis harra(Forssk.)Boiss. | T | SA | gypseous and marls lithosol |
| -Diplotaxis erucoides(L.) DC. | T | SA,OS | marls and gypseous soil |
| -Eruca sativa Miller | T | SA,ES,IT,SS | sandy, waste places |
| -Erucaria hispanica (L.)Druce. | T | AS,M,IT | scattered in anywhere |
| -Erysimum oleifolium J.Gay | Hm | SS | slope of sandy and marls lithosol |
| -Euclidium syriacum (L.) R.Br. | T | SA | weed on cultivated land |
| -Goldbachia leavigata DC. | T | IT,M | margin of cultivated land. |
| -Hirschfeldia incana (L.) Lagreze | T | M,IT | weed on the N. areas |
| -Lepidium sativum L. | T | P1 | cultivated |
| -Malcomia africana R.Br. | T | SA | sandy soil and marls |
| -Malcomia behboudiana Rech.f. | T | SA | sandy dunes |
| -Matthiola longipetala (Vent.)DC. | T | M,IT,AS | sandy soil in anywhere |
| -Moricandia sinaica (Boiss.) Boiss. | T | SA,OS | marls in N. of Deylam |
| -Nasturtium officinale R. Br. | Hm | IT,SS,M | water channel and riverside |
| -Neslia apiculata Fisch., C.A.Mey. & Avelall. | T | IT,M | marls and calcareous soil |
| -Physorrhynchus chamaerapistrum (Boiss.) Boiss. | Ch | SA,OS | gypeseus soil |
| -Rhaphanus raphanistrum L. | T | IT | weed on the cultivated land |
| -Schimpera arabica Hochst. | T | SA,AS,IT | Saline soil |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Sinapis alba L. | T | IT,SS | weed on the sandy soil |
| -Sinapis arvensis L. | T | IT,SS | weed on the sandy soil |
| -Sisymbrium irio L. | T | SS,IT,M | vernaly weed |
| -Sisymbrium officinale (L.) Scop | T | M,IT | calcareous soil |
| -Sisymbrium septulatum DC. Reg | T | M,IT | on the cultivated land |
| -Torularia torulosa (Desf.) O. E. Schulz. | T | IT,SA | marls and calcareous soil |
| 22.Cucurbitaceae | | | |
| -Citrullus colocynthis (L.) Schrad. | Hm | SA,SS,SM | sandy soil and sandy gravel |
| -Citrullus vulgaris Schrad. | T | Cult | cultivated |
| -Cucumis mello L. | T | Cult | cultivated |
| -Cucumis sativus L. | T | Cult | cultivated |
| -Luffa cylindrica (L.) Roem. | T | Cult | cultivated |
| 23.Cupressaceae | | | |
| -Cupressus sempervirens L. | Ph | COSM | cultivated |
| 24.Cuscutaceae | | | |
| -Cuscuta planiflora Ten. | Par | SA, IT | parasite |
| 25.Cyperaceae | | | |
| -Cyperus conglomeratus Rottb. | Ge | Pa12 | sandy dunes |
| -Cyperus difformis L. | Ge | COSM | weed on the wetland |
| -Cyperus rotundus L. | Ge | COSM | weed on the wetland |
| -Eleocharis palustris (L.) R. Br. | Ge | IT,M,SS | scattered on swamp |
| -Scirpus maritimus L. | Ge | SA,M,ES,IT | salt marsh and swamp |
| 26.Dipsacaceae | | | |
| -Cephalaria dichaetophora Bioss. | T | IT | slope and cliff of mountain |
| -Cephalaria syriaca (L.) Schrad. | T | SA,IT,M | sandy soil |
| -Scabiosa calocephala Boiss. | T | IT,SS | marls and sandy soil |
| 27.Elaeagnaceae | | | |
| -Elaeagnus angustifolius L. | Ph | Cult | cultivated |
| 28.Ephedraceae | | | |
| -Ephedra foliata Boiss. | Ph | AS,IT | marls, clay places |
| 29.Euphorbiaceae | | | |
| -Andrachne telephioides L. | Hm | SA,M,IT,SS | coarse, compact, sandy soil |
| -Chrozophora hierosolymitana Spreng. | T | P1 | marls and wadis |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Euphorbia granulata Forssk. | T | SA,IT,SS | sandy soil and gypseous place |
| -Euphorbia petiolata Banks. | T | SS,IT | scattered weed on the province |
| -Euphorbia helioscopia L. | T | M,IT,SA | weed on industrial plants |
| -Ricinus communis L. | T | Cult | cultivated |
| 30.Frankeniaceae | | | |
| -Frankenia pulverulenta L. | T | ES,M,IT | saline places |
| 31.Fumariaceae | | | |
| -Fumaria parviflora Lam. Rech. | T | AS,IT,M,ES | weed on ruderal place |
| 32.Gentianaceae | | | |
| -Centaurium tenuiflorum (Hoffmans. et Link) | T | ES,SA,M | marls, calcareous cliff |
| -Centaurium spicata (L.) Fritsch. | T | ES,SS,M,IT | rare on the field |
| -Gentiana olivieri Griseb. | T | IS,SS,ES | marls, gypseous, calcareous place |
| 33.Geraniaceae | | | |
| -Erodium ciconium (Jusl.) L, Her.ex Aition | T | M,IT | sandy soil |
| -Erodium cicotarium(L.)L,Her.ex Aition | T | M,IT,ES,SS | calcareous sandy soil |
| -Erodium glaucophyllum (L.) Aition | Hm | SA | sandy, calcareous soil |
| -Erodium gruinum (L.) L, Her.ex Aition | T | SS,IT | marls, calcareus place |
| -Erodium moschatum (L.)L,Her.ex Aition | T | IT,M | sandy soil |
| -Erodium oxyrrhynchum M.B. | T | SS,IT | sandy ground |
| -Erodium pulverulentum (Cav.) Willd | T | SA,SS | scattered on the field |
| -Geranium collinum Steph. ex. Willd. | Hm | SS,IT | weed on ruderal land |
| -Geranium rotundifolium L. | T | SS,IT | cliff and lithosols |
| -Geranium trilophum Boiss. | T | SA | rare on lithosols |
| 34.Gramineae | | | |
| -Aegilops crassa Boiss. | T | SS | marl, calcareous soil |
| -Aegilops triuncialis L. | T | SS | on irrigated place |
| -Aegilops umbellulata Zhuk. | T | SS,IT | slopes of mountains |
| -Aeluropus lagopoides(L.) Trin ex. Thw. | Ge | SS,IT,SA | salty, often damp areas |
| -Aegilopus littoralis (Goudn.) Parl. | Ge | SA,IT,M,SS | on waste salty land |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Ammochloa palaestina Bioss. | T | IT,SA,S | sandy soil |
| -Aristida adscensionis L. | T | SS,M | marls cliff, calcareus place |
| -Arundo donax L. | Hel | Pal | seachore, shallow pools |
| -Asthenatherum forsskalii (Vahl.) Nevski. | Hm | SA,SS | sand dunes |
| -Avena ludoviciana Durieu | T | IT,SS | sandy soil on anywhere |
| -Avena sativa L. | T | IT,M,SS | margin of cultivated land |
| -Bromus danthoniae Trin. | T | COSM | on rrigated place, on slopes |
| -Bromus madritensis L. | T | SS,IT | saline, salty place |
| -Bromus rechingeri Melderis. | T | M,IT | weed on field |
| -Bromus scoparius L. | T | M,IT | higher terrain with sandy soil |
| -Bromus tectorum L. | T | SA,IT,ES,M | scattered on anywhere |
| -Calamagrostis pseudophragmites Adans. | Ge | ES,IT | slopes with shallow waterpool |
| -Cenchrus ciliaris L. | Hm | Pal2 | sandstone in sandy places |
| -Chloris virgata Swartz. | Hm | SS | salty place, N. of Ahwaz |
| -Cutandia dichotoma (Forssk.) Trab. | T | SS,SA | sandy dunes |
| -Cutandia memphetica (Spreng.)Benth. | T | SS,IT,M | sandy dunes |
| -Cymbopogon olivieri (Boiss.)Bor. | Hm | OS,IT,SS | arid compact, sandy gravel places |
| -Cynodon dactylon (L.) Pers. | Ge | COSM | common weed in field, garden |
| -Desmostachya bipinnata L. | Ge | SS,SA | sandy dunes |
| -Dichanthium annulatum (Forssk)Stapf. | Ge | SubT | on irrigated farmland |
| -Dinebra retroflexa | T | SA | rare weed on farmland |
| -Echinochloa colonum L. | T | IT,M,SS | weed on farmland |
| -Echinochloa grus-galli L. | T | COSM | weed on damp land |
| -Enneapogon persicus Boiss. | Ge | M,IT,SS | between cliff and escarpment |
| -Eremopoa persica (Trin.) Roshev. | T | IT,M,SS | weed on field |
| -Eremopyrum distance (C. Koch) Nevski | T | SS,SA,IT | sandy-gravel place |
| -Heteranthelium piliferum Hoscht. | T | IT,SS | clay-sandy places |
| -Hordeum bulbosum L. | Hm | M,IT,ES | rare in, N. of areas |
| -Hordeum glaucum Steud. | T | IT,M | scattered in areas |
| -Hordeum marinum Huds. | T | SS,IT,M | salty soil and saline |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Hordeum spontaneum C.Koch | T | SS,IT,M | cliff, lithosol, sandy soil |
| -Hyparrhenia hirta (L.) Stapf. | Hm | SS,SM | on calcareous cliff |
| -Imperata cylindrica (L.) P. Beauv. | Ge | COSM | scattered on riverside |
| -Lolium rigidum Gaudin. | T | COSM | in field and moist places |
| -Lophochloa obtusiflora (Bioss.) Gontsch. | T | SS,IT | salty places |
| -Lophochloa Phleoides L. | T | SS | semi-saline places |
| -Oryza sativa L. | T | COSM | cultivated |
| -Panicum antidotale Retz. | Ge | Cult | cultivated |
| -Panicum repens L. | Ge | SS,IT | margin of water channel |
| -Panicum sanguinalis (L.) Digiratia sanguinalis | Ge | IT | moist places of province |
| -Parapholis incurva(L.)C.E.Hubbard. | T | SS | ruderal land,S. of Ahwaz |
| -Paspalum paspaloides (Michx.) Scribner. | Ge | SS,IT | moist habitats |
| -Pennisetum divisum (Gmel.) Henrard. | Hm | SS,SM | sandy dunes, sandy places |
| -Phalaris minor Retz. | T | M-IT | scattered on anywhere |
| -Phragmites australis(Cav.)Trn. | Hel | COSM | swamp, riversides |
| -Poa bulbosa L. | Ge | SS,IT,M | moist place on hills |
| -Polypogon monspeliensis (L.) Desf. | T | Pa12 | in damp places, waste ground |
| -Saccharum officinarum L. | Ge | T | cultivated |
| -Schismus arabicus Nees | T | SS,M,IT | heavy salty and saline |
| -Setaria glauca (L.) P. Beauv. | T | SS,IT | weed on wetland |
| -Sorghum halepense (L.) Pers. | Ge | COSM | weed on farmland |
| -Sphenopus divaricatus (Gouan) Reichenb. | T | SS,IT,M | saline places, riverside |
| -Stipa capensis Thunb. | T | SS,IT,M | scattered on any places |
| -Stipagrostis pennata (Trin.)De Winter. | Hm | SA,SS | sandy dunes |
| -Stipagrostis plumosa(L.) Anders. | Hm | SS,IT,SA | sandy, gravel desert |
| -Taeniatherum crinitum (Schreb.)Nevski. | T | IT | rare on gypseous hills |
| -Trachynia distachya (L.) Link. | T | IT,AS,M | sandy gravel and gypsum plain |
| -Tricholaena teneriffae (L.F.) Linke | Hm | SS,SM | scattered on gypsum plain |
| -Zea mays L. | T | COSM | cultivated |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| 35.Iridaceae | | | |
| -Gladiolus segetum Ker-Gawl | Ge | SS,IT | scattered on farmland |
| -Gynandriris sisyrinchium (L.) Parl | Ge | IT,SS | scattered on moist places |
| 36.Juncaceae | | | |
| -Juncus acutus L. | T | IT,SS | distributed along sandy shore |
| -Juncus bufonius L. | T | IT,SS,M | distributed along sandy shore |
| -Juncus inflexus L. | Ge | IT,SS,M | wetland, N. of province |
| 37.Labiatae | | | |
| -Eremostachys laevigata Bunge. | Hm | IT | distributed on farmland |
| -Mentha longifolia (L.) Hudson | Hm | COSM | riverside, water channel |
| -Ocimum basilicum L. | T | Cult | cultivated |
| -Phelomis bruguieri Desf. | Hm | SS,IT | marls, gypsum places |
| -Salvia compressa Vent. | Hm | SS | sandy soil in middle altitude |
| -Salvia macrosiphon Boiss. | Hm | SS,IT | sandy soil inlowland |
| -Teucrium polium L. | Hm | SA,IT | sandy soil in wadis |
| -Teucrium olivierianum Gingins | Hm | IT | marls and calcareous places |
| 38.Liliaceae | | | |
| -Allium atroviolaceum Boiss. | Ge | IT | scattered on farmland |
| -Allium cepa L. | Ge | Cult | cultivated |
| -Allium eriphyllum Boiss. | Ge | IT | margin of farmland |
| -Allium Jesdianum Boiss. | Ge | SS,IT | sandy soil of middle altitude |
| -Asphodelus tenuifolius Cav. | T | SS,M | sandy and loamy soil |
| -Bellevalia glauca (Lindl.) Kunth. | Ge | IT,M | clay-loamy places |
| -Dipcadi unicolor Medicus. | Ge | SS,IT | sandy and loamy ground |
| -Gagea reticulata (Pall.)Schut | Ge | SS,IT | on bare stony ridges |
| -Muscari sp. | Ge | IT | clay-loamy places |
| -Ornithogalum persicum Hausskn. ex Bornm. | Ge | IT | distributed on farmland |
| -Scilla autumnalis L. | Ge | IT,SS | distributed on field |
| -Tulipa clusiana Vent. | Ge | IT | clay-loamy soil |
| -Tulipa systola Stapf. | Ge | IT | sandy,gravel soil |
| -Urginea maritima (L.) Baker. | Ge | M | ruderal soil and vegetation |
| 39.Linaceae | | | |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Linum strictum L. | T | SS | scattered on middle altitude |
| 40.Lythraceae | | | |
| -Ammania multiflora Roxb. | T | IT,SS,M | weed on farmland |
| -Lythrum hyssopifolia L. | T | IT,SS,M | moist places, margin farmland |
| -Lythrum salicaria L. | Hm | IT,SS,M | riverside-water channel |
| 41.Malvaceae | | | |
| -Alcea aucheri (Boiss.)Alef. | Hm | IT | gypsum place in middle altitude |
| -Alcea sulphurea(Boiss.-et Hohen) Alef. | Hm | IT,ES | rare scattered on field |
| -Hibiscus esculentus L. | T | Cult | cultivated |
| -Hibiscus rosa-sinensis L. | Ch | Cult | cultivated |
| -Hibiscus syriacus L. | Ch | Cult | cultivated |
| -Malva parviflora Sm. | T | M,IT,SA | cultivated |
| -Malva rotundifolia L.Rech. | T | IT,M | ruderal field |
| 42.Mimosaceae | | | |
| -Acacia farnesiana (L.) Willd. | Ph | Cult | cultivated |
| -Acacia victoriae Benth. | Ph | Cult | cultivated |
| -Albizia lebbeck (L.) Benth. | Ph | Cult | cultivated |
| -Inga edulic Mort. | Ph | Cult | cultivated |
| -Leucaena leucocephala (Lam.)de Wit. | Ph | Cult | cultivated |
| -Prosopis farcta (Banks. Soland.) Macbr. | Ch | OS,M,IT | ruderal vegetation |
| -Propopis juliflora (Swartz.) DC. | Ph | OS | sandy soil, W. Zeydon |
| 43.Moraceae | | | |
| -Ficus benghelensis L. | Ph | Cult | cultivated |
| -Ficus carica L. | Ph | Cult | cultivated |
| -Ficus religiosa L. | Ph | Cult | cultivated |
| -Morus alba L. | Ph | Cult | cultivated |
| 44.Myrtaceae | | | |
| -Callistemon salignus Sweet. | Ph | Cult | cultivated, ornamental |
| -Eucalyptus camaldulensis Dehnh. | Ph | Cult | cultivated |
| -Eucalyptus microtheca | Ph | Cult | cultivated |
| 45.Najadaceae | | | |
| -Najas graminea L. | Hy | COSM | river,water channel |
| 46.Nyctaginaceae | | | |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Bougainvillea spectabilis Willd. | Ch | Cult | cultivated, ornamental |
| -Mirabilis jalapa L. | T | Cult | cultivated, ornamental |
| 47.Oleaceae | | | |
| -Olea europaea L. | Ph | Cult | cultivated, in Behbahan |
| 48.Orobanchaceae | | | |
| -Cistanche tubulosa (Schrenk) R. Wight. | Par | SA,IT | parasite, sandy dunes |
| -Orobanche cernua Loef. | Par | SA,M,IT | parasite, in Miankooh |
| 49.Oxalidaceae | | | |
| -Oxalis corniculata L. | T | IT,M | weed on moist places |
| 50.Palmae | | | |
| -Phoenix datylifera L. | Ph | T | cultivated |
| -Washintonia filifera H. Wendl. | Ph | Cult | cultivated, ornamental |
| 51.Papaveraceae | | | |
| -Hypecoum pendulum L. | T | M.IT,AS | farmland in Haft-Gel |
| -Papaver dubium L. | T | SS,IT | mountains and higher terrain |
| -Papaver hybridum L. | T | SS,IT | mountains and higher terrain |
| 52.Papilionaceae | | | |
| -Alhagi mannifera Desv. | Hm | SS,S,M,IT | scattered on anywhere |
| -Astragalus annullaris Forssk. | T | SA,M,IT | marls, N. of Ramhormoz |
| -Astragalus corrugatus Betrol.Rar. | T | SA,IT | sandy soil, desert |
| -Astragalus cruciatus Link. | T | SS,IT | scattered on farmland |
| -Astragalus fasiculifolius Boiss. | Ch | SS | marls and gypsum places |
| subsp. arbusculinus Bornm. | | SA | |
| -Astragalus gypsocolus Maassomi.ex Mozaffarian | Hm | SA | gypsum places |
| -Astragalus hamosus L. | T | SS,IT | scattered on farmland |
| -Astragalus obtusifolius DC. | Hm | SS | sandy soil, gypsum places |
| -Astragalus sieberi DC. | Hm | SS,IT | sandy soil, gypsum places |
| -Astragalus spinosus (Forssk.) Masch. | Ch | SA,IT | hard, sandy, gravelly soil |
| -Astragalus talimansurensis Rech.f. | Ch | IT | sandy calcareous places |
| -Astragalus tribuloides Del | T | AS,IT | sandy places |
| -Colutea uniflora G.Beck | Ch | IT | mountains, N. of Behbahan |
| -Dalbergia sisso Roxb. | Ph | Cult | cultivated |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Ebenus stellata Boiss. | Ch | OS,IT | sandy, gravelly soil |
| -Glycyrrhiza glabra L. | Hm | IT,M,ES | scattered on wadis |
| -Hippocrepis bicontorta Loisel. | T | SA,IT | sandy soil |
| -Hippocrepis bisiliqua Forssk. | T | SA,IT | sandy-loamy places |
| -Hymenocarpus circinnatus (L.) Savi. | T | M | gypsum, morls places |
| -Lotus corniculatus L. | Hm | IT,M | scattered on moist places |
| -Lotus halophilus Boiss. & Sprun. | T | M,SA | sandy dunes |
| -Lathyrus aphacea L. | T | IT | scattered on farmland |
| -Medicago coronata (L.) Bartalini. | T | SS,IT,M | sandy soil |
| -Medicago intertexta (L.) Mill. | T | IT,M | compact, calcareous lithosols |
| -Medicago laciniata (L.) Miller | T | SA,SS | coarse, sandy soil |
| -Medicago minima (L.) Bartalini. | T | SS,IT | mountains, N. of Haft-Gel |
| -Medicago orbicularis (L.) Bartalini. | T | SS,IT | sandy, calcareous places |
| -Medicago polymorpha L. | T | M.IT,ES | scattered on anywhere |
| -Medicago radiata L. | T | M,SS,IT | sandy soil |
| -Medicago rigidula (L.) All. | T | M,SS,IT | coarse, compact, sandy soil |
| -Medicago rugosa Desr. | T | M,SS,IT | compact, sandy soil |
| -Medicago scutellata (L.) Mill. | T | M,SS,IT | rare on field |
| -Melilotus indicus (L.) All. | T | COSM | heavy saline places |
| -Onobrychis crista-galli(L.) Lam. | T | IT,SS | sandy soil, desert |
| -Onobrychis gypsicola Rech.f | Hm | SS | gypsum places |
| -Onobrychis ptolemaica (Delile)DC. | Hm | SA,IT | marls, calcareous soil |
| -Ononis serrata L. | T | SA,M | caorse, sandy, compact soil |
| -Scorpiurus muricatus L. | T | M,IT | saline places |
| -Trifolium angustifolium L. | T | IT,SS | scattered on field |
| -Trifolium clusii Gordon. Gern. | T | IT,SS | sandy soil |
| -Trifolium dasyurum C.Persl. | T | IT,SS,M | scattered on dield |
| -Trifolium lappaceum L. | T | IT,SS,M | distributed on irrigated places |
| -Trifolium scabrum L. | T | IT,SS,M | distributed anywhere |
| -Trifolium stellatum L. | T | IT,SS,M | cliff, hard lithosols |
| -Trifolium tomentosum L. | T | SS | sandy soil, in field |
| -Trigonella anguina Delile. | T | SS | sandy, silty soil |
| -Trigonella stellata Forssk. | T | SA | sandy soil, ruderal lands |

Table 1. : (Continued)

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Trigonella uncata Boiss. & Noe. | T | AS | sandy, gravelly soil |
| 53.Pedaliaceae | | | |
| -Sisamum indicum L. | T | Cult | cultivated |
| 54.Plantaginaceae | | | |
| -Plantago boissieri Hausskan.Bornm. | T | OS,SA,IT | sandy,salty places |
| -Plantago coronopus L. | T | SA,IT | sandy soil |
| -Plantago lanceulata L. | Hm | IT,SS,M | scattered on moist places |
| -Plantago ovata Forssk. | T | SS,IT,SA | scattered anywhere |
| -Plantago psyllium L. | T | IT,SS,M | scattered anywhere |
| 55.Plumbaginaceae | | | |
| -Limonium thouinii (Viv.) O.Kuntze | T | IT | sandy, gravelly soil |
| -Limonium meyeri (Boiss.) O.Kuntze | Hm | IT | moist places, riverside |
| -Psylliostachys spicata (Willd.)Nevski. | T | IT | salty, saline places |
| 56.Podophyllaceae | | | |
| -Leontice leontopetalum L. Subsp. Leontopetalum. | Hm | IT | weed on farmland |
| 57.Polygonaceae | | | |
| -Calligonum intertextum Rech.f. Schiman-Czeika | Ph | SS | rare on sandy dunes |
| -Emex spinosus (L.) Campd. | T | SA,M | sandy soil |
| -Polygonum hydropiper L. | T | IT,SS | river side, moist places |
| -Polygonum lapathifolium L. | T | IT,SS | river side, moist places |
| -Polygonum persicaria L. | T | IT,SS | river side, moist places |
| -Polygonum patulum M.B. | T | IT,SS | clay with irrigation |
| -Rumex crispus L. | Hm | SS,SM | weed on moist places |
| -Rumex dentatus L. | T | ES,M,IT | weed on moist places |
| -Rumex vesicarius L. | T | SS,SM | marls, gypsum, calcareous places |
| 58.Portulacaceae | | | |
| -Portulaca grandiflora W.J. Hook | T | Cult | cultivated, ornamental |
| -Portulaca oleracea L. | T | Pan | weed on moist, sandy places |
| 59.Potamogetonaceae<br>-Potomogeton nodosus Poir. | Hy | COSM | distributed on water channel |
| 60.Primulaceae<br>-Anagallis arvensis L. | T | ES,M,IT | distributed on anywhere |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| 61.Punicaceae | | | |
| -Punica granatum L. | Ch | Cult | cultivated |
| 62.Ranunculaceae | | | |
| -Adonis aestivalis L. | T | IT,M | vernaly weed on farmland |
| -Adonis microcarpa DC. | T | IT,M | vernaly weed field |
| -Delphinium tuberosum Auch. ex Boiss. | Hm | SS | marls, calcareous places |
| -Nigella arvensis L. | T | IT,SS,M | rare on sandy soil |
| -Ranunculus arvensis L. | T | IT,M,ES | vernaly weed on farmland |
| -Ranunculus asiaticus L. | Hm | IT,ES | marls, gypsum places, vernaly weed |
| 63.Resedaceae | | | |
| -Reseda aucheri Boiss. | Hm | IT,SS,M | gypsum places |
| 64.Rhamnaceae | | | |
| -Ziziphus nummularia (Burm.F.)Wight. & Arn. | Ph | AS,OS | sandy soil in field |
| -Ziziphus spina-Christi (L.) Willd. | Ph | Pa12 | sandy, gravelly places |
| 65.Rosaceae | | | |
| -Amygdalus scoparia Spach. | Ch | IT,SA | sandy soil, near river |
| -Neurada procumbens L. | T | SS,SA | sandy soil, dunes |
| -Rubus anatolicus (Focke) Focke ex Hausskn. | Ch | IT | moist places in gardens |
| -Sanguisorba minor Scop. | Hm | IT | scattered on farmland |
| 66.Rubiaceae | | | |
| -Callipeltis cucularia (L.) Stev. | T | OS,SA | scattered on middle altitude |
| -Galium setaceum Lam. | T | IT,SS | sandy, gravelly soil |
| -Vailantia hispida L. | T | SS | rare in hills |
| 67.Rutaceae | | | |
| -Citrus spp. | Ph | Cult | cultivated |
| -Haplophyllum tuberculatum (Forssk.) Juss. | Hm | SA,IT,SS | sandy and gravelly soil |
| 68.Salicaceae | | | |
| -Populus euphratica Olivier | Ph | SA,SS,IT | riverside, moist places |
| 69.Sapindaceae | | | |
| -Dodonea viscosa(L.) Jacq | Ph | T | cultivated, ornamental |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| 70.Scrophulariaceae | | | |
| -Kichxia sieberi (Reichenb.) Allan | T | ES,AS,IT | ruderal land, roadside |
| -Linaria albiforns (Sm.) Spreg. | T | IT,SA,S,ES | gypsum places |
| -Parentucellia latifolia Viv. | T | SA-IT | scattered on any where |
| -Scrophularia deserti Del. | Hm | AS,SA,IT | scandy, gypseous soil |
| -Scrophularia striata Boiss. | Hm | IT,SS | sandy, gypsum places |
| -Verbascum kochiiforme Boiss. & Hausskn. | Hm | SS | sandy, gravely places |
| -Verbascum pseudo-digitalis Nab. | Hm | SS,IT | coarse, sandy soil |
| -Verbascum sinuatum L. | Hm | IT,M | cliff, coarse lithosols |
| 71.Solanaceae | | | |
| -Hyoscyamus orthocarpus Schoenbeck-Temesy | Hm | OS | cliff, margin of river |
| -Hyoscyamus tenuicaulis Schoenbeck-Temesy | | SS,IT | gypsum places |
| -Lycium shawii Roemer. & Schultes | PH | AS,SM.IT | sandy, salty places |
| -Lycopersicum esculentum Mill. | T | Cult | cultivated |
| -Petunia x hybrida L. | T | Cult | ornamental |
| -Physalis divaricata D.Don. | T | SS,IT | ruderal land and vegetation |
| -Solanum melongena L. | T | Cult | cultivated |
| -Solanum nigrum L. | T | M,ES,IT | scattered on farmland |
| -Solanum tuberosum L. | Ge | COSM | cultivated |
| 72.Sparganiaceae | | | |
| -Sparganium erectum L. ssp. Neglectum | Ge | COSM | swamp, shallow water pools |
| 73.Tamaricaceae | | | |
| -Tamarix aphylla (L.) Karst. | Ph | SS,SM | sandy dunes, salty places |
| -Tamarix arceuthoides Beg. | Ph | SS,IT | riverside, damp places |
| -Tamarix leptopetala Beg. | Ph | SS,IT | riverside, damp places |
| -Tamarix passerinoides Del. | Ph | SA | saline, river side |
| -Tamarix tetragyna C.A.Mey. | Ph | SS,IT | saline, damp places |
| -Reaumuria stocksii Boiss. | T | SS,IT | marls, gypsum places |
| 74.Tiliaceae | | | |
| -Corchorus olitorius L. Rech. | Ch | SS | compact, sandy soil |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| 75.Typhaceae | | | |
| -Typha australis Schum. & Thonn. | Ge | COSM | swamp, shallow water places |
| 76.Umbelliferae | | | |
| -Ammi majus L. | T | M,IT,ES | scattered on field |
| -Ammi visnaga (L.) Lam. | T | M,IT | weed on farmland |
| -Anethum graveolens L. | T | Cult | cultivated |
| -Anisociadium orientale DC. | T | SA | sandy soil |
| -Bunium paucifolium DC. | Ge | IT | weed on farmland |
| -Bupleuram lancifolium Hornem. | T | IT | sandy, gravelly places |
| -Bupleurum semicompositum L. | T | SA,IT,M | rich soil, in Behbahan |
| -Dicyclophora persica Boiss. | T | SS | marls, gypsum places |
| -Ducrosia anethifolia (DC.)Boiss. | Hm | IT-SS | marls, calcareous soil |
| -Ducrosia flabellifolia Boiss. | Hm | IT | marls, gypsum places |
| -Ergocarpon cryptanthum C.C.Townsend. | T | SS | calcareous soil |
| -Ferula sphenobasis C.C.Townesend. | Hm | SS | gypsum, calcareous places |
| -Ferula stenocarpa Boiss. & Hausskn. | Hm | SS,IT | gypsum, sandy soil |
| -Ferulago macrocarpa (Fenzl.) Boiss. | Hm | IT | gypsum, marls places |
| -Lagoecia cuminoides L. | T | SS | Cliff, sandy, gravelly places |
| -Malabaila secacul (Miller.)Boiss. | Hm | IT,SS | Weed on farmland |
| -Olivieria decumbens Vent. | T | IT,SS | marls, gypseous soil |
| -Pteroselinum crispum (Miller) A.M. Hill. | T | Cult | cultivated |
| -Pimpinella barbata(DC.)Boiss. | T | OS,IT | marls, gypsum places |
| -Pimpinella eriocarpa Banks & Soland. | T | IT,OS | roadside, ruderal lands |
| -Pimpinella olivieri Boiss. | T | IT,SS | weed on farmland |
| -Pimpinella stocksii Boiss. | T | IT,SS | weed on farmland |
| -Pycnocycle caespitosa Boiss. | Hm | SS | higher terrain, sandy places |
| -Tordylium persicum Boiss. & Hausskn. | T | IT | weed on farmland |
| -Torilis leptophylla (L.) Reichnb. | T | M,IT,ES | sandy, gravelly places |
| -Turgenia latifolia (L.) Hoffm. | T | IT,M | weed on farmland |
| 77.Urticacea | | | |

**Table 1. : (Continued)**

| Species | Life form | Chorotype | Habitat |
|---|---|---|---|
| -Parietaria alsinifolia Delile | T | SA,OS | cliff, stony lithosols |
| -Urtica pilulifera L. | T | COSM | weed on garden |
| 78.Valerianaceae | | | |
| -Valerianella vesicaria (L.) Moench | T | SA,IT | sandy, gravelly places |
| 79.Verbenaceae | | | |
| -Phyla nodiflora (L.) Greene | Hm | IT | rich soil, moist places |
| -Vitex pseudo-negondo (Hausskn.) Hand.-Mzt. | Ch | SS | riverside, moist places |
| 80.Violaceae | | | |
| -Viola tricolor L. | T | Cult | cultivated |
| -Viola cinerea Boiss. | Hm | SS | heavy soil |
| 81.Zygophyllaceae | | | |
| -Fagonia bruguieri DC. | Hm | OS,SA | sandy, gravelly soil |
| -Fagonia glutinosa Del. | Hm | SA | sandy, salty soil |
| -Peganum harmala L. var stenophyllum | Hm | SA,M,IT | ruderal land, sandy soil |
| -Tribulus terrestris L.var robustus Boiss. & Rech.f. | T | M,IT,SS,ES | sandy soil |
| -Zygophyllum eurypterum subsp. Gontsharowii (Boiss.) Haddi | Ch | SS | marls, calcareous places |
| -Zygophyllum fabago L. subsp. Orientale Boiss. | Ch | IT,SS,M | saline with heavey clay |

**Results and Concluding remarks**

According to present-day knowledge, the vegetation of the oil field areas contains about 531 species (49 species is cultivated); 1 fern, 2 gymnosperms and 528 angiosperms. These species belong to 81 families and 351 genera. The largest family is Graminae, that is completely dominating in vernaly aspects of flora and vegetation, but dominant aspects of flora in autumnal is covered by Chenopodiaceae. About 295 of the species, somewhat more than 45%, are annuals; 41 species, about 7.7% are phanerophytes; 92 species, about 17.3%, hemicryptophytes; 47 species, about 8.9% chamaephytes; 41 species, about 7.7%, geophytes; whereas the rest are hydrophytes and helophytes and parasites. 9 species can be expected to be endemic to the oil field areas. The flora of oil field areas (SW. Iran) have a complex nature. Their present-day

distributions, with our poor knowledge of geological past, are hard to understand. This is certainly true for a few of anomalies which are now listed without comment. Typical and rare species in the oil field areas (SW of Iran) in Saharo-Sindian territory bordering Irano-Turanian stock are:

**Ebenus stellata; postia puberula** and **Erysimum oleifolium**. Eebnus Stellata is the sole member of sect. Tragacantha and endemic to Iran and adjacent Oman. There are 4 other species with restricted area of distribution, that can be subendemic to S and SW of Iran: **Hyocyamus orthocarpus Schonbeck-Temesy**, in cliff and slopes margin of seasonal rivers; **Onosma dasytrichum & Boiss** and **Onobrychis gypsicola Rech. f** in gypsum and marls places; **Verbascum kochiformis Boiss & Hausskn** in sandy, gravely places of lowlands.

According to our studies, with regard to distributional patterns (see table 2), the overwhelming majority of species (25.5%) belong to the Irano-Turanian & Saharo-Sindian elements. This is followed by high percentage of Saharo-Sindian (22%) and a much smaller number of Irano-Turanian (15.1%) and some bi- or pluri regional species. The tabulation demonstrates the Irano-Turanian & Saharo-Sindian character of flora in lowlands of the oil field areas. Finally, in the lowlands of Persian Gulf area, the floristic situation is complex. African links are strong. The more or less tropical pan-African-S Arabian elements and Irano-Turanian one are very prominent and possibly the most important.

Another important element is provided by those taxa which stretch all the way from NW Africa through Arabia to S persia (oil field areas) and to Pakistan and SE Afghanistan. In the oil field areas there is no clear differentiation between these three distributional type, the former paleo-tropis, the two latter holarctic in origin. Also there is very little evidence of SE Asiatic and Euro-Siberian influence on the flora of the Persian Gulf area, but there is comparatively strong Mediterranean elements. This is obvious in the north of the oil field areas, and outer parts of the Zagros mountain system in Irano-Turanian region. There is also clear endemic elements in the Saharo-Sindian territories, showing autochthonous development within .

Table 2. Distributional types and life form in flora of the oil field areas

| Distributional types | Shrubs, dwarf shrubs | Other perennials | Geophytes | Annuals, biennials | Total S.% | |
|---|---|---|---|---|---|---|
| Irano-Turanian | 7 | 21 | 10 | 33 | 71 | 15.1 |
| Saharo-Sindian | 20 | 30 | 4 | 50 | 104 | 22 |
| Mediterranean | - | - | 1 | 6 | 7 | 1.5 |
| Ir.-Tur. & Saharo-Sindian | 12 | 27 | 9 | 72 | 120 | 25.5 |
| Ir.-Tur. & Mediterranean | 1 | 4 | - | 35 | 40 | 8.5 |
| Sah. Sin. – Mediterranean | 2 | 1 | - | 9 | 12 | 2.5 |
| Ir.-Tur.&Sah.-Sin.& Medi. | 3 | 7 | 5 | 37 | 52 | 11 |
| Ir.-Tur.&-Euro-Siberian | - | 1 | 1 | 2 | 4 | 0.84 |
| Ir.-Tur.& Medi.&Euro-Sib. | - | 2 | 1 | 13 | 16 | 3.4 |
| Ir.-Tur.&Sah.-Sin.&Euro Sib. | - | 1 | - | 6 | 7 | 1.5 |
| Cosmopolitant | 3 | 2 | 10 | 15 | 30 | 6.4 |
| Endemics | 2 | 4 | - | 3 | 9 | 1.9 |
| Total | 50=10.5% | 100=21.2 % | 41=8.7% | 281=59.5 % | 472=100% | |

Fig 3. Halocnemum strobilaceum. North of Abadan

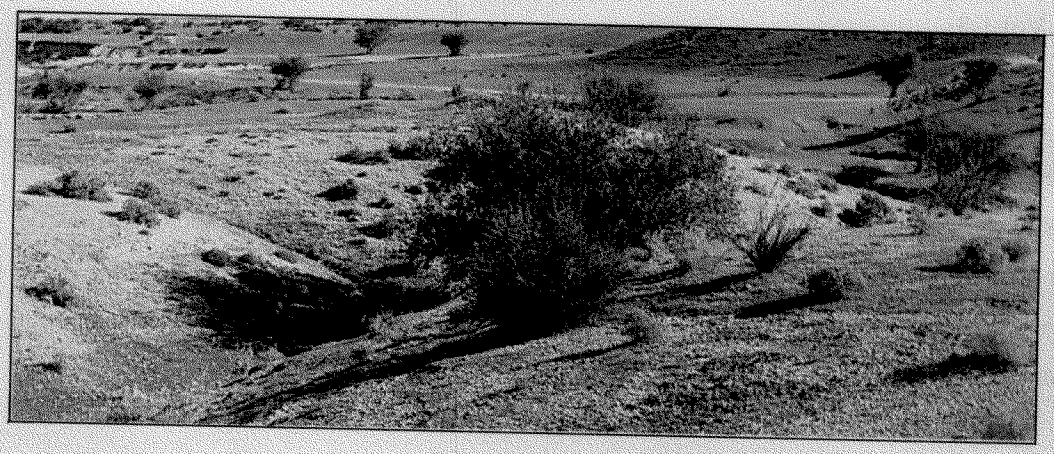

Fig 4. Stands of Ziziphus spina-christi. Between Behbahan and Gachsaran

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# مطالعه فلورستیک مناطق نفت خیز جنوب ایران

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**کلمات کلیدی:**
ترکیب فلورستیک، جنوب غربی ایران، مناطق نفت خیز.

**چکیده:**
مناطق نفت خیز با سرزمینهای پست و کم ارتفاع گسترده در جلگه خوزستان از نظر ترکیب فلورستیک مورد مطالعه قرار گرفته است. اطلاعات مختصری راجع به اقلیم، مکان نگاری و جنبه های زمین شناختی این مناطق ارائه شده است. بر اساس ۱۳۰۰ نمونه گیاهی جمع آوری شده در این مناطق، عناصر گیاهی پس از نامگذاری دقیق در جداولی با ترتیب الفبایی به تفکیک تیره، جنس و گونه ارائه شده است. مناطق نفت خیز در جنوب غربی ایران اساساً از سه رویشگاه اصلی شامل: بیابانها و نواحی پست و شور ساحلی، نواحی کم ارتفاع و تپه های شنی متحرک و بالاخره زیستگاههای گچی و آهکی در ارتفاعات شمالی منطقه تشکیل شده است. در مطالعه این زیستگاهها، ۵۳۱ گونه گیاهی متعلق به ۳۵۱ جنس و۸۱ تیره گیاهی شناسایی و معرفی شده اند که برخی از آنها بومی و انحصاری ایران می باشند. برای تمامی گونه های گیاهی رویشگاه و محل زیست آنها، شکل حیاتی و پراکنش جغرافیایی گیاهی مربوط به آنها نیز بیان شده است.

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