

accompanying plants of *Cotula cinerea* Del (table 4.1, figure 4.9).

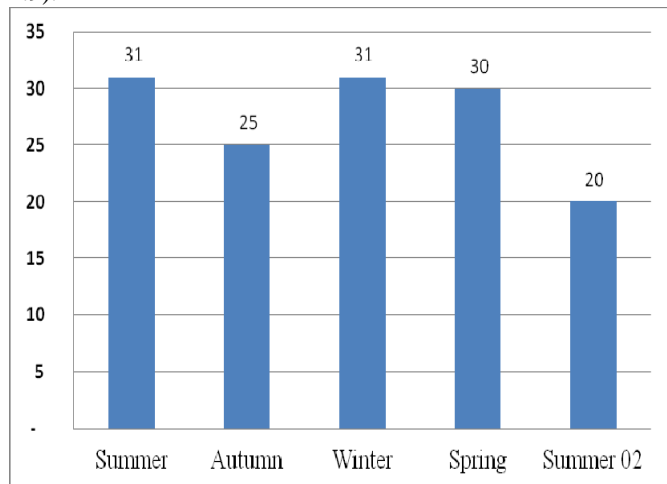


Figure 4.8: Floristic wealth of the seasons

According to the results in figure 4.8, we can say that the annual distribution of the accompanying plants varies from one season to another. The maximum was found in summer winter and spring, almost 30 taxa developed in these periods, because both of the taxa are seasonal plants. of the growth of many seasonal plants in both seasons due to the availability of amount of precipitation and suitable temperature to the growth of this types of plants. In autumn and summer the number is low, it due to the lack of seasonal and hardy plants adapted to drought. and the number of types is low in autumn and summer due to the lack of seasonal types and survival of perennial types adapted to drought.

Table 4.1: Accompanying plants of *Cotula cinerea* Del in the study areas. (Th: Thérophytes; Ph: Phanérophytes; He: Hémicryptophytes; Ch.: Chamaephytes; Ge: Géophytes).

Plant type	Family	Biological type
<i>Aristida plumosa</i>	Poaceae	Ph
<i>Arnebia decumbens</i>	Boraginaceae	Th
<i>Asphodelus refractus</i>	Liliaceae	Ge
<i>Astragalus cruciatus</i>	Fabaceae	Th
<i>Atractylis flava</i>	Asteraceae	Th
<i>Bassia muricata</i>	Chenopodiaceae	Th
<i>Chenopodium murale</i>	Chenopodiaceae	Th
<i>Cleome arabia</i>	Capparidaceae	Th
<i>Cornulaca monacantha</i>	Chenopodiaceae	Ph
<i>Cutandia dichotoma</i>	Poaceae	Th
<i>Danthonia froskahlii</i>	Poaceae	Ph
<i>Echiochilon fruticosum</i>	Boraginaceae	He
<i>Erodium glaucophyllum</i>	Geraniaceae	Ge
<i>Erodium laciniatum</i>	Geraniaceae	Ge
<i>Euphorbia guyoniana</i>	Euphorbiaceae	He
<i>Helianthemum lipii</i>	Cistaceae	Ch
<i>Ifloga spicata</i>	Asteraceae	Th
<i>Koelpenia liniaris</i>	Asteraceae	Th
<i>Launaea glomerata</i>	Asteraceae	Th
<i>Launaea resedifolia</i>	Asteraceae	Th
<i>Lotus halophylus</i>	Fabaceae	Th
<i>Malcolmia aegyptiaca</i>	Brassicaceae	Th
<i>Mathiola livida</i>	Brassicaceae	Th
<i>Moltkia ciliata</i>	Boraginaceae	He
<i>Neurada procumbens</i>	Rosaceae	Th
<i>Nolletia chrysocomoides</i>	Asteraceae	Th
<i>Onopordon macrocanthum</i>	Asteraceae	Th
<i>Plantago albicans</i>	Plantaginaceae	Th
<i>Plantago psyllium</i>	Plantaginaceae	Th
<i>Polycarpea repens</i>	Caryophyllaceae	Th
<i>Salsola foetida</i>	Chenopodiaceae	Ph
<i>Schismus barbatus</i>	Poaceae	Th
<i>Silene villosa</i>	Caryophyllaceae	Th
<i>Zygophyllum album</i>	Zygophyllaceae	He

All specie of accompanying plants (34), which were counted in the study seasons, belongs to 15 plant families (figure 4.9)

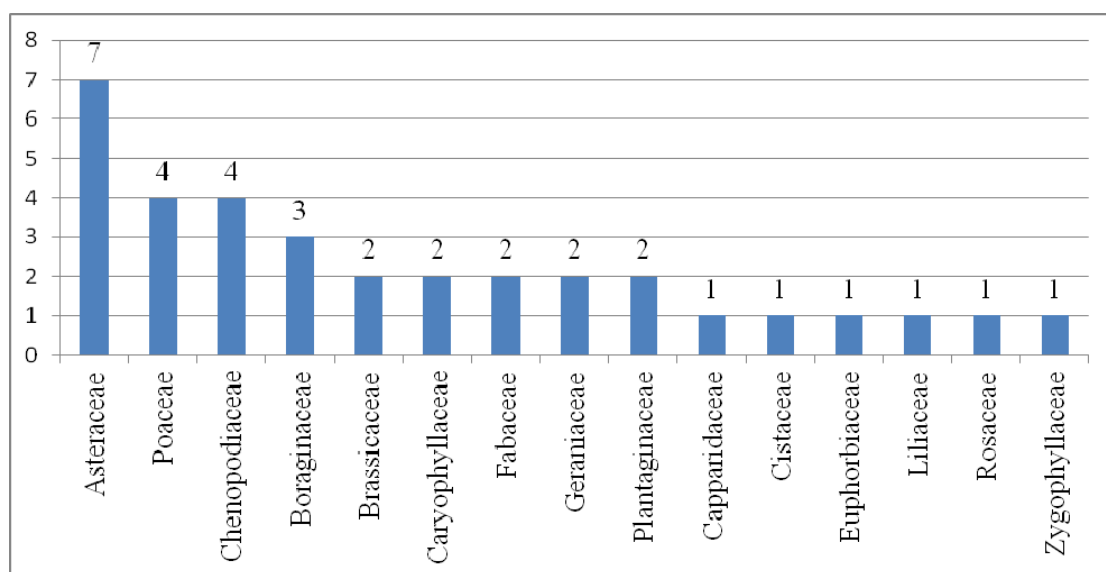


Figure 4.9: Distribution of the accompanying plants of *Cotula cinerea* Del counted through the seasons of study for the plant species

The family of Asteraceae is the first in the classification of the type's number with 07 species plants types because this type is most widely distributed in the area with power seed dispersal and the variation of its biological form. The second position occupied by two botanical families (Chenopodiaceae and Poaceae) with 04 species for each family type and after that the Borraginaceae family with 03 types. These same groups represent 50% of total accompanying plants number, because the majority numbers are annual species. They can accomplish their life cycles in short period humid that accomplished their life cycles in short periods to avoid long periods of drought in which these study areas are characterized.

According to the results of the biological species of the accompanying plants (figure 4.10), we noticed that Therophytes types are omnipresent (64%). because of the climate's nature which is characterized by long periods of drought also the intervention of human beings that live near the study areas.

The seconde place occupied by Phanerophytes and Hemicryptophytes because these types are adapted to the dry climate with special mechanisms. The Geophytes presented by bulb plants *Asphodelus refractus* and tubers one such as *Erodium* so we found 03 types of Geophytes which have special parts for the bulb in *Asphodelus refractus* plants and tubers in *Erodium* plants that help to withstand the conditions of severe drought and high temperature by the burial of its part in the ground until the arrival of the good conditions to grow, also there is a type belonging to Chamaephytes because of the very high temperatures accompanying the lack of precipitation [12].

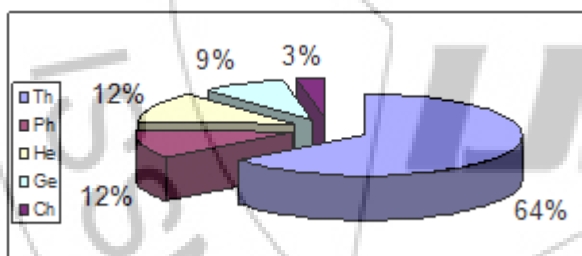


Figure 4.10: Percentage of the biological types of *Cotula cinerea* Del floristic cortege.

The Therophytes are in the top of biological types in all seasons (Figure 4.11) in the biological forms of the accompanying plants then the Phanerophytes then Hemicryptophytes and Geophytes.

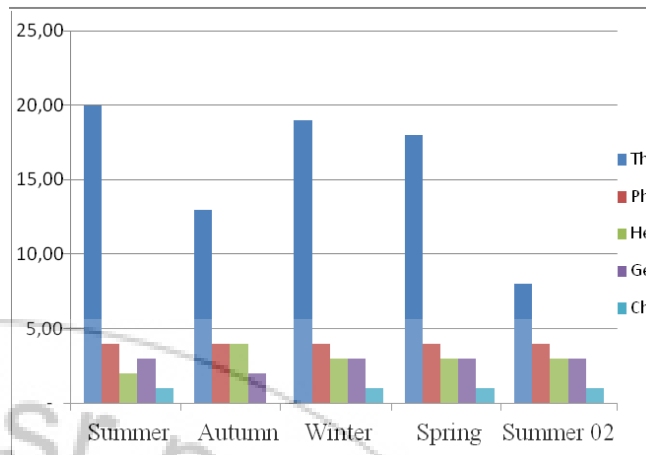


Figure 4.11: percentage of the biological types of *Cotula cinerea* floristic cortege seasonally.

5. Conclusion and Future Works

The present study revealed that:

After the annual monitoring of the Shihia *Cotula cinerea* Del and the accompanying plants in the year 2009-2010 we concluded that:

- The total coverage rate in the study areas has a direct link with the amount of precipitation, also the biological diversity that appears in autumn and spring due to the growth of seasonal plants undried Xerophytes unlike the winter which is characterized by very frost resistant plant types, and in summer where perennials plants are resistant to drought.
- *Cotula cinerea* is distributed widely in spring because of the abundance of rainfall amount and the appropriate temperature and the soil's nature in which they are distributed extensively in the light sandy soils and low in other soils.
- According to the annual monitoring of the studied plant we were able to identify the stages of life of the plant as follows:
 - Vegetative Phase: mid-October to mid-January.
 - Flowering Phase: mid-January to the end February.
 - Fruiting Phase: from the beginning of March to the beginning of April.
- All these growth phases are well related to drought resistance [21] the climate can cause to reduce or to extend each phase so that a phase can last only two weeks.
- Within the availability of appropriate conditions, the new generation can grow parallel to the previous generation but it can reach its life cycle in a short period than the previous generation.
- The number of the studying plants was important in spring (3.525 m²) due to the existence of two generations in this season followed by winter (2.345 m²) and autumn (3.525 m²), it is zero in summer (0 m²) due to lack of the conditions (high temperatures and low precipitation).
- The diameter of the plant is high in fruiting phase (in spring) and fewer in the flowering phase (in winter).
- The height of the plant is important in flowering phase (in spring) in the fruiting phase as it tends to increase its diameter depends on the height.

- The number of the plants branches is almost the same in all stages of life also the number of branches has a direct link to the plant's diameter.
- It is considered that the rate of pollination of *Cotula cinerea* Del is low, it is between 25 and 40% and it depends on the type of petal producer and the lack of ray florets that attract insects for the purpose of pollination on one hand and the failure of fertilization after pollination because of the harsh climate on the other.
- The seasonal distribution of the accompanying *Shihia Cotula cinerea* Del plants varies from season to another and the maximal plant diversity is in spring and winter (30 plant types), and it is according to the growth of many seasonal types as well as the permanent existence perennial types and diversity (Floristic Wealth) will be minimal in summer and autumn due to the disappearance of seasonal types and the survival of perennial seasonal types.
- According to the monitoring we obtained 34 of plants types belonging to 15 plant families, the composed family Asteraceae is the most encountered with 07 types because it is one of the most common plant species in the area with a great power to form and disperse the seeds on one hand and the diversity of its biological form on the other.
- As we observed the domination of Therophytes represent 64% because the climate is characterized with long periods of drought forcing seasonal plants to complete its life cycle in short periods, then the biological types phanerophytes and hemicyptophytes since they are perennial types which fit dry climate of the area, also the types Geophytes that is distinguished by 03 plant types containing tubers and bulbs and at the end Chamaephytes with one type.
- And for the annual distribution of the accompanying biological types Therophytes are in the top of all seasons followed by Phanerophytes, Hemicyptophytes and Geophytes.
- **Future work focus on Conservation milieus natural at this plant and development of traditional medicinal use and evaluation in Vivo and in Vitro.**

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