

STUDY OF BIOECOLOGICAL CHARACTERISTICS OF FERULA L. SPECIES

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Abstract: In this article, the bioecological features of Ferula L species, the dynamics of seed germination are explained based on experiments.

Keywords: Ferula L, ontogeny, Monocarp species, Petri dish, F. kuhistanica, F. Samarkandica, F. ovina, F. Dshizakensis.

The biological characteristics, ecology, systematics, reserves and economic importance of Ferula L. species have been described by many scientists in the scientific literature [25; 253-b], but information about the ontogeny of the plant is almost never found. Ferula L. species are collected from their seeds in the experimental fields, and the biomorphological characteristics of the plant are studied in the ontogeny.

Below, the biomorphological characteristics of Ferula L. species were studied in ontogeny according to the methods of T.A. Rabotnov (1969), A.A. Uranov and others (1975, 1976), and the specific signs of the development periods were described.

It should be noted that not all species of Ferula L. have full stages of ontogenesis. Monocarp species do not have a senile period, they go through flowering and fruiting very quickly.

Studying the dynamics of seed germination. Ferula L. seeds have a low level of germination and must go through a physiological rest period. This can be caused by the incomplete development of the seed coat, the need for the seed to be in a dormant state. In some species, the incompletely developed seed pod is morphologically dormant, and in some, it is physiologically dormant.

In nature, the temperature factor plays an important role in controlling the process of seed germination. The length and depth of the dormant period can be different for the seed even under the same conditions. Collecting seeds at different temperatures allows us to think about their adaptation to external conditions.

The seeds of some Ferula L. species occurring in nature were stored for different periods and their germination at different temperatures was studied. Option 1. 3-4 months of Ferula L. species under normal conditions (at room temperature), then recovery at 0 - +4 °C. For this, well-ripened, high-quality seeds of 10 species collected in the summer were kept at room temperature for 3-4 months, and the seeds were collected in a Petri dish at a temperature of 0 - +4 °C.

In nature, even if the seed is sown in autumn or early spring, it will only begin to germinate in spring, because after ripening, the seed needs to be dormant for some time (full development of the bud). The non-germination of seeds at high temperatures in autumn should be considered as adaptation to the climate of Central Asia in the course of its evolution. In autumn, firstly, there is a lack of moisture in the soil, and secondly,

the air temperature is much higher. Low temperatures in late fall, winter, and early spring prevent seed germination. In such an environment, seeds go through a period of natural stratification and accelerate their germination in early spring.

In conclusion, it should be noted that, as a result of the experiments, keeping the seeds at 0 - +4 °C gives the best results both in monocarpic species (*F. kuhistanica*, *F. samarkandica*) and polycarpic species (*F. ovina*, *F. dshizakensis*). .

Latent period, The latent period is the period of primary dormancy, during which the plant is dormant in the form of seeds, fruits and other fruits..

Dissemination of seeds of *Ferula L.* species is ballistochorous, that is, the seed spreads around by its own weight and the wings of the fruit. Ballistic - anemochores are also found among *Ferula L.* species. In addition to their own weight, seeds are dispersed by wind (anemochor). The seed is spread around only after ripening in summer and autumn. In nature, it is difficult to determine the period of germination of the seeds after they fall to the ground and receive soil moisture. Because, as the seeds ripen, they begin to fall one after the other. Therefore, "new seed" refers to the seeds of the plant collected in the autumn of the same year.

According to M. G. Nikolaeva (1950, 1967), E. V. Tyurina et al., (1978), U. Rahmonkulov (1999), *Apiaceae Lindl.* grows in Central Asia. family, including *Ferula L.* species, germination from seeds is observed in early spring, natural stratification of seeds in winter. Morphology of seeds. The average absolute weight of the seeds (1000 pieces) of the studied monocarp - *F. kuhistanica*, *F. diversivittata*, *F. samarkandica*, *F. helenae*, *F. kokanica*, *F. foetida* species is 26.6 g, polycarp - *F. ovina*, *F. angrenii*, *F. dshizakensis*, *F. penninervis* species is 14 gr.

In monocarps, the length of the seeds is 7.0:0.5-25.9:1.7 mm, the width is 3.8:0.2-12.9:0.4 mm, the length of the endosperm is 5.4:0.2- 17.9:0.2 mm, width 3.1:0.1-9.1:0.5 mm, length of the bristle 2.1:0.2-72:0.9 mm, width 0.9:0.1-3.3:0.1 mm, length of seeds in polycarps 8.4:0.3-11.6:0.6 mm, width 3.7:0.2-7.4:0.5 mm, endosperm length 6.3:0.2-8.2:0.4 mm, width 3.5:0.2-5.6:0.2 mm, pith length 2.3:0.1- 5.3:0.2 mm, the width is 1.2:0.2-1.9:0.1 mm.

Within each species, the size of the seeds varies depending on the place where the plant grows, environmental conditions and weather conditions of the year. For example, the length of the seeds of *F. samarkandica*, *F. kuhistanica* from monocarp species is from 7.1:0.4 mm to 25.8:1.7 mm, the length of seeds from polycarp species *F. dshizakensis*, *F. penninervis* is 8.5 :0.3 to 11.5:0.7 mm. The seed sizes of *Ferula L.* species are given below.

Monocarp type *F. samarkandica*, *F. kuhistanica* endosperm length is 5.5:0.3 mm to 17.9:0.2 mm, width is 3.2:0.1 mm to 9.2:0.5 mm the length of the endosperms of *F. dshizakensis*, *F. penninervis* from the polycarp species is from 6.3:0.3 mm to 8.5:0.4 mm, and the width is from 3.5:0.2 mm to 5.5:0.2 mm is The absolute seed weight of each species is relatively different depending on how it grows under different conditions.

From the obtained results, it is known that the average absolute weight of the seeds of the population of *F. foetida* growing in the Bobotog range is 50.8:2.3 g, the southern slope of the Nurota range is 62.3:3 around the village of Ukhum. 2 g, the average absolute weight of the seeds of the population of *F. kuhistanica* growing around the

village of Bakhmal in the Turkestan range is 63.5:3.3 g, in the Zarafshan range around the village of Omonkoton average is 66.2:4.4 gr.

Thus, the weight of the seeds of *F. foetida* and *F. kuhistanica*, the ratio of bracts and endosperms varies in different species and under different conditions within the species and is considered the genotype of this plant. The change in their ratio under different conditions shows the variability of species.



Figure 1. Grass stage of *F. foetida* seed

The latent period of *Ferula* L. species lasts from 6 (9) months to 2-4 (8) years.

Observations showed that from the monocarpic species, *F. kuhistanica* has 58.5:3.1 mm, *F. samarkandica* has 61.2:2.3 mm, *F. helenae* has 54.6:1.4 mm. , *F. diversivittata* was 34.5:2.4 mm and *F. kokanica* was 32.3:2.4 mm. The beginning of *F. kuhistanica* vegetation lasts from February 22 to March 5. The growth of cotyledons continued until April 20. The ratio of the length of the cotyledon to the width is also different in the species, in monocarp species - *F. diversivittata*, *F. kokanica* it is 6:1, in *F. kuhistanica*, *F. samarkandica*, *F. helenae* it is 13:1, polycarp type is 20:1 in *F. dshizakensis*, *F. ovina*, *F. angrenii*, and this amount is 30:1 in *F. penninervis*.

Below are the morphological dimensions of the cotyledons of *Ferula* L. species. The root system of the lawn is well developed before the first leaf appears.

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