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INTRODUCTION OF *EREMURUS ROBUSTUS* (REGEL) REGEL IN LUGANSK REGION

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Introduction

Eremurus robustus is a contractive endemic in Tian Shan and Pamiro Altay with breaking-up area [6, 8]. In this way as far as anthropogenic changes of natural flora intensify preservation of endemic cultivars becomes the urgent problem that should involve all possible methods for solution. At the same time high demand for ornamental plants, *Eremurus robustus*, requires not only increasing of planting material but significant assortment gain of exotic and rare plants in that region. *Eremurus robustus* was cultivated in 5 botanical gardens of USSR, Donetsk Botanical Garden (DBG) possessed a huge *Eremurus robustus* collection in 80s of the last century [4]. But today only one cultivar of *Eremurus robustus* is cultivated in DBG, its population was found out in Lugansk region either [3]. That`s why renewal of *Eremurus robustus* collection in Donetsk region is of great importance for its further use in landscape of Donbass cities.

The study purpose was to identify peculiarities of plant development under conditions of Lugansk city and obtaining of viable seeds.

Objects and methods of the research

3 rhizomes of study object (*Eremurus robustus)* were presented by Nikita Botanical Gardens (NBG) in 2012. In autumn 2012 they were planted in different districts of Lugansk city and its outskirts on private areas of scientists from Biology Department in Lugansk Agricultural University. Unfortunately, only two specimens wre observed, as the third one grew in combat zone.

Phenological observations were conducted according to agreeable research methods in botanical gardens [2]. At the same time they allowed for main phenological phases of plant development: draws after winter dormant season, leaves of root system, development of the floral shoot, flower budding, beginning and finishing of blooming, beginning of fruit ripening, complete fruit ripening, dying of overground vegetative and generative organs. All development phases were fixed applying camera Nikon D40. These photos are posted on-line "Plantarium" (Electronic plant determinant on-line) [10]. Measurements were made by devices tested metrically.

Results and discussions

In the middle of March 2015, vegetation beginning was fixed with hibernating bud of renewal on the soil surface (fig.1a). It should be noted that leaves presented intensive growth and by the end of April root rosette was developed completely and made 25 thick and juicy leaves, which almost got their maximum length. Nearly at ones in spite of enough amount of moisture, leaves tops started to dry, but their growth at the bottom didn`t stop. Developed leaves are wide-linear with carina. External leaves at the bottom reached 6-8 sm wide and 50-60 sm long, soft and smooth (fig.1b).

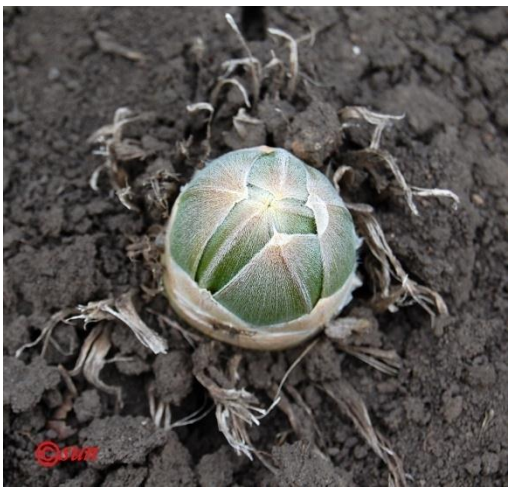
a  b 

Fig .1 Renewal bud (a) and root rosette of leaves (b) of *E. robustus*

In the beginning of the second decade of April germ of inflorescence occurred between leaves, and by May the 1st it developed to root rosette above leaves. Flower-bearing stem of study cases isn`t branching, bare, cilindric 2-2,5 sm across diameter in the middle, green-colored. It is characterized by intensive development, its acropetal growth keeps on even during blooming and possible to reach 1 m 62 sm (the first study specimen) and 2 m 15 sm (the second one).

On the opening stage of development inflorescence seems downy due to its well-developed bracts - awl-shaped leaf-lets 2 sm long. Bracts membranous with one vein are widened at the bottom and densely covered with trichomes. As far as inflorescence develops flower buds advance bracts and they become not so visible.

Inflorescence is a coma cluster, develops acropetally (fig. 2a). Budding stage begins in the end of the first May decade. The first flower opening was fixed on May the 13th (fig. 2b). Flower buds are characterized by more intensive pink color, while flowers are white with hardly notable pink touch. Floral envelope has six segments and two circles. There are 6 stamens, baculum and stigma are filamentous. Pedicle is long and exceeds even flower size, during blooming it locates a flower almost at the angle of 90° towards inflorescence axis. In general blooming period takes no more than two weeks. Well-developed inflorescence of much stronger specimen gets 100 sm long, the second specimen – abut 60 sm. On the first plant there were 615 flowers, the second – 235. In this way inflorescence density of the first case makes 6 flowers/sm, while the second one – about 4 flowers/sm.

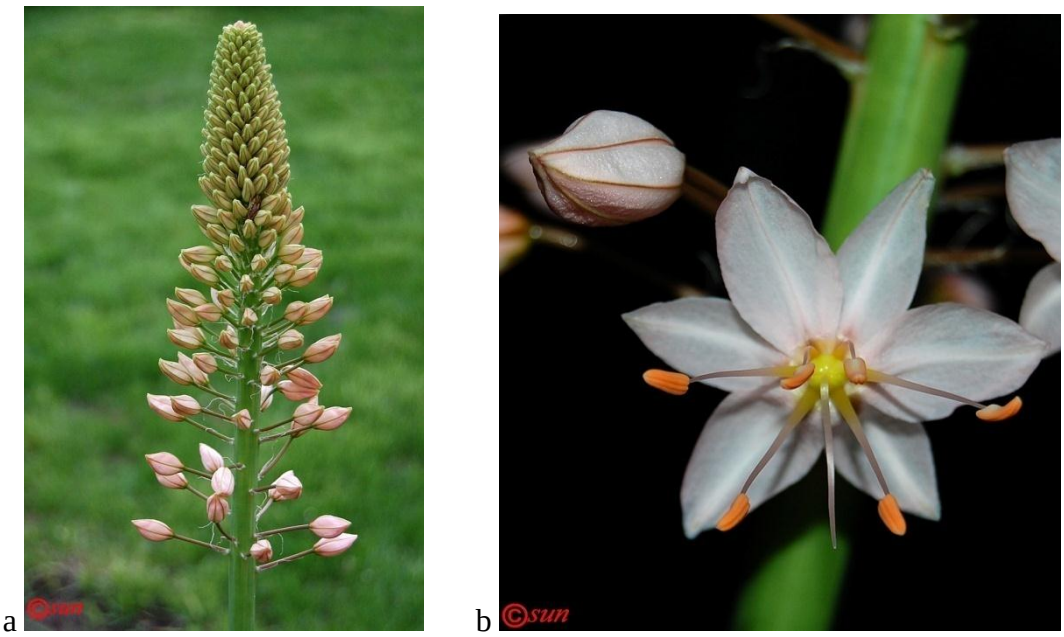


Fig.2 Developing inflorescence on the budding stage (a), flower and flower bud (b) in the bottom of inflorescence of *E. robustus*

During blooming in the bottom of inflorescence fruits were set in acropetal order, making global-shaped densed box with three channels being green at first and as fas as ripening reached light-brown color (fig.3a). First fruits were fixed on May the 23rd. Well-developed fruits got 2 sm across diameter. In the end of blooming a number of withered fruits were calculated. Stronger specimen of *Eremurus robustus* had 89 fruitcases, the second one – 59. Setting rate for the first case made 14,5%, the second one – 25,1%.

By the third decade of June vegetative organs of plant started to die and by the beginning of July dried entirely. At the same time fruitcases started bursting and sowing ready seeds. On average each fruitcase had 7 seeds. Seeds were three-edged with a small scarious wing (fig 3b).

Fig 3. Ripenng fruitcases (a) and ripe seed (b) of *E. robustus*

In conclusion it should be noted that in natural and climatic conditions of Lugansk region *E. Robustus* is a typical ephemeroid that gets over all phases of life cycle. At the same time being *a* flowering plant characterized by high ornamental qualities permits to

recommend it for landscaping of Donbass cities. Investigation of biological peculiarities and capacity to propagate by seed will be continued.

Conclusions

1. Advance study of *Eremurus robustus* growth and development revealed that the plant successfully goes over all stages of life cycle forming viable seeds.
2. *Eremurus robustus* is a typical ephemeroid under weather conditions of Lugansk region.
3. *Eremurus robustus* is characterized by high ornamental qualities and can be recommended for cultivation within Donbass region.

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Introduction of *Eremurus robustuS* (Regel) Regel plants was successfully carried out. Planting stock was provided by employees of Nikita Botanical Gardens. Three years later under conditions of Lugansk city plants started blooming, formed fruits and viable seeds.

Key words: *Eremurus robustus, introduction, growth and development rhythms.*