

PALE-PURPLE CONEFLOWER (*ECHINACEA PALLIDA* (NUTT.) NUTT.) IN UKRAINE: PARTICULARITIES OF BIOLOGY, GROWING AND QUALITY OF RAW MATERIAL

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Lately Pale-Purple Coneflower (*Echinacea pallida* (Nutt.) Nutt) has enjoyed wide popularity according to its unique medicinal qualities. From nine species only three have been introduced into the crop: Purple Coneflower (*Echinacea purpurea* (L.) Moench), Narrow Leaved Purple Coneflower (*Echinacea angustifolia* DC.) and Pale-Purple Coneflower (*Echinacea pallida* (Nutt.) Nutt). It should be noticed that biology and technology of purple coneflower cultivation are studied better, two other species are on the whole confused and this does not give objective characteristics for their introduction and usage. That was the reason for studying of pale-purple coneflower in the condition of Ukraine. Our researches were begun in 1991 by the means of mobilization of population-specific diversity of pale-purple coneflower both from the places of its area and outside one.

Carried out morphological, anatomical, histological analyses allowed to emphasis on more interesting and typical patterns, especially patterns received from a number of firms in Germany.

Cytological analysis of chromosomal numbers of indices showed that in somatic cells of plants there was tetraploid arrangement of chromosomes ($2n = 44$). The population was formed by means of individual selection of the best species on the base of which the first in Ukraine variety of pale-purple coneflower "Krasunya preiy" (*Prairie's Beauty*) was brought fourth by us. Under the studying of biology of this variety it has been established that growth activity was not rather high during the first year of vegetation. They are in cotyledons on the average for 7-9 days. After that (on the 25th-32nd day after seedlings) the first real leaf appears. But the root system develops very slowly for 60 days. All this does not provide competitiveness of pale-purple coneflower before weeds. Beginning from July significant acceleration of growth is observed that goes on until the end of vegetation. For this period pulpy vertically-thicken rhizome is being formed. The diameter is two times as thick and medium length is 28-29 cm. It promotes the increase of plant drought-resistance, the whole number of ecological, social and economical advantages bound up with result of digging out, washing and drying of raw materials. For the first year the flowering of solitary plants is only when autumn is damp and warm. Mass flowering begins in May of the second year of vegetation when every

unbranched shoot forms one inflorescence. Flowering lasts on the average 76-80 days, comes earlier than and it is very important for the organization of nectar obtained from early spring to the late autumn for beekeeping.

Pale-purple coneflower differs good fruit setting. On the average to 275 achenes are formed on one plants with mass of 1000 pieces varying from 3,49 to 8,22g. Indices of laboratory germination and energy of sprouting accordingly vary from 3,5 to 60% and 8-68%, it testifies about necessity of presowing stratification of seeds and treatment for the field germination increasing. Plants of the second year of vegetation have the increase of root system mass by root growing in the diameter. The beginning of bud setting begins in September. More intensive growing of above ground mass is in the third year of vegetation. Plants differ maximal sprout height and their quantity to 11 pieces a specimen.

On substance quantity of phenol origin (at the analyses of UV-spectrum) raw material of pale-purple coneflower yield to in raw material from purple coneflower especially on contain in rhizomes with roots and leaves, differences in inflorescence and stems are not very significant. There is less containing of hydrooxycinnamon acids (on chicory acid) in raw material of pale-purple coneflower in comparison with raw material of purple coneflower. Heightened quantity of given combination typically for inflorescence and rhizomes with roots and lowed quantity are for leaves and stems.

On the studying particularities the technology of cultivation of pale-purple coneflower by the means of direct sowing into open ground for the receiving of maximal yields of raw material of high quality is worked out.

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