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**BIOLOGICAL PECULIARITIES OF GROWTH AND
DEVELOPMENT OF MEADOW GRASSES DEPENDING ON THE
SPECIES AND VARIETAL DIFFERENCES AND THEIR SUITABILITY
FOR ORGANIZATION OF HAY CONVEYORS IN DRAINED
PEATLANDS OF FOREST-STEPPE**

The actuality of these investigations lies in the necessity of finding high-yielding varieties and species suitable for the organization of the hay conveyor on drained peatlands on their use. The aim of the research is investigation of growth, development and productivity features of new grass varieties suitable for developing on their basis mixed grass crops and variety mixes of different ripening time. In researching were used field and laboratory research methods. The study was conducted in the period 2014-2016 in plot №3 of the drained peat soils of the floodplain of the Supoy river of Panfil'ska Experimental Station of NSC "Institute of Agriculture NAAS".

On the biological peculiarities of growth and development of meadow grasses the optimal time of mowing of early-ripening type of grass canopy that provides high yield and quality of forage is the third decade of May; of the middle ripening grass canopy is the end of the third decade of May - beginning of the first decade of June and of the late ripening – the first decade – beginning of second decade of June.

Was determined the adaptation and productivity of new varieties of grasses; their characteristics of the leaf surface formation, photosynthetic potential and net productivity of photosynthesis and suitability for developing of different ripening types of mixed grass crops on organogenic soils of Forest-Steppe.

Key words: mixed grass crops, grass crops variety mixes, drained organogenic soils, hay conveyors, leaf surface, photosynthetic potential, net productivity of photosynthesis.

The actuality of these researches lies in the necessity of finding high-yielding varieties suitable for the organization on their basis the hay conveyor on drained peatlands. The aim of the work is researching of features of growth and development and productivity of new varieties of grasses suitable for creation on their basis mixed grass crops and grass crops variety mixes of different ripening

types. The research conducted with field and laboratory research methods use. The experiment was conducted in the period 2014-2016 for the plot No.3 of the drained peat soils of the floodplain of Supoy river in Panfil'ska Experimental Station of NSC "Institute of agriculture NAAS".

Investigation defined that early maturing species meadow foxtail (*Alopecurus pratensis*) variety Sarnenskyi rannii and orchardgrass (*Dactylis glomerata*) variety Kyyivska rannya-1 characterized by intensive growth in April and the first half of May. The accumulation of green and dry mass on these species and varieties was maximal (1.7-2.1 kg/m² of green mass and 0.24 – 0.44 kg/m² of dry mass). In the flowering and maturation phase increasing of the green mass yield have not been observed, but the increase in the content of dry matter and its output still increases slightly, especially in Orchardgrass of variety Kyyivska rannya-1. However, it should be noted that in this phase deteriorated the quality of feed by reducing the protein content by 2-3%, increased fiber content by 2-4% and decreased a forage digestibility by 4-7%. All this results indicates that mowing of these species in the given phase for high fodder quality producing is not practicably.

Awnless brome grass (*Bromus inermis*), orchardgrass variety Muravka, fescue grass (*Festuca orientalis*), reed canary grass (*Digraphis arundinacea* L.) had slower growth in April and first part of May. Intensive growth and development in these species were between 20-31th of May and first part of June. In that time these species had been passing phase of the spike formation and flowering. Dry matter content in plants in this phase was 22-23%, and the yield of dry mass, respectively – 0.54-0.64 g/m². For the period 20-22.06 the yield of dry mass was the highest (0.70 to 0.85 g/m²), but worsened the quality of food. The higher yield had reed canary grass among the several species. The perennial ryegrass (*Lolium perenne*) was observed the lowest yield of green mass (1.9 – 2.1 kg/m²) and yield of dry mass (of 0.41 – 0.52 kg/m²).

Timothy-grass (*Phleum pratense* L.) and bent grass (*Agrostis gigantea* Roth) were observed at the slowest growth until middle May among all the above

species, but in the first half of June the growth of these crops was most intensive. In these calendar periods they were in the phase of ear formation and beginning of flowering. The latest ripening noted of bent grass, in which the phase of flowering beginning was in the middle of June.

According to the calendar dates of the development of grasses phases also changed the yield structure. In all kinds of herbs there was simultaneous ageing of the grass canopy, especially in the first cut and increased the proportion of specific weight of stems and is reduced specific weight of leaves accordingly. The leaf area increased up to the flowering stage and at this time in the different varieties it was 5.5-8.4 m²/m². The higher leaf area was in the orchardgrass (7.9-8.4 m²/m²), slightly lower leaf area had reed canary grass, awnless brome grass and fescue grass and the meadow foxtail was only 5.5-6.2 m²/m². At the time of the ripening phase, which corresponds to calendar dates of second half of June the photosynthetic potential of different species was 2.7-3.8 million m²/ha per day. However, the optimal timing of mowing per phase of the formation of the ear - beginning of flowering it in different species is 1.5-2.5 million m²/ha of the day. The highest was at the reed canary grass and lower from orchardgrass and awnless brome grass. Other species it is even lower by 0.2-0.7 million m²/ha of the day.

The net productivity of photosynthesis (NPP) of grass growing from the start of stem elongation phase until flowering phase and maturation phase it decreases again. So, in the boot phase it was decreased for the range of 3.3-7.5 g/day. In the phase of "ear formation – flowering" NPP increases dramatically to 10-21g/day and in the phase "maturation-full ripeness" is reduced to 3-10 g/day. In the first two decades of May the highest net productivity of photosynthesis was 7-14 g/day in Meadow foxtail and Orchardgrass. Maximum photosynthetic productivity (12-17 g/day) was observed in the awnless brome grass, meadow fescue (*Festuca pratensis* Huds.), orchardgrass variety Muravka and reed canary grass in the second - third decades of May. Late-ripening species of Timothy-grass and giant bent grass have a maximal net productivity of photosynthesis observed during the

first half of June (9-16 g/day). It should be noted that the net productivity of photosynthesis of grass on drained peatlands in Forest-Steppe zone is quite high. This indicates that the drained peat soils of Forest-Steppe zone is well provided with moisture, mobile compounds of nitrogen and phosphorus and have favorable thermal regime.

The results of dry mass yield during the period of research determined that the more productive during vegetation and the first mowing were species and varieties of grasses with a medium term of maturity. There are reed canary grass, meadow fescue, awnless brome grass and orchardgrass variety Muravka. In the level of productivity were slightly lower early-ripening orchardgrass variety Kyivska rannia-1 and late-ripening species of timothy-grass and giant bent grass. Even less productive was ultra-early-ripening meadow foxtail, and perennial rye-grass indicated as a temporary dominant and prevailed in the grass canopy only the first year after which its yield decreased. In this time its proportion in botanical composition of grasses was sharply reduced and replaced with natural non-sowed cereals and grasses.