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ЭКОЛОГИЧЕСКОЕ ЗНАЧЕНИЕ БОЯРЫШНИКА CRATAEGUS L.

**Аннотация**

В статье рассматриваются социальные, медицинские и экологические особенности и значение боярышника (Crataegus l.). В составе плодов боярышника имеются аденин, аденозин, гуанин, аминопурин, ацетилхолин, холин, изомиламин, изобутиламин, этиламин, диметиламин, алканоламин, этаноламин, флавоны, гиперозиды, агликоны – витексин мен квертецин, эфирные масла, триметиламин, дубильные вещества, витамины A, $B_2$ , C, E, P.

***Ключевые слова:*** боярышник, аденин, аденозин, гуанин, витамины, биоиндикация.

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ECOLOGICAL SIGNIFICANCE OF HAWTHORN CRATAEGUS L.

**Annotation**

Social, medical and ecological features and importance of hawthorn (Crataegus l.) are considered in the article. The hawthorn fruit contains adenine, adenosine, guanine, aminopurine, acetylcholine, choline, isomilamine, isobutylamine, ethylamine, dimethylamine, alkanolamine, ethanolamine, flavones, hyperosides, aglycons - vitexin men quercetin, essential oils, trimethylamine, tannins, vitamins A, B2, C, E, P.

***Keywords:*** crataegus, adenine, adenosine, guanine, vitamins, bioindication.

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ENVIRONMENTAL CONDITIONS OF SELF-SEEDING PLANT

**Abstract**

This article consider environmental conditions of self- seeding plant. There is a different understanding of the basic concepts for the forest resumption in science and industry. In some cases, the natural regeneration of the forest may be understood as spontaneously occurring

process in the forest, though a subordinate to certain laws of growth and development like all natural processes in ontogenesis.

Therefore, the study of patterns development got a great theoretical and practical importance for the natural regeneration process, which should be used in afforestation areas of pyrogenic tape hog at Priirtyshja.

***Keywords:*** forest stand, the seeds of pine forest plantations, forest belt, ontogenesis, selfrenewal.

**Introduction**

The tape hogs of Priirtyshja pine forests dominate 90% of the natural stands of seed origin [1]. Consequently, all the tape hogs of Priirtyshja pine forests are self-sown forest where occur the basic biological laws of development and stands formation of pine seed origin in the natural environment. Thus, the pine forest stands are formed of pine regrowth seed origin - a product of nature, its natural strength. Self-sown forest inherent the recrudescing, processes of self-thinning and trees differentiation, antrogenez stands. Abundant renewal is essential for the viable forest development, is meant for the success of young plants in struggling with other species especially with herbaceous vegetation. Development and growth of the formed stand are regulated by self-thinning process. Final result of the self-thinning process is the death of the old stand and whereas conditions emerge for the young generation (re-growth), capable forming new tree stands. Self-sown forest is also formed on the basis of multiple colonization of the testes territory during the entire life of the stand. Therefore, the creation of yielding seed crops on burnt pine areas and promotes the formation of wastelands natural stands of the most resilient adolescents, heredity, which is more consistent with the existing situation.

**Materials and research methods**

First study of natural regeneration on a scientific basis is connected with the creation Lebyazhinsky experimental station steppe of Altai Territory in 1929.

Natural regeneration occurs quite satisfactory under certain conditions in the belt forests. One can often observe a dense pine self-seeding composing ten thousands of copies on 1 hectare. The main significance in the process of natural regeneration has tentative resumption arising under the canopy of the forest stands of the older generation [1]. The whole success of renewal may be awarded under the canopy of plants and poor renewal he set in open areas [2]. According to these scholars not always, the reforestation is provided by activities to promote natural regeneration: leaving seed trees, loosening the soil and so on. Artificial attempts of the reforestation in forests tape were made long time ago. V.E. Smirnov concluded based on the study of archival materials that forest cultural operations started in the region of band elections since 1936. In 1946-1947, K.A. Pashkowski examined more detailed the peculiarities of natural regeneration in the southern regions of the belt hog Priirtyshja, namely woodland present territory GLPR “Semei ormany” and “Yertys ormany” [3]. The main conclusion of these studies is to use pine seedlings planting as a protection while working to promote natural pine regeneration.

The process of rebuilding of the forest consists to the following major effects in time to each other:

Fruiting trees that make up the plantation;

The emergence of self-seeding in the forest;

Conversion of self-seeding in the undergrowth

According to observations of G.F. Morozova, taproot pine branch in liming thicker sand, loamy layers reaching “begins to branch out, forming a vertical brush” [4].

The forming new forests quality and value strongly affected by the initial number of undergrowth and their distribution area. Using only the number of indicators of young growth can’t give an objective assessment of the success of reforestation on the cutting.

The plainest numerical indicator of uniformity of placing plants on the area is the occurrence. This index is defined as the percentage of accounting pads certain value (in this example, S = 25 m2 area of accounting areas). In which there is at least one instance of a viable undergrowth, and is usually expressed as a percentage or in tenths of unit shares.

The main purpose of research is to develop biological and environmental parameters seminiferous plantation crops pine and agricultural techniques of cultivation of seedlings with closed root system of artificial (from nurseries) and natural (wildings) origin, with a view to accelerate the availability of these pine seeds for the natural seed regeneration of forest on burned areas and vacant lots.

In order to achieve a goals it will work out the following tasks:

to study ecological and forest cultural conditions of fresh burnt cuttings and burnt forest mainly of water supply conditions established plants;

to make analysis of the seed renewal felling areas and burnt to give a quantitative and qualitative assessment of the populations of their self-seeding and undergrowth;

examine the features of fruiting seed crops pine cultures and to identify the factors of their abundant seeds;

to develop the technology cultivation of plantation crops yielding seed pine trees on burned areas and offer an optimal production method of reforestation (natural or artificial).

**Research results**

C.B. Igembayeva's works revealed the dependence of the needles` weight on the age and the number of plants in biogroups. Researcher was able to describe this relationship type with the regression equation y = f (x). The author came with the conclusion on the basis of research material that the conditions for elections Priirtyshja tape, the optimal number of needles corresponding to hydrological conditions and transpiration flow rate should be between 8-9 tons (fresh state) per 1 ha.

Orintatingon the maximum number of needles in stands 8-9 tons per 1 ha and the average stocks on one tree at the age of 7-30 years – from 2.4 to 6 kg. Density of pine plants may constitute for district elections tape, in the absence root availability groundwater: at the end of individual growth phase (6-7 years), about 3 thousand copies per 1 ha, aged canopy (14 - 16 years) to two thousand of 30 years - about 1 thousand trunks per 1 ha [5].

In the tape-hog forests, the dryness of the climate and high temperatures on the surface of the soil natural regeneration of pine is successful only if enough moisture left in the upper soil horizon during the subsidence of the soil seed, acceleration and growth of emerging seedlings. The best conditions for the growth of pine self-sowing are when shading it from the south and south-west, and on the slopes of sandy hillocks northern exposure, shaded from the scorching searing action direct rays of the midday sun. In terms of tape hog group accommodation real-life phenomenon.

It is determined by non-uniformity of contamination area phytocenosis depending on the distance spacing of seeds, heterogeneity of soil cover (in the presence of grassy vegetation on the site), a large variability of soil moisture depending on their no shading from sunlight searing action [1,6].

Consequently, the leading indicators of various types of accommodation adolescents in the area phytocenosis are: the number of adolescents, their occurrence in a certain area and the distance of these areas from seed sources and these figures show a diverse and complex correlations between them, where the amount of regrowth at this area of the forest area is dependent variable ($Y_1Y_0$), that characterize the growth of undergrowth at the site, depending on the independent variable $X_1$ $X_2$ (coefficient of occurrence, the distance of seed dispersal, etc.).

In order to characterize the curve resumed the cutting area, we used exponential function of the form:

$Y_1 = l\, X^a_1 \times X^a_2$ logarithm having the following form:

$$Lgy = lgl + a_1\, lgx_1 + a_2\, lgx_2$$

Studied researches have established the most important features and characteristics of the processes of natural and artificial reforestation and create the appropriate economic and mathematical models [5, 7, 8]. Mathematical modeling is an effective tool of knowledge of internal laws inherent phenomena and processes.

The forest's natural regeneration - a dynamic process and its success is determined by many factors. For example, the amount of undergrowth under the canopy due to a number of factors, but the nature of their display depends on the density and age structure of closed canopy forests. Pine regrowth usually more in a different age, and over-lowgrowth plantations. If you keep on the cutting area 0,5-1.0 th.pcs / ha pine regrowth of coniferous species, the planting is formed with their predominance.

It is known that reforestation can occur in two ways: natural and artificial. At the same time, forestry, special attention should be paid to the natural regeneration of the forest, which does not require such costly as artificial.

Natural regeneration of forest clearings and burnt areas the last five years was considered a success if there is a 1 hectare 5 th. pcs. and healthier evenly spaced copies of the main and related parody under the age of 5 years, and in clearings and burnt areas of the preceding fiveyear period -. 3 th. pcs. / ha in age from 6 to 10 years (Table 1).

Table 1 – Scale to assess the natural regeneration of the forest in the mountains

| | | | |
|---|---|---|---|
| Satisfactory | 10 - 5 | 5 - 3 | 3 - 1 |
| Low | 5 - 3 | 3 - 1 | 1 - 0,5 |
| Poor | < 3 | < 1 | < 0,5 |

In a last five years forest plantations is considered satisfactory if the plants decline in them was not more than 25%, the cultures prior five-year period - no more than 35%.

Under the conditions of Northern Kazakhstan the most reliable criteria for evaluating cultures, translated into wooded land vegetation are: the degree of crown density of trees in rows and between rows, the number of forest species of trees per unit area, the height of crops and their growth in height over the past 1-2 years. At the time of transfer to the wooded land elevation pine cultures it should be 1.0 - 1.5 m, larch and birch - 1.5 - 2.0 m; the density of pine crops in favorable conditions 3-4 th.pcs / ha, in satisfactory -. 4 - 5 th.pcs / ha, birch and larch -. 1.5 - 2.5 th.pcs / ha [10].

Thus, on the basis of data obtained as a result of years of research, developed basic technological maps of the plantation, cultivation and planting material of the main forest-forming species for the conditions of Northern Kazakhstan.

Foresters of Priirtyshja until now, when assessing the natural regeneration of pine clearings and burnt areas are scale G.V. Krylov etc. developed for the conditions of Western Siberia in 1958 Table 4.

Table 2 – Scale of assessment of natural regeneration of pine clearings (for tape hog Irtysh G.V. Krylov 1958)

| Rates of renewal | Soil moisture indicators | The number of healthy young generation copies per 1 ha, thousand. | | |
|---|---|---|---|---|
| | | I group (2-5 years) | II group (6-10 years) | III group (11-15 years) |
| Satisfactory | dry | > 3,0 | > 2,0 | > 1,0 |
| | fresh | > 5,0 | > 3,0 | > 2,0 |
| | wet | > 4,0 | > 2,5 | > 1,5 |
| Low | dry | 2,0 – 3,0 | 1,0 – 2,0 | 0,5 – 1,0 |

| | | | | |
|---|---|---|---|---|
| | fresh | 3,0 – 5,0 | 2,0 – 3,0 | 1,0 – 2,0 |
| | wet | 2,5 – 4,0 | 1,5 – 2,5 | 0,7 – 1,5 |
| Unsatisfactory | dry | < 2,0 | < 1,0 | < 0,5 |
| | fresh | < 3,0 | < 2,0 | < 1,0 |
| | wet | < 2,5 | < 1,5 | < 0,7 |

In this scale, given three categories of assessment of natural regeneration: satisfactory, weak and unsatisfactory. The number of self-sown young growth and accounted for three age groups: 2-5 years, 6-10 years, 11-25. Although this scale is differentiated by age group, but it does not reflect the types of growing conditions and forest zoning. This assessment is successful renewal only on the number of copies of the plant is insufficient, that in its guidance on the distribution of the number of self-seeding and undergrowth on phytocenosis area regarding forest conditions. As is known, the development of reforestation processes on cuttings depends on the biological characteristics of the breed, complex environmental conditions: climate, edaphic (soil), biotic. These are in addition to tree species, habitat conditions, and have a degree of soil moisture. Foresters of Priirtyshya need to take three grades of soil moisture: dry, fresh and moist, which is an intensive process of reforestation.

We think that quantitative account of the current state of natural regeneration tape-hogs of Priirtyshya pine forests, natural regeneration of pine forests in the tape occurs intensively in places protected from the sun by the shade of the cones of single trees or krutine and northern walls of the forest. These places timed group pine regrowth where provided by natural ample of the territory [1].

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## ЭКОЛОГИЧЕСКИХ УСЛОВИЙ ПРОИЗРАСТАНИЯ РАСТЕНИЙ

**Аннотация**

В статье рассмотрены условия произрастания растений. Мы считаем, что в науке и на производстве существует различное понимание основных понятий с возобновлением леса. Так же как процесс, управление лесоводом, как метод естественного воспроизводства леса. Процесс воссоздания леса со всеми характерными для него существенными свойствами, подобного прежнему, обеспечивается закладкой и содержанием лесосе-

менных насаждений по площадям гарей и пустырей, при котором древостой формируется из семян древесных пород естественного происхождения.

Поэтому наш эксперимент  изучение процесса естественного возобновления леса, ленточных боров Прииртышья имеют очень большое практическое и теоретическое значение.

***Ключевые слова:*** лесная подставка, семена сосновых лесных насаждений, лесной пояс, онтогенез, самооценка.

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ӨСІМДІКТЕРДІ ӨСІРУДІҢ ЭКОЛОГИЯЛЫҚ ЖАҒДАЙЫ

**Андатпа**

Бұл мақалада өсімдіктердің өсу жағдайлары қарастырылады. Біздің ойымызша ғылым мен өнеркәсіпте ағаш қайта өндеу туралы әртүрлі ұғымдарды кездестіруге болады. Сондай-ақ орманды басқару, орманды табиғитолықтыру әдісі ретінде болады деп санаймыз. Орман өзіне тән табиғи текті ағаштар тұқымынан құрылған, оларды отырғызу және осы отырылған алқапта  түгелдей өртелген, бос алқаптар, ағаштар жаңа тұқымдардан табиғи түрде қайта толығады.

Сондықтан біздің Ертіс қарағайлы ормандарда жасалған  эксперимент, үлкен теориялық және практикалық маңызы бар деп ойлаймыз..

***Кілт сөздер:*** орман тұқымы, қарағай ормандарының тұқымдары, орман белдеуі, онтогенезі, өзін-өзі бағалау.

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ВЛИЯНИЕ УДОБРЕНИЙ НА РОСТ И ПЛОДОНОШЕНИЕ
ЯБЛОНИ В ИНТЕНСИВНОМ САДУ

**Аннотация**

На юго-востоке Казахстана на темно-каштановых почвахпри ежедневном и периодическом поливах в интенсивном Апортовом саду изучены рост, развитие и плодоношение яблони в зависимости от минеральных удобрений и биопрепаратов. По результатам исследований существенное влияние на рост и плодоношение яблони проявили варианты при внесении минерального удобрения- $N_{110}P_{110}K_{120}$ и биопрепарата МЭРС.

***Ключевые слова:*** Яблоня, минеральное питание, удобрение, продуктивность.

**Введение**

Мировой опыт показывает, что в основе количественного и качественного увеличения продукции плодоводства одним из основных факторов является оптимизированное питание растений с соблюдением всех агротехнических приемов.