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УЛУЧШЕНИЕ ВОДНО-СОЛЕВОГО РЕЖИМА ОРОШАЕМОГО ЗЕМЛЕДЕЛИЯ

В статье рассматривается мелиоративное состояние орошаемого земель Шиелийское массив орошения, путем анализа объема поступающих солей в почву с оросительной водой и выход солей из почвы с коллекторными водами. Приводятся материалы опыта по проведению промывки засоленных на площадь 71,15 га, что дала положительные результаты водно-солевой режим почвы.

Ключевые слова: засоление, опытный участок, земледелия, чеки, промывка, коллектор.

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IMPROVEMENT OF THE WATER-SALT MODE OF IRRIGATED AGRICULTURE

In article Shiyeliyskoye's irrigated lands meliorative condition the irrigation massif, by the analysis of volume of arriving salts to the soil with irrigating water and an exit of salts from the soil with collector waters is considered. Materials of experiment on carrying out washing salted on the area of 71,15 hectares that yielded positive results water-salt soil modes are given.

Key words: salinization, skilled site, agriculture, checks, washing, collector.

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PINE FRUITING FACTORS LAW AND CAUSES OF LARGEST CROP SEEDS

Abstract. As the real sources of seeds are different kinds, seed plants and timber walls. However, the impact is limited to timber wall strip in 40-50m width due to the specific separation of seeds. Research by KJ Ustemirova [1]. Found that the value of the testes limited on the earth 25-35 meter ribbon cutting burnt and burnt wood. Plaque seeds, carried out over a large area, but the possibility of germination and conservation of pine seedlings were only in the area of the protective effect of the trees, which in this case was measured at 25-35 m. Here it begins to affect characteristic tape hog confinement Priirtyshja undergrowth to the cone shadow [2].

Keywords: forestry, forest stand, yielding seed of pine, Pinus sylvestris, needles.

Destination: study pine fruiting factors law and causes of largest crop seeds
Objective: - Share learning and generative organs of flowering

- Who conducted surveillance of seed-pine in the middle of the hog belt indicates that the start date of disclosure of cones and escape from them the first seed is the sum of positive air temperatures

- Developed meteorological forecasting method harvest pine seeds on the basis of a fairly high correlation

In tape forests near the Irtysh 90% dominated by plantations of natural seed origin and are self-sown forest where manifest basic biological law formation and the seed origin formation pine stands in the natural environment. The most important prerequisite for successful natural regeneration of tree species, as under forest canopy and in clearings is the presence of seeds. The development of the generative organs of any woody plant can be divided into two periods: the embryonic (the time of laying and the formation of kidney premordia) and Postnatal, which starts with the end of flowering and seed maturation. Formation of pine cones runs for three growing seasons.

Bookmarks generative organs and flowering; n+1 - year closure of the embryonic development of the generative organs and flowering; n+2 - year of fertilization, growth and development of seeds in cones; n +3 - year departure seeds. In pine embryonic period lasts about 12 months - from June to June of year n year n +1; Postnatal period covers two growing seasons in years n+1 and n+2 and winter between them. In total, the bookmark rudiments of female cones seed maturation. By mid-May form seed scales, that followed the ovules appear as blisters. Over the next few days of warm female cones are fully exempt from the outer scales grow to 4-5 mm seed scales develop into coverts. Colour cones become bright crimson. This way seed flakes widely spread apart, allowing access to pollen. In the forest-steppe and southern taiga pine pollen fly occurs in late May - early June, and in years with a cold spring it is delayed until mid-June. Flowering timing determined by the degree of formation of generative organs and depend mainly on the weather in May. Of particular importance in this period has heat.

Successful preparation for flowering pine runs at an average temperature in May is not below 10˚C. Based on this and the time limit for the departure of pollen in different areas.

Pollinated female cones shortly after flowering ganging scales change their bright color to brown. Their length at this time is about 0.05 cm, almost round shape. During the summer n +1 inside the female cones are pollinated by pollen grains germination, but it is suspended for the winter, since winter pollen and ovule are dormant. The second period of growth occurs with warm spring days of the year n +2; where fertilization occurs this year, the growth and development of seeds in cones. Thus, from pollination to fertilization in pine occurs about 13 months.

NN Egorov (1934), who conducted surveillance of seed-pine in the middle of the hog belt indicates that the start date of disclosure of cones and escape from them the first seed is the sum of positive air temperatures, which for the specified region in 1931 amounted to 67,8˚, 1932 y - 62,6˚, in 1933 - 63,2˚. According to the observations of Leo Gribanova [3] in the steppe forests sum of positive air temperatures was found to be in 1954 (an average year) in Arakaragay forest was 100˚, in the forest Munchakty 75˚, in Naurzym forest 60˚. In very arid 1955 were Arakaragaysky boron 70 ˚, 66 ˚ Munchaktinsky boron and boron Naurzym 66 ˚.

Thus, with increasing dryness of the climate for opening pine cones requires a smaller amount of positive air temperatures. As a rule, the maximum seed shed on the soil of the cones in the belt forests during the 2-3 days departure from the beginning of the first seed cones. Moreover, in the first period from the beginning of uncovering cones on the ground fall heavier and with better germination pine seeds. Subsequently, their weight and at the end of fall to the ground and empty small seeds, mainly do not look like to another seeds (LN Gribanov, 1960). Best pine seed germination observed at 16-20˚ C soil surface. While seedling germination occurs in the shortest possible time - within 8-11 days.

Thus, the emerging self-sown forest of natural origin, in the usual natural environment, differing in their hereditary properties of artificial forest plantations. While virgin forests remain, they grow normally and renewed in vast areas with a variety of soils and climatic conditions.

As the structure of the tree is an increase in the size of the trunk, branches, stems and root system. In old age much slower growth and death of individual branches starts and top of the barrel. It's common knowledge. However, along with a change in the overall size and undergo structural transformations defined.

In forest species best studied age-related changes stem growth in height and diameter. In the literature, there is a mass data showing the gradual transformation of this indicator from juvenitale stages of life of the tree to the period of his aging and dying. Stroke rate, in general, can be characterized by unimodal curve, maximum rise in softwood which usually accounts II - III age classes. The most detailed age changes the intensity of fruiting conifers.

By OG Capper (1926) Trees III - IV age classes give the richest harvest of pine seeds. Most forest geneticists and breeders believe these trees are unique creations of nature that create plus stands in a natural setting. However, these fruiting trees to some extent depending on weather conditions this year.

In 1961 DY Girgidov developed meteorological forecasting method harvest pine seeds on the basis of a fairly high correlation between the deficit humidity for 12 hours and the number of cones in the period Bookmarks generative organs pine. Observations show that in dry weather generative organs laid pine than in rainy. There is no doubt that environmental factors, such as wealth and the soil moisture regime, play an important role in the formation of generative organs and pine needles. Comparison of data on seed- raising with rainfall during the growing season allows us to conclude that the harvest of pine seeds is directly dependent on the amount of rainfall during the growing season, when there is a formation of generative organs of pine. On the basis of established seed years depending on the weather in May - June and the size of the current crop, you can go to long-term forecasting yields pine . Abaeva K.T [4] recommends that the forecasts for an easier and more accurate method : accounting annual pollinated cones.

Such an allowance may be made in the summer or autumn of the year n+1, ie more than a year of ripening seeds, which is quite acceptable for practical purposes. To account for annual pollinated cones need to calculate it in less than three felled trees for planting subject to fruiting. Then determines the number of cones per tree, and then calculate the yield per 1 ha in accordance with the number of fruit-bearing trees in this area. Weather effect is significant not only in the initial stage of formation of the generative organs, but later-during their ripening and seed development, but at these stages, it is not as crucial as the first (table 3).

Table 1 - Stages of harvest pine plantations

Data	1994 laying generative organs harvest for 1997	1995 bloom and bookmark generative organs harvest for 1998	1996 formation and maturation of the ovary tab generative organs harvest for 1999	1997 shedding seeds in the soil tab generative organs harvest for 2000	1998 shedding seeds in the soil tab generative organs harvest for 2001	1999 shedding seeds in the soil tab generative organs harvest for 2002
Seed yield in thousand units per 1 hectare				129,5	27,5	554
The amount of precipitation in mm during the growing season	110	78	188	161	47	200

Productivity dynamics of pine plantations due to weather conditions in the year bookmarks generative organs, we describe the equation:

$$\lg Z \pm 0{,}0418 = 0{,}8812\lg X + 2{,}0146\lg Y - 3{,}8701: R = 0{,}9969 \pm 0{,}0024$$

Where: LgZ - pine seed yield thousands per 1 hectare

LgX — precipitation of the current year, mm (April-June)

LgY - rainfall year Bookmarks generative organs mm (April-September)

Ha Based on this relationship it is possible to predict the degree of pine seed crop the next three years and in accordance with this plan blank pine cones and activities to promote natural regeneration. Thus, in terms of band elections primary determinant of the effectiveness of the process of reproduction of plants, starting with the formation of seed yield and ending with the formation of young stands of pine, is moisture. At the same time, the success of natural regeneration and rooting determined only sufficient moisture in the upper soil horizons, combined with a favorable temperature regime air and soil surface. Success is the subsequent growth of natural regeneration will depend on the availability of moisture in deeper soil horizons, where the bulk of the focuses of the plant roots. At present, because of forest destruction by man, fire, cattle grazing and other human factors in a large area of tape hog almost completely lost forest setting and the process of natural regeneration of pine gradually fades. In such circumstances, measures to promote natural regeneration of pine should be directed primarily at creating a forest environment, increased spring soil moisture and to protect it from overheating in the sun. In evenaged stands number of cones (and hence seeds). The most favorable conditions for the formation of large cones, pine finds in drier climates.

Table 2 Average size of 2-year cones in different paragraphs tape hog

Forestries	Dimensions 2-year cones		
	length mm	greatest diameter, mm	weight, g
Barnaul	48,2	22,6	9,70
Lebyazhinsky	47,9	21,0	8,9
Chalday	52,7	26,2	11,20

Study of natural regeneration can not be divorced from consideration of the security of the area of germinating seeds. Belt forests throughout heterogeneous. Deterioration of forest conditions in the south-west of the Ob in Kazakhstan affects not only their composition and structure, but also on fruiting. In general, the average yield hog belt of pine seeds, dry 1.2 kg boron and boron for fresh - 2.8 kg. In terms of band elections on near Irtysh Gribanov [3], seed yield of 1.0 - 1.5 kg per 1 ha, is sufficient for a successful natural regeneration of pine. The most detailed study of age-related changes, taxation data intensity of fruiting plants and conifers. With age, the share of fruit-bearing trees. The formation of lumps or ionic size affects primarily genetic (inherited) characteristics of individuals. Among other factors, it should be noted the degree of development of the trees, which characterizes the rate H/D - relative height. The lower the relative height of the tree, the higher level of the tree, the usually larger bumps are formed on it. Trees accelerated development (with a small relative height) differ usually stronger fruiting and, conversely, individuals delayed development have fewer cones. The absolute height of the trees did not affect the intensity of fruiting.

As a rule, there is a correlation between the thickness of the tree crown with a powerful and abundance of cones [5].

In studying these questions, we established correlations between the number of cones with a diameter at breast height ($d_{1,3}$), stand age and indicators of their phytomass (needles). It was found a correlation ratio (R = 0,90) show a close connection between the number of cones with age, diameter at breast height ($d_{1,3}$). Based on the detected correlation close connection R = 0,90 was obtained following equation communication:

$$\lg y = 1{,}4508\lg x - 0{,}8407\lg z + 0{,}3694\lg u + 0{,}091$$

Where: $\lg y$ - number of cones per tree, pieces / tree

lgu - weight wet weight of needles per tree, kg / tree

lgz - average diameter spaces $d_{1,3}$ cm

lgx - tree age, years.

This correlation equation relating the amount of cones stand age, diameter trees with their weight indicators needles, pattern formation characterizes the intensity of fruiting trees, depending on the age structure of stands and individual development. Revealed patterns can serve as a practical basis for the forecast of abundant harvests pine seeds necessary for successful natural regeneration of pine on pyrogenic areas.

Table 3 Relationship amounts cones per tree Y (pieces) of age x (years), mean diameter Z ($d_{1,3}$ cm) and weight needles U (kg) per tree

X - age, years	Z – average diameter $d_{1,3}$	U – weight needles kg/tree	Y – number of cones per tree	lgx	lgz	lgu	lgy
40	12,3	2,5	45,0	1,6021	1,0792	0,3979	1,6532
60	20,0	3,7	61,0	1,7782	1,3010	0,5682	1,7852
80	30,0	4,9	75,0	1,9031	1,4771	0,6902	1,8751
100	33,0	17,0	84,0	2,00	1,5185	1,2304	1,9243

The data in Table 2 shows that the number of cones produced by individual trees depending on the thickness of the trees, from age class and a plumb tree needles accumulated one. With increasing age plantations increases their diameter, and their respective weight softwood.

Consequently, the increase in the number of cones per tree , associated with increased assimilation surface tree needles , which is directly related to age and tree diameter . This is evidenced by the high multiple correlation coefficient R = 0,90 given the regression equation . R - characterizes the relationship between the dependent variable (ie the number of cones per tree) and the independent variables (age of the tree, trunk diameter and weight softwood mass). 1 – R2- the proportion of variance due to unaccounted factors , in our case it is equal to = 0,091.

For band elections: the average seed yield of dry pine boron was 1,2 kg/ha, and for fresh boron – 2,8 kg/ha. Such an amount of pine seed harvest enough for successful completion of the process of natural regeneration of pine forest areas Priirtyshja dry pine forests . According to LN Gribanov [3] in the belt forests of the Altai Territory and Kazakhstan by 90% dominated stands of natural origin, therefore, they all arose only by self-seeding. Repeated until, until there is a complete change of the dying generation of young forest stands of viable The described process of natural regeneration of pines in hog tape is very slow and lasts for hundreds of years.

Research by KJ Ustemirova [1] Found that effective natural seed regeneration occurs shadow cone mother trees Seniors forest seed dispersal in the area at a distance of 35 m from the source of contamination. To maximize the area of the shadow cone, researcher, proposes the creation of thin (rare) pine cultures on pyrogenic squares, with a limited number of seats (800 units/ha to 1000 plants/ha). Promising rocker of pine 2-row, planting scheme seats 3x3 m. To a maximum of seeds falling in April-May, was falling on the northern edge of the wings, so the long side of Culture 1000 m should be directed carefully from west to east. Thus, it is expected that free standing trees, planted with low crown bring more cones than trees growing of crops. According to VD Ogievskii fruiting trees growing in thinned stands, the same as in free standing trees and on the number of cones exceeds by several times than trees growing of crops.

Thus, the researcher to provide a more abundant colonization intercool's create space offers pine cultures on pyrogenic areas with a limited number of seats 800-1000 plants per 1 ha. However, you must pay special attention to the location of seats on the area phytocenosis a distance seed dispersal pine, where the area is left for natural pine seed reproduction. Desired placement of seats in the square pine scheme 3,5 x3,5, to provide a large surface area of water supply of the testes . Table 2 shows that the presence of testes on silvicultural area in the amount of 750 units/ha already provides seed yield 2,17 kg of seed for satisfactory natural renewal silvicultural areas. If we assume

that 1 kg of seeds, the minimum required for satisfactory silvicultural 1 hectare afforestation area, the seed crop of trees at age 40 exceeds 2,17 times , and the most fruitful aged 60-80 years testes this excess is 2,17-4, 82 -fold (Table 3).

Table 4 Dynamics harvest pine seeds depending on the availability of the testes to silvicultural area kg.

Number of cones per tree, pieces	Tree age, years	Average weight of cones, g	1% - seed yield per tree, based on the number of cones, g	Exit pine seeds on the number of testes, kg		
				750	850	1000
45	40	6,43	2,89	2,17	2,46	2,89
61	60	6,43	3,92	2,91	3,33	3,92
75	80	6,43	4,82	3,61	4,10	4,82
84	100	6,43	5,72	4,29	4,86	5,72

Conclusion. Thus, as the real sources are seeds of various kinds of timber wall and testes. However, the impact is limited to timber wall strip in 40 -50m width due to the specific separation of seeds. Research by K.J. Ustemirova [1] Found that the value of the testes limited 25-35 meter ribbon cutting burnt and burnt wood. Plaque seeds, of course, carried out over a large area , but the possibility of germination and conservation of pine seedlings were only in the area of the protective effect of the trees, which in this case was measured at 25-35 m here already beginning to affect the characteristic belt hog confinement near Irtysh undergrowth to the cone shade [1, 2].

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КӘДІМГІ ҚАРАҒАЙДЫҢ ЖЕМІС БЕРУ ЗАҢДЫЛЫҚТАРЫ ЖӘНЕ ТҰҚЫМ ӨНІМІНІҢ МӨЛШЕРІНЕ ӘСЕР ЕТЕТІН ФАКТОРЛАР

Бұл мақалада кәдімгі қарағайдың жеміс беру заңдылықтары және тұқым өнімінің мөлшеріне әсер ететін факторлар қарастырылады және байқалады.

Кілт сөздер: орман шаруашылығы, сүректің, қарағай екпелері, кәдімгі қарағай, қылқан.

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ЗАКОНОМЕРНОСТИ ПЛОДОНОШЕНИЯ СОСНЫ ОБЫКНОВЕННОЙ И ФАКТОРЫ ОБУСЛАВЛИВАЮЩИЕ ВЕЛИЧИНУ УРОЖАЕВ СЕМЯН

В данной статье рассматриваются и наблюдаются закономерности плодоношения сосны обыкновенной и факторы обуславливающие величину урожаев семян. Таким образом,

в качестве реальных источников семян остаются различного рода семенники и стены леса. Однако влияние стен леса ограничивается полосой в 40-50 м ширины в связи с особенностями разноса семян.

Ключевые слова: лесное хозяйство, древостой, культуры сосны, сосна обыкновенная, хвоя.

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АГРОМЕЛИОРАТИВНЫЕ ХАРАКТЕРИСТИКИ ОРОШАЕМЫХ ЗЕМЕЛЬ КЫЗЫЛОРДИНСКОЙ ОБЛАСТИ

Аннотация. В статье рассматривается фактическое состояние водно-солевого режима орошаемых земель в Кызылординской области и возможные пути их решения.

Ключевые слова: приток, динамика водопотребления, водохранилища, регулярное орошение, Аклакский гидроузел, гидропост.

Река Сырдарья является главной водной артерией бассейна, которая образуется от слияния рек Нарын и Карадарья, малых притоков Ферганской долины, среднего течения и притоков Ахангаран, Чирчик, Келес, Куруккелес и Арысь. Из общей площади территория бассейна реки Сырдарьи, равной 444 тыс.км^2, 250 тыс.км^2 (или 56,6%) находится в пределах Республики Казахстан.

От нижнего бьефа Шардаринской плотины начинается нижнее течение реки Сырдарьи, которое характеризуется отчетливо выраженной извилистостью, а ее пойма, шириной от 5-10 км до 20-40 км образуется древней и современной зоной меандрирования, современной и древней дельтой, в которой имеется значительное количество протоков, стариц и озер, часть которых в настоящее время пересохло.

Гидрометрические наблюдения за уровнем воды реки Сырдарьи в пределах Республики Казахстан были начаты в 1910-1913 годах на четырех гидропостах: Тюмень-Арык, Кызылорда, Караозек и Казалинск. В настоящее время действуют девять опорных гидропостов: Чиназ-Кокбулак, н/б Шардаринского водохранилища, Коктобе, Тюмень-Арык, Тасбугет, Караозек, Жосалы-Караозек, Казалинск и Каратерен.

Водные ресурсы бассейна реки Сырдарьи оцениваются в объеме 38,6 км^3/год, естественный сток 90%, обеспеченности 28,2 км^3/год. С 1982 года в бассейне введено лимитированное распределение подачи воды из реки Сырдарьи.

Кызылординский, Айтекский и Казалинские гидроузлы обеспечивают поливной водой все поливные земли Кызылординской области.

Основным потребителем воды в регионе является орошаемое земледелие.

По состоянию 2012 года в бассейне орошаемые земли составили по Кызылординской области 226,879 тыс.га, из которых использовались 159,52 тыс.га и по разным причинам не использовались 67,357 тыс.га. В основном эти земли содержат значительные соли которые колеблются от 0,354 до 0,605% от веса сухой почвы. При обеспечении поливной водой в нужные сроки, в требуемом объеме можно получить высокие и гарантированные урожай сельскохозяйственных культур, о чем свидетельствуют итоги уборки урожая 2012 года. Так, в Кызылординской области валовой сбор риса составил 357,363 тыс.тонн (средняя урожайность 47,7 ц/га) (в 2011 году этот показатель был равен 47,8 ц/га).

Общая протяженность магистральных каналов, обеспечивающих посевы оросительной водой, более 30 тыс.км.