CULTURAL PLANTS OF THE WORLD

AND THEIR APPEARANCE

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Annotation *this article describes the scientific views on the emergence, reproduction, and development of cultivated plants*

Key words Areas of ancient agriculture, cultivation and cultivated plants, Central Asia (along the banks of the Syrdarya and Amudarya) Mid-Earth Sea region, the Nile Basin, Western Asia and Western Iran.

Among the flora of the globe, there is a significant in the number of species (more than 2500) group of plants cultivated by man and received the name of cultivated plants. Cultivated plants and the agrophytocenoses formed by them have replaced meadow and forest communities. They are the result of human agricultural activity, which among some peoples began 7-13 millennia ago.

A new stage in their life is inevitably reflected in the wild plants passing into culture. The branch of biogeography that studies the distribution of cultivated plants, their adaptation to soil and climatic conditions in various regions of the world and includes elements of agricultural economics, is called geography of cultivated plants. According to their origin, cultivated plants are divided into three groups: the ancient group, weed-field species and the youngest group. The youngest group of cultivated plants comes from species that are still found in the wild. For plants of this group, it is not difficult to establish the center of the

beginning of their cultivation. These include fruit (apple, pear, plum, cherry, gooseberry, currant, raspberry, strawberry, etc.), all melons, beets, rutabagas, radishes, turnips, etc. Weed-field plant species became objects of culture where the main crop, due to unfavorable natural conditions, gave low yields. Thus, during the advancement of agriculture to the north, winter rye displaced wheat; The oilseed crop of camelina, widespread in Western Siberia, used to obtain vegetable oil, is a weed in flax crops. For the most ancient cultivated plants, it is impossible to establish the time of the beginning of their cultivation, since their wild-growing ancestors have not survived. These include sorghum, millet, peas, beans, beans, lentils, etc.

Almost all cultivated plants belong to angiosperms, and only about 5 gymnosperms and a few fern-like species break the solidity of this group. Of the huge species diversity of angiosperms, including up to 225,000 species, cultivated species account for less than 2,500. However, despite such a negligible specific gravity in terms of species composition, cultural flora looks quite solid in terms of the relative size of the area occupied by it, which by the middle of the twentieth century. amounted to 1.5 billion hectares, i.e. up to 0.1 of the entire land surface of the globe. But the plantations of cultivated plants are unevenly distributed here. With the advent of agriculture, their areas have increased due to the decrease in the territory of virgin flora from century to century. The steppe and meadow plant communities collapsed most easily under the hand of the farmer. In densely populated and lightly wooded India, now more than 60% of its territory is occupied by cultural plantations. Steppe Hungary also has over 60% of the land under arable land, orchards and vineyards. A similar situation is in the chernozem zone of the CIS: more than 3/5 of the territory has been plowed up, and the virgin feather grass steppe will soon remain here only in reserves . Forests were a more serious rival to agriculture. But they were also consumed and gave way to plantations of cultivated plants. The United States of America has lost over 40% of its forest area occupied by currently cultivated plantations.

In New Zealand, in less than a quarter of a century (1886-1909), over 20% of its forested area was uprooted and turned into arable land. In the Federal Republic of Germany, less than 33% of those forests that were in the last years of the Roman Empire are now preserved. Over 30% of the territory of Germany and England is now occupied by cultivated plants. Even the virgin forests of New Guinea Island do not escape the common fate and have been replaced by plantat In the face of the cultural flora, we have a young group of plant species. These are the children of human agricultural activity, which began in individual peoples about 7-13 millennia ago. Then the first cultivated plants arose. And then their number increased in the process of transition to agriculture of new peoples, with the expansion of mankind's needs for plant products and the migration of agriculture to new areas of the globe. In Iraq, the cultivation of einkorn wheat, according to the latest data, dates back to the 67th century BC. Cultivated soft wheat (in Central Asia) and cultivated rice (in India) appeared about 65 centuries ago. Relatively younger cultivated plants: rye and oats - have an age of 30-40 centuries, and the cultivation of beets is measured in 25 centuries. Quite recently (XIX - XX centuries), the cultivation of the rubbery hevea, cinchona tree, rose hips and sea buckthorn, for the sake of their fruits rich in ascorbic acid, arose. A cultivated plant was created by agriculture, but the introduction of individual plants into culture was sometimes carried out even before a person began to cultivate the land for them. Evidence of this can be seen among certain backward peoples as early as the 19th and even the 20th centuries.

G. Stanley points out that in the last quarter of the XIX century. in tropical Africa, among blacks, he observed planting bananas in a virgin forest, in which only one undergrowth was cut down. After that, shallow pits were made in the soil with a mo-tygo, and young shoots of bananas were planted in them, covered with earth only so that the seedlings could maintain their vertical position. A year later, such primitive plantations bore fruit successfully without any maintenance.

E. Brandes 50 years later, already at the end of the first quarter of the twentieth century, observed among the Papuans of New Guinea the planting of sugar cane with cuttings on plots burned for this purpose without any preliminary soil cultivation, except for the deepenings with a stick in the soil of the conflagration required for planting cuttings. Sugar cane, reaching a height of up to 10 m here, quickly developed from planted cuttings and suppressed the possible restoration of wild vegetation. In Sikkim and Burma in the middle of the twentieth century. the method of sowing rice in the place of a burnt forest was preserved by simply scattering seeds over the fire or sowing them into holes with a slightly loosened soil with a stick. Anderson and William describe a similar picture of maize culture in Honduras that existed at the same time. Here, on the territory intended for the maize plantation, large shrubs are cut down and, after drying, they are burned along with the grass that has dried up from lack of rain. At the conflagration, small holes are made with a spade and maize seeds are sown in them.

However, the competition from the remaining wild species on the plantation sometimes significantly reduced the productivity of cultivated plants. For the destruction of wild vegetation on the territory prepared for plantation, various methods of soil cultivation have arisen. Loosening of the soil and, then, the introduction of organic fertilizers into the soil developed. Thus, the cultivated cultivated plantation has become the usual backdrop for the cultivation of useful plants.

Wild plants passing into culture inevitably had to reflect in their evolution this new stage of their life. The most primitive culture, even without proper tillage of the plantation soil and only with weakening of virgin vegetation by cutting down or burning its representatives, greatly facilitated the struggle for existence for cultivated species and weakened the effect of natural selection on them. In the wild, the breeding rateions of cultivated plants.

In the wild, the reproductive rate of most species is actually close to 1, since the number of their individuals for a number of years fluctuates in certain areas around one more or less stable value. This means that up to 99% of the newly emerging young representatives of this species die in the struggle for existence. Plants cultivated under the auspices of humans have at least a multiplication factor of 5-10, and in some cases, much higher. Consequently, natural selection among them is weakened, and as a result, separate, newly emerging hereditary forms, completely dying in the harsh struggle for existence in virgin nature, can survive on cultivated plantations.

Thus, a wild plant, passing into culture, brings with it here not only the variability characteristic of it in nature, but also enhances it as a result of the weakening of the struggle for existence in culture, which controls evolution in wild populations. Natural and artificial selection in cultural conditions rests on this increasing variability. Embedding seeds in the soil during sowing gives the advantage of larger-seeded forms, which more easily penetrate the soil covering the seeds. Mass methods of caring for plantations and the simultaneity of their harvesting contribute to the exclusion from populations of both plants that are sharply ahead of others in their development, and noticeably lagging behind. Forms with fast and simultaneous germination of seeds here have an advantage over forms with non-simultaneous, slow, extended germination. Thus, new conditions of existence determine both a new direction of natural selection and a new direction of the evolution of plants taken into culture. As a result of a long, centuries-old evolution under cultivation conditions, the currently existing cultivated plants are characterized by a number of adaptive characteristics to the methods of culture and requirements imposed by humans. Relatively simultaneous and fast germination of seeds is characteristic of all sown crop plants under favorable conditions for this — temperature and humidity. Non-swelling of seeds, post-harvest ripening and other features that interfere with the rapid germination of seeds are, as a rule, absent in cultivated plants. However, cultivated plants propagated vegetative during their cultivation often retain the type of seed

germination of their wild ancestors. Fruits and seedlings of cultivated plants in most cases do not open and do not crumble. Cultivated plants with unfolding fruits, such as cotton, where there are people maintains this attribute as desirable for it constitute an exception. Cultivation is the reason for the appearance in cultivated plants of such types of fruits that are unknown in virgin nature, such as non-opening capsules in poppies and lions, non-opening multi-seeded beans of beans and peas. Many fruit cultivated plants, propagated vegetatively, have created seedless fruits, like banana, raisins, mandari-na-unshiu. The fruits and seeds of cultivated plants, as a rule, exceed in size the corresponding organs of their wild relatives, which, in all likelihood, is a consequence of both artificial selection in this direction and evolution under the constant action of deep embedding of seeds when sowing them. as well as correlative changes caused by a decrease in the number of fruits per plant as a consequence of selection for the simultaneity of their ripening.

For cultivated plants, the acceleration of their development and fruiting is also characteristic, with a corresponding shortening of the time of their cultivation. Perennial wild types of cotton, castor oil plant, tobacco, peanut, tomato are cultivated as one year crops. Wild perennials in culture have become juveniles, like cultivated beets and rye, which have perennial ancestors. The emergence of primary cultivated plants is associated with the beginning of human cultivation of certain wild useful species, the products of which people had previously used, collecting from virgin nature. Many of them probably belonged to the group of anthropophilic plants, i.e. settling near human habitation, where they find better nutritional conditions and are free from the competition of stronger wild species. Anthropophilic plants are relatively easily trampled by livestock and by humans. They relatively easily endure frequent and severe damage to terrestrial organs. The character of the soil, altered by the vital activity of man and his domestic animals, is more consistent with the requirements of anthropophiles than in the wild. Thanks to this, the anthropophilic plants surrounding human habitation became cultivated relatively easily and were the ancestors of the first cultivated plants.

Anthropophilic ancestors of some cultivated plants have survived to this day. Wild castor oil plants constantly surround the huts of Ethiopian farmers. Kupriyanov's wild rye often forms its own outgrowths in the mountains of the Western Caucasus around the camps of the Imeretian shepherds. In Central Asia, attention to the garden The first cultivated plants arose where agriculture first began. On the basis of archaeological and historical data and the distribution of the existing cultural flora, we can now with sufficient probability outline these most ancient, independently emerging centers of agriculture. Such areas must inevitably be characterized by a large genetic diversity of plant species that have been cultivated here since ancient times. Indeed, the mutational process that enriches the genetic systems of individual species is a function of time and the number of individuals of a given species that grows in a particular territory. Polymorphism of certain types of cultivated plants in certain areas of the globe is, to a certain extent, a consequence of their ancient culture.

The connection between the greatest polymorphism of individual cultivated plants and the centers of their earliest cultivation can sometimes be violated. Outbreaks of morphogenesis can be associated with new possibilities of hybridization in certain areas of migration of cultivated plants. Physico-geographical conditions in different parts of the range are also reflected in the polymorphism here of individual cultural species, depending on the severity of natural selection in them and the variety of ecological conditions that facilitate or hinder intraspecific differentiation. Thus, the data on the polymorphism of cultivated species should be compared with the data on the history and archeology of the corresponding areas, before being used to outline the primary foci of ancient agriculture and the emergence of cultivated plants.

Areas of ancient agriculture: Independent autochthonous civilizations arose in antiquity in a number of separate isolated regions of the earth. The most ancient civilizations arose over 7000 years ago in the interfluve of the Tigris and Euphrates and along the Nile, including its upper reaches in mountainous Ethiopia. Further,

new civilizations were born, reckoning their age over 4500 years. The Caucasian Caucasians created their states in Asia Minor, Transcaucasia, Western Iran and along the eastern coast of the Mediterranean Sea. The culture of the Mediterranean Caucasians advanced along the southern coast of the Mediterranean Sea to present-day Libya. Thus, in the eastern Mid-Earth Sea region, the Nile Basin, Western Asia and Western Iran, there are a complex of civilized states was built, maintaining certain contacts with each other. At the same time, new civilizations were created in Central Asia (along the banks of the Syr Darya and Amu Darya) and on the Indian subcontinent (Pyatirechye). These were the civilizations of the Indo-Pamir Caucasians. Around the same time, a civilization of the Far Eastern Mongoloids, the ancestors of the present-day Chinese, arose in the Yellow River basin. An equally ancient civilization is noted in Sri Lanka and in the south of India, then inhabited by the Ceylon-Sunda and South Indian groups of Australoid peoples. The civilized states of the Mediterranean Europeoids have covered all the shores of the Amid-terrestrial sea. The level of civilized peoples was reached by the South Indian-Australoids in the Ganges basin and southeastern India. Younger civilizations are 600-2500 years old, but some of them arose quite autochthonously. Such are the civilizations of the American-Iids of Central America, southern Mexico and Peru and the civilization of the Sudanese Negroids in the savannas of western Sudan.

On the territory of the future ancient civilized states, the period of barbarism undoubtedly passed earlier than in other regions of the globe, and here, earlier than among other peoples, land development arose. In some of them, it arose completely autochthonously, surrounded by wild non-agricultural peoples and without any connection with more ancient farmers. Here, the tribes passing over to agriculture, independently and independently of others, introduced the plants of the surrounding wild flora into the culture, the first cultivated plants of the corresponding civilizations were created. Peoples who switched to agriculture later simply borrowed farming techniques and ready-made crops from their more advanced neighbors, which had a solid economic foundation. The introduction of

wild plants into the culture was economically feasible, while there were no cultivated plants of appropriate use in this area and those closest to it, and it became impractical when these cultural forms were already available and could be easily borrowed. The introduction of new wild plants into the culture arose only when there were no ready-made cultural forms that would satisfy the corresponding human needs. In modern times, new needs have arisen: for rubber (XIX - XX centuries), the need for forage grasses for the northern half of Europe (XVIII century), a wide demand of the world paint and varnish industry for quickly drying tung oil (XIX - XX centuries). The emergence of these needs and caused the introduction of new wild plants into the culture.

Referens

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