conditions, including ensuring a sufficient number of nutrients. Biologization of technologies for growing cultivated plants to solve this problem includes: activation of the cycle of organic matter and nutrients; protection of the environment with a minimum of chemicals for harvesting; use of organic waste; energy saving through the use of nitrogen fixers ; biological tillage; preservation and increase of soil fertility (biological, physical and chemical).

The biological direction in crop production, like the traditional one, requires compliance with the following provisions in technology: the need to apply such an amount of mineral fertilizers, below which the size and quality of the crop may change; taking into account the nutrients in the small and large circuits; a sufficiently effective pest control system so that the use of pesticides is not mandatory.

Biologization of technologies for growing field crops is a purposeful formation of optimal parameters of the structure of the agrocenosis, which provide stable yields while optimizing nutrition and growing conditions.

Therefore, we can conclude that biologization is the implementation of agronomic measures at the stages of growth and development of plants; fertilization according to the balance of nutrients in the soil and according to plant diagnostics; orientation of technology on the formation of the leading parameters of plant productivity.

INFLUENCE OF PREPARATORS ON HARVEST AND BUCKWHEAT SEED QUALITY

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The main feature of intensive technology of buckwheat cultivation is good quality performance of the whole complex of mechanized works in strict sequence and in optimal time in compliance with agronomic requirements for each operation.

However, the conditions necessary for a high yield do not always coincide with the conditions that promote the formation of high-quality seed. This is evidenced by the types of seed yield established by M. M. Makrushin

depending on soil and climatic conditions, different effects of a number of agronomic measures on yield and biological properties of seeds, different modes of postharvest processing of commercial and seed grain and more. In this regard, there is a need to develop technology for growing seed, is to create a set of measures for seed farming.

Precursors have an indirect effect on seed quality, leaving different reserves of moisture and nutrients in the soil, as well as causing the development of diseases and pests. The less water and nutrients they use from the soil, the better the conditions for the next crop.

In seed practice, predecessors are subject to special requirements: any possibility of clogging crops with difficult to separate cultivated plants and weeds, as well as other varieties, should be excluded.

When ensuring scientifically substantiated crop rotation in crop rotation, well-filled seeds with high sowing properties are formed. With a constant culture, these figures are significantly reduced.

In the total increase in yield of field crops due to the intensification of cultivation technology, the share of variety and seed quality is 25-30%. This obliges to reconsider a number of provisions of buckwheat seed production technology, taking into account the material and technical potential of the agro-industrial complex.

In the development of technology for growing high-yielding buckwheat seeds for different parts of Ukraine, an important place is given to studying the impact on yield and yield properties of seeds of tillage techniques, predecessors, fertilizers, trace elements, sowing dates and methods, sowing rates, climatic features and more.

Research on the technology of growing high-yielding buckwheat seeds should include the development of special seed crop rotations. In the development of such crop rotations, according to M. M. Makrushina, it is necessary to be guided by such principles. They must meet the needs of production in high-quality seeds of crops, varieties, reproductions. These crop rotations must be designed taking into account the zonal characteristics, the area sown to individual crops and the yield of conditioned seeds per unit area. It should be borne in mind the features of fertilizers, tillage, weed, disease and pest control measures, as well as special measures for the care of seed crops.

In recent years, due to structural changes in agriculture in many farms, attention has fallen sharply to crop rotations, violating the basic requirements

of crop rotation in the name of market conditions. A significant number of studies confirm the fact that permanent crops are unacceptable. Crop rotation is necessary in every farm, whether it is a small farm or a large collective one.

Since buckwheat belongs to the group of moderately sensitive to the constant cultivation of crops, the duration of the period of return to the previous place is 2–3 years.

However, it is believed that in farms with a limited number of fertile soils, to stabilize the harvest of buckwheat can be grown 2–3 years in a row on the best massifs, but intensively control weeds.

The main criterion in the evaluation of buckwheat precursors is how they affect the nutritional and phytosanitary condition of the soil environment. In areas of unstable and insufficient moisture, residual moisture reserves in the root layer of the soil are also important.

According to most researchers and growers, in the selection of predecessors for buckwheat in the first place should be put row crops, under which make a sufficient amount of organic and mineral fertilizers. In the Forest-Steppe it will be sugar beets, and in Polissya – potatoes. Less effective precursor from row crops is corn for silage.

Sugar beet not only improved root nutrition but also increased the nectar content of flowers, making bees more likely to visit crops. This in turn improved fertilization, ovary formation, increased seed productivity and yield.

To truly understand the importance of proper selection of the predecessor, we must emphasize once again: the normal growth and development of the root system of buckwheat, and hence plants in general occurs only on weed-free, fertile soils.

After predecessors that leave the soil clogged, buckwheat greatly reduces yields, although in the first half of growth it suppresses weeds. When the flowering period ends – fruiting and browning of the grain, plant growth slows down and may stop, and weeds (especially white quince, yellow thistle, chicken millet, mouse) grow intensively, suppressing buckwheat. Their impact at this time is much stronger than at the beginning of flowering, because weeds quickly use water reserves and nutrients from the soil during the period of fruiting, which is critical when needed. Lack of them in the soil sharply reduces the yield.

Summing up the results of numerous studies, we can say that the level of buckwheat seed yield depends largely on the skillful use of the main means of production – land, the introduction of scientifically sound farming systems, crop rotation. Without a well-chosen predecessor, there can be no question of obtaining seeds with high yielding properties.

СТИМУЛЯЦІЯ РИЗОГЕНЕЗУ РОСЛИН ЖИТА ОЗИМОГО ЗА ВИКОРИСТАННЯ АЕРОГІДРОПОННИХ ТЕХНОЛОГІЙ

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Аналіз морфогенетичних процесів рослин і управління ними є одним з основних напрямків у сільськогосподарській біотехнології, що активно розвивається та обговорюється [1, 5]. Аерогідропонна система, як високотехнологічний спосіб безсубстратного культивування рослин на спеціально підібраних поживних середовищах, є вдалим інструментом у дослідженнях інтактних рослин, спрямованих на встановлення значення тих чи інших ендогенних і екзогенних чиників у процесі життєдіяльності біоматеріалу за високого рівня регулювання умов культивування [2–4, 6, 7]. Вирощування за використання аерогідропонних установок дозволяє поступово переводити біооб'єкт з умов *in vitro* в умови *ex vitro*, підвищуючи частку адаптованих рослин до польових умов вирощування.

Процес адаптації складний, і його успіх залежить від низки чинників. У першу чергу, це якість рослин, зокрема, наявність або відсутність розвиненої кореневої системи, розмір і фізіологічний вік рослин (довжина стебла, кількість листків тощо). Велике значення має і середовище, в яке переноситься рослина. Зазвичай, за перенесення в ґрунт виникають проблеми, пов'язані з наявністю у великих кількостях патогенної мікрофлори та неоднорідністю ґрунтового складу.

Метою наших досліджень була розробка способу інтенсифікації розвитку кореневої системи і адаптаційного процесу клонованих рослин жита озимого за використанням аерогідропонної технології.