ANNOTATION

dissertation by Zhaylibaeva Lyazzat Asylbekovna on the topic: «Biological features and productivity potential of promising varieties of repair raspberry in the southeast of Kazakhstan», submitted for the degree of Doctor of Philosophy (PhD) in the specialty - 6D080900 «Horticulture»

Raspberry is the second most important crop after strawberries in both the world production and the Republic of Kazakhstan. However, now in our republic, the area of the planting raspberries began to surpass strawberries. In Almaty region, over the past three years, about 300 hectares of plantations have already been laid, and only by repair varieties. These varieties are technologically simpler to grow than the traditional ones because they bear fruit on annual shoots and do not require protective measures against winter damage and the installation of an expensive trellis. Varieties of repaired raspberries ripen in late summer and usually bear fruit until autumn frosts. Prices for non-season berries are much higher. Despite all these advantages in the Kazakhstan register of varieties approved for use in the Republic there is not one repairable grade.

In Kazakhstan, only one repairable kind of raspberries «Babiye summer» was studied, still having in planting, but it is morally outdated. The planned work is therefore very relevant for Kazakhstan. Selection and recommendation for farmers to grow the best varieties, processing key farming techniques will significantly increase interest in this crop, and increase the yield and gross harvest of berries.

Purpose and objectives of research

The aim of the research is to study biological features and determine the potential productivity of promising varieties of repaired raspberries in the south-east of Kazakhstan.

Tasks:

1. Determination of seasonal dynamics of growth and development of studied varieties.
2. Highlight the best varieties on the complex of economic and useful features.
3. Optimization of the planting density of repairable raspberries.
4. The influence of biostimulants on productivity potential and its realization.
5. Determine the effect of retordants on the stability of annual fruit shoots.
6. Determine the economic efficiency of growing repairable raspberries.

Description of the main findings of the study

A complex assessment of prospective repairable varieties of raspberries of Russian selection was conducted: Bryansk divo, Caramel, Orange miracle, Nizhny

Novgorod, Malina ridge, Hybrid-39. Introduced varieties of Polish breeding - Polka and Polana.

In a three-year study of promising varieties of Russian and Polish breeding, a significant advantage of the variety Bryansk Divo, which had the largest fruit bearing zone (68-77cm) and exceeded the yield of Polish varieties Polka by 47%, a Polana by 54%. The average berry mass of this variety was also highest at 5.2 g, compared to 4.2 g and 4 g respectively of Polish varieties.

A positive biostimulant effect was observed on the mineral composition of the leaves of the Bryansk divo variety. In terms of micro and macronutrient content, Polka has achieved the best result in the Aminopul variant. Also the accumulation of chlorophyll and carotene was greater in the version Aminopul, in the variety Polka its content reached 2.74 mg/100 g, which is 49% more control and 27% other options, The carotene increased by 21%. Bryansk divo increased the chlorophyll content in the Aminopul version by 22%, and carotene by 31.4% compared to control. At the same time, the productivity of these varieties increased respectively by 20%.

Retordants actively influence the physiological processes in plants primarily the chlorophyll content directly related to the photosynthesis process. It was normal for chlorophyll to increase overall, and A and B to increase naturally, that their amounts were highest in the Sprifert-Biostim variant by 21%, and in the other two variants by only 98-72%, respectively. No significant effect of retardants on the biochemical composition of berries has been observed.

The figures varied both by year and by variety. It follows that treatment with retardants does not impair the value of raspberry berries.

There is an advantage of a thickened landing scheme of 1.4 + 1.5 x 0.4 m, over traditional. Its use made it possible to obtain a commercial yield of 12.3 t/ha in a year of planting.

The calculation of the economic efficiency of the studied varieties showed a significant advantage of the variety Bryansk divo. Its cost was 12.1% lower and its profit was 4 mln. t/ha higher than that of the control variety Polka. Profitability also increased by 23.9 per cent. The other varieties were less profitable for commercial cultivation, as were inferior to a large extent to the whole set of indicators of the benchmark variety Polka and Bryansk divo.

Phenotypic assessment of numerous forms of repaired raspberry showed that the manifestation and severity of repair significantly depends on the age and varietal characteristics of plants and conditions of the growing period. The Bryansk Divo, Raspberry Ridge, Nizhny Novgorod, Polka varieties complete their fruit bearing in late October and early November. In the conditions of the south-east of Kazakhstan in some years they realize their biological potential productivity only 85%,

depending on the weather conditions. High potential productivity is realized before the onset of autumn frosts on 9°C.

Production recommendation

1. In the south-east of Kazakhstan, it is recommended to lay down industrial plantations of repaired raspberries with a variety of Bryansk divo providing the highest yields of high quality berries. In order to increase productivity, leaf treatments of plants with the preparation Aminopul are necessary. at a dose of 1 kg/ha during active growth (bud blooming, beginning of flowering).

2.The greatest economic effect and profitability is provided by thickened planting of plants at the level of 34 thousand. Per hectare with a scheme of 1.4 + 1.5 x 0.4 m.

3.Sufficiently high economic efficiency is provided and with a lower degree of thickening in 17 thousand. ras./ha, which can also be applied to limit investment funds.

Substantiation of novelty and significance of obtained results

1. The selected varieties were submitted to the State Inspectorate for Study of Varieties for inclusion in the register of varieties approved for use in the territory of Kazakhstan.

2. For the first time in Kazakhstan, effective methods for accelerating the development of raspberry plants were studied and proposed for production.

3. The influence of biostimulants on productivity potential has been determined.

4. The best varieties from the world collections were offered to Kazakh farmers.

5. Data obtained on their productivity and crop quality.

6. A comprehensive economic assessment of the cultivation of the best repairable varieties was carried out.

Practical significance

As a result of the study of biological features of introduced varieties of repaired raspberries in the conditions of south-east of Kazakhstan, the advantage of the Russian variety Bryansk Divo has been established on the aggregate of economic and useful signs.

The comparison on the action of organically pure biostimulators on the stability of repairable raspberries to stress factors in the growing period has been conducted.

The estimation of repair raspberry «Bryansk divo» on the intensity of disease and pests in the test center of phytosanitary laboratory analysis on phytopathological and entomological examinations is given.

High-yield and adaptive varieties of repairable raspberries for the conditions of south-east Kazakhstan have been allocated.

Aminopul has also been found to have a positive effect on the mineral composition of the leaves in both studied varieties.

The results of this study allowed to allocate the best varieties by the number of economically useful signs and to show the adaptability of varieties of repaired raspberries in the south-east of Kazakhstan, to determine the economic efficiency of cultivation, varietal potential of productivity and its realization.

Compliance with scientific directions and state programs

Research work on the thesis was carried out from 2018 to 2020 within the framework of scientific projects and programs: BR06249308, project registration number 0118RK01334, program cipher O.0887 (2018-2020).

Doctoral contribution description

The applicant carried out all experimental works on biological features of potential productivity of promising varieties of repaired raspberries in the conditions of south-east Kazakhstan. The text of the dissertation was written personally by the applicant.

Together with scientific managers, the selection of research objects was carried out, the structure of the dissertation work and the planning of experiments was compiled, the techniques of statistical data processing were mastered by the dissertant.

The following are the basic provisions for protection:

- Study and selection of varieties of repair raspberry by adaptability in the south-east of Kazakhstan.
- Biological features of potential productivity of advanced varieties of repairing raspberries.
- Determination of economic efficiency of cultivation of repaired raspberries.
- Study of repair raspberries in the work on their inclusion in the SMS of the RK.

Approbation of thesis results

The main principles of the dissertation work were considered and discussed at the scientific and technical councils of the faculty «Agrobiology» of the Kazakh National Agrarian Research University, the expanded meeting of the department «Horticulture». The main results of the dissertation on the topic were announced at international scientific conferences.

The results of the dissertation are included in the interim and final reports on research work (BR06249308, project registration number 0118RK01334, program cipher O.0887)

Publications. 12 scientific articles were published on the topic of the dissertation, including 6 in the publications recommended by the Committee for Quality Assurance in the field of education and science of the Ministry of Education and Science of the Republic of Kazakhstan, 1 article - in the publication included in the SCOPUS database, 5 articles - in collections of international conferences.

Volume and structure of the thesis. The total length of the dissertation is 106 pages. The list of used literature includes 159 titles; thesis work contains 99 drawings, 26 tables and 9 annexes.