



PRODUCTION RESULTS OF SOME DIOIC HEMP GENOTYPES CULTIVATED IN THE PEDOCLIMATE CONDITIONS FROM ARDS LOVRIN, IN THE PERIOD 2017-2019

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Abstract: the paper presents the study of the crop behavior of four dioic hemp genotypes under the influence of pedoclimatic conditions within ARDS Lovrin, during 2017-2019. The cultivated hemp varieties were: Lovrin-110, Silvana, Armanca and line Lv-457/08. Production results to the four cultivars, registered in the first year of experience under the influence of climatic conditions of 2017, were: 370 kg / ha Lovrin-110 variety, 327 kg / ha Silvana variety, 355 kg / ha Armanca variety and 464 kg / ha at the line Lv- 457/08. In the second experimental year 2018, the production values are higher compared to the previous year, for all varieties, as follows: 634 kg / ha Lovrin-110, 525 kg / ha Silvana, 607 kg / ha Armanca and 549 kg / ha Lv-457/08. Analyzing the three experimental years, we notice that, in 2018, the highest productions were made in all four genotypes, obtaining productions that exceed the average seed production made in the experimental cycle. The climatic conditions were registered at Lovrin Meteorological Station, during 2017-2019.

Key words: seed production, dioic hemp varieties, pedoclimatic conditions.

Introduction

In the middle of the 20th century, hemp was banned from cultivation by governments as an illegal drug crop. However, in recent years, governments and researchers became more interested in the cultivation of hemp, as one of the most important crops for green fiber, seed oil (rich in omega-3 and omega-6 in the right ratio) and domestic drugs uses.

Hemp has attracted much attention from the market and from researchers due to its multiple uses, therefore, improving the production of hemp fiber through research will help promote the promotion and competitiveness of hemp products .

Like a plant with multiple uses, ubiquitous over history and the evolution of mankind, hemp (*Cannabis sativa* L.) is a source of: fiber, wood and seeds used in the world for a wide range of products.

The desire for a diet rich in natural, organic products entails the use of hemp seeds in various foods. Due to their high nutritional value, hemp seeds are consumed as food or feed, but can be processed as oil, grit or hemp flour. The economic importance of hemp for the seed is highlighted by the content of oil (30-32%), protein (20-25%), carbohydrates (20-30%) and a significant intake of insoluble fiber (10-15%) and minerals.

Hemp oil is rich in unsaturated acids: oleic acid, linoleic acid, alpha-linolenic acid, but also in saturated acids, such as stearic, palmitic, eicosanoic acid, it is used in the manufacture of varnishes, paints, even in food, having a drought index of 140-170 (Ceapoiu, 1974).

In our country the production of hemp seed is quite low; 300-500 kg / ha although the potential of cultivated hemp varieties is 800-1200 kg / ha. (V. Tabără).

From the researches carried out by M. Mihoc, in the period 2011-2013, we mention the production results obtained for the Silvana variety, in 2011, the highest production was 798 kg / ha seed, in 2012, 447 kg / ha was obtained, and in 2013, registering a harvest of 571 kg / ha.

From the specialized literature it appears that the obtained seed productions oscillate from one year to another, so we can conclude that the influence of the climatic conditions from the year of cultivation on the production is very much maintained.

The distribution of precipitation over the vegetation period is a factor that contributes to the formation of production elements. Hemp has higher moisture requirements when the plants reach the budding-flowering phase. During this period, hemp consumes 2/3 of the amount of water needed throughout the growing season. For the hemp crops, the rains that fall in July-August are extremely favorable.

From the point of view of precipitation, hemp meets the best cultivation conditions in areas where during the vegetation period 350-450 mm fall.

Material and method

The study took place in 2017-2019 in the experimental field of the dioecious hemp breeding laboratory at ARDS Lovrin. The soil on which the experimental field was located is a typical chernozem, with a medium clay structure, specific to the area of influence of the resort. The climate is temperate, with an annual average rainfall of around 520 mm and a multiannual average temperature of 10.70°C.

A multifactorial experiment was set up, with the following factors: factor A - agricultural year (2017, 2018, 2019), factor B - variety (Lovrin 110, Silvana, Armanca and line Lv 457/08) and factor C - sowing density (7 plants / m², 37 plants / m² and 150 plants / m²).

Of all the productivity elements studied, those presented in this paper are the size of the plant and the length of the inflorescence of hemp plants.

The statistical interpretation of the obtained data was performed according to the variance analysis model.

Results and discussions

Figure 1 shows that the climatic factors in 2017 favorably influenced the seed production of all varieties, the Lv-457/08 line reacting with a higher production increase, respectively 464 kg / ha compared to the average production of 379 kg / ha, of the experimental years.

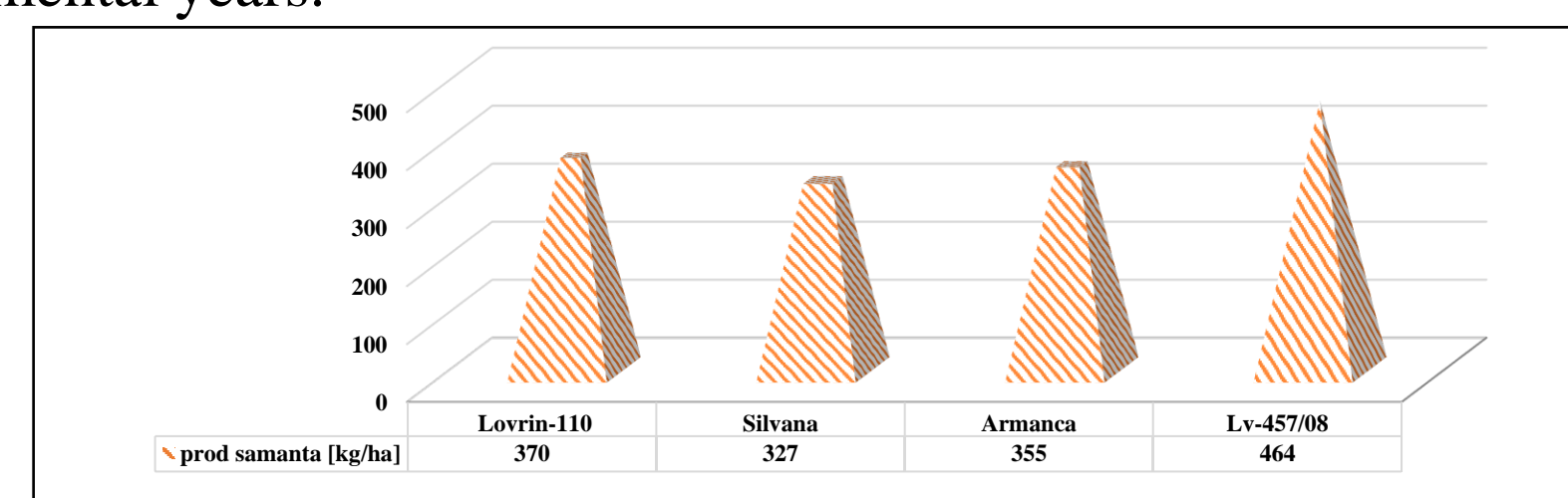


Fig. 1. Average productions (kg / ha) of seed, obtained from the 4 genotypes, in 2017

The average production of 2018 was 579 kg / ha, two varieties of hemp achieved a higher amount of seed exceeding the average of the year, respectively the Armanca variety with 607 kg / ha and the Lovrin-110 variety with 634 kg / ha, and the others two cultivars being with the values obtained below the average of the year, results from the data presented in figure 2.

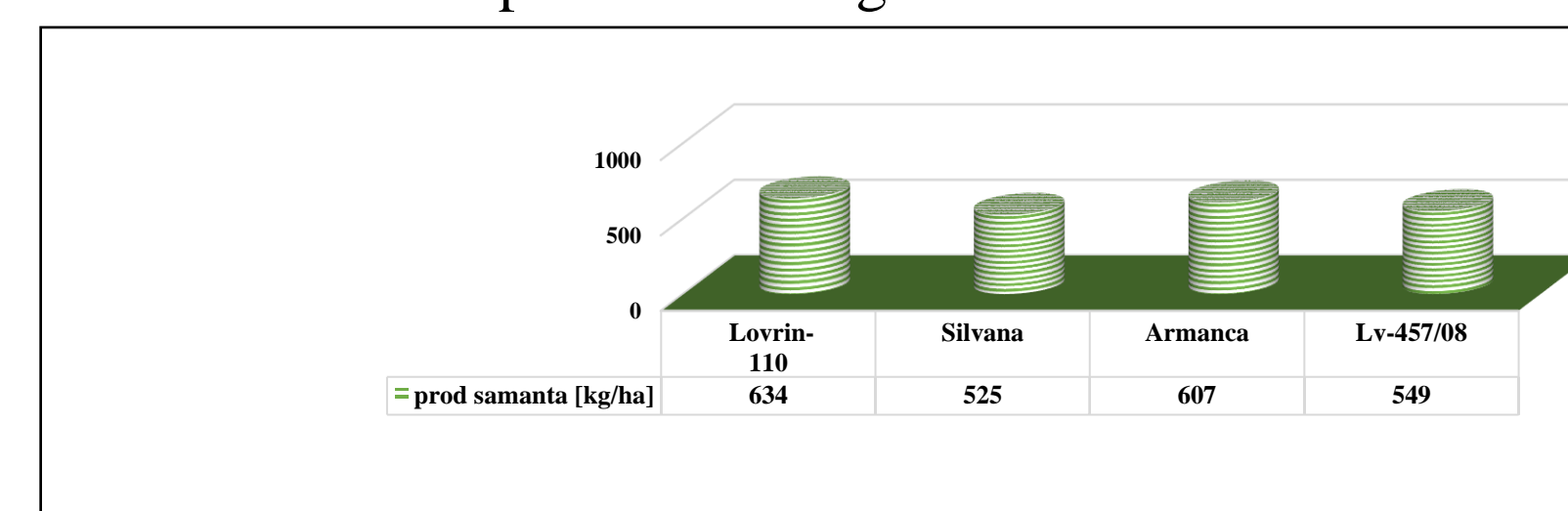


Figure 2. The average seed yield obtained in 2018

The interaction of climatic factors led to obtaining seed production with values close to the average production of 157 kg / ha recorded in 2019, results presented in Figure 3.

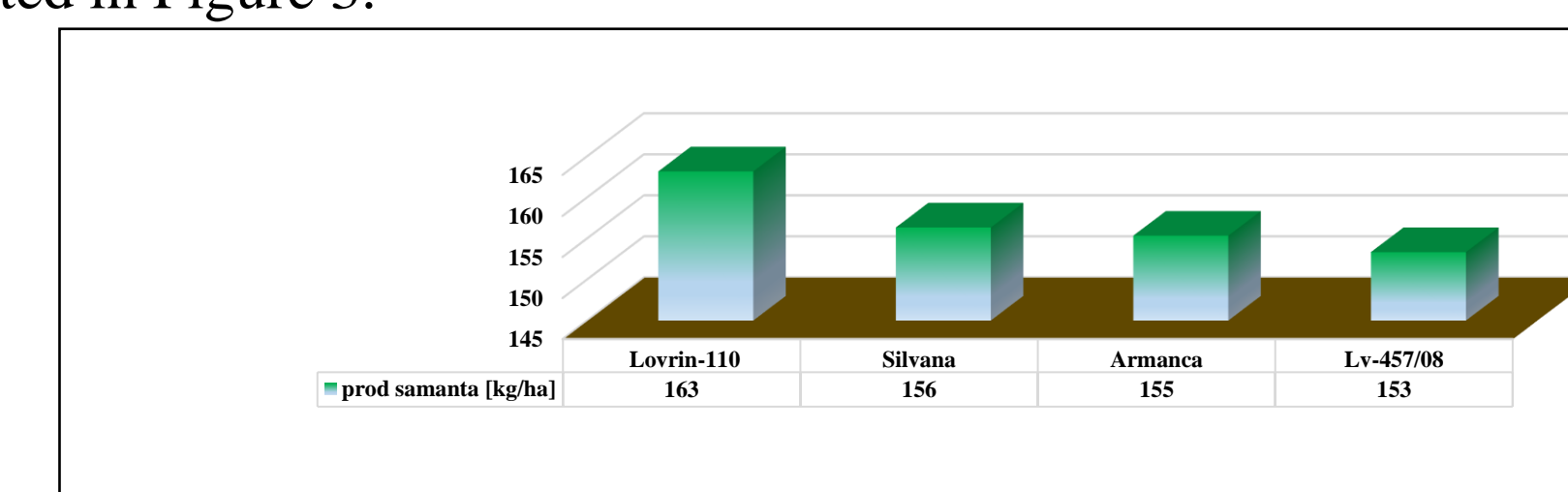


Figure 3. Average yields (kg / ha) of seed, obtained at the 4 genotypes in 2019

The average of seed productions from 2019 have suffered significant decreases compared to the production from 2018 and 2017, because the year 2019 is very dry in the spring and autumn months. Regarding the rainfall regime, the spring recorded a number of 48 days without precipitation, with direct consequences on the uniformity at sunrise of the culture, its growth and subsequent development.

Conclusions

The results regarding the seed production for the four genotypes of dioic hemp, obtained at ARDS Lovrin in the period 2017-2019, allow us to draw some conclusions:

The seed productions obtained in 2019 are lower than in the productions made in the first two years: 163 kg / ha Lovrin-110, 156 kg / ha Silvana, 155 kg / ha Armanca and 153 kg / ha Lv-457/08.

In 2017, the highest seed production was obtained at the Lv-457/08 line, and in the next two years 2018-2019 the variety with the highest seed production was Lovrin-110. In the experimental cycle 2017-2019, the variety that recorded the lowest seed production is the Silvana variety.

From a climatic point of view, the experimental years were very different from each other.

Unfavorable environmental conditions of the crop year block the expression of the production potential of the varieties, leveling the yields.

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