ABSTRACT

*Kye words:*monoecious hemp, nipping, stalks production, seed production, climatic conditions

Cannabis sativa includes two subspecies: subsp. Serebr. *spontaneously*. (indian hemp) and subsp. Serebr. cult. (grown hemp).

Cannabis sativa (L.) cultivated Serebr. it covers an area stretched, characterized by very different ecological conditions and fluctuate in concerning morphology, physiological characteristics, and biochemical and technological. In the subspecies are four groups of varieties (ecological groups):): Prol. *Asian* Serebr. (narcotic hemp), prol. Serebr. *borealis* (north hemp), prol. Serebr. *australis* (southern hemp) and prol. serebr. *mediorutenica* (mediorutenica hemp) (Ceapoiu, 1958).

Although, today, cannabis is best known for its use such as marijuana and hashish (Di Marzo & De Petrocellis, 2006), hemp is a species that catch higher importance in Europe (Ranalli, 2004), it is used to extract the fibers, oil and as a medicinal plant (Şandru et al., 1996).

Hemp fibers are the most resistant vegetable fiber and as such, in the past, accounted for most treasured raw material to the textile industry worldwide (Forgo, 1957).

Technological characteristics of the fibers as resistance (tensile, torsional friction, rotting), expandability (elastic and plastic), spinning ability and great length (Şandru, 1996) determines its use in various fields such as the manufacture of fine paper, basketry and fabrics, fine fabrics, plastic molded products (Small and Marcus, 2002), cement reinforced with fiber(Zhijian et al., 2004) thermal insulation etc.

Hemp seeds are rich in oil and protein (Ceapoiu, 1958). The content from seed oil can be up to 36% and the protein up to 28% (Şandru et al., 1996).

Hemp oil is used in the manufacture of fine soaps, paints, varnish and lacquer, in food, cosmetics, industry etc. Nutritional benefits of oil hemp is due to fatty acids contained: omega-6, omega-3 (in the ideal ratio of 3: 1), alpha linolenic acid, and lesser amounts of gamma-linolenic acid and stearidonic (Lesson and Pless, 1999) .

PhD thesis entitled „Research on improving the cultivation technology at monoecious hemp for fiber for the efficiency of culture" it contains 9 chapters embedded in 184 pages, 95 tables and 36 figures. It has two distinct parts, the first part summarizes data on the "State of knowledge nationally and internationally hemp culture" and contains three chapters.

In these chapters are displayed information from the literature regarding the subject thesis, which were then used in the second part of the thesis for comparing and interpreting the results.

In Part II - entitled "The presentation and interpretation of experimental results. Conclusions and recommendations "are exposed six chapters.

Here are presented the natural enviroment in witch where made the research, material and method of research and the own research results

The location of experiments were carried out to Agricultural Research – Development Station Secuieni, located in the S-E Neamt County, between the geographical coordinates 26 ° 5 'east longitude 46 ° 5' north latitude.

Point of view in agrosistema terms territory belongs Moldavian Central Plateau.

The average annual temperature for the period 1962 - 2016 is 8.8 ° C, and the interval average from 2011 to 2016 is 9.9 ° C, 1.1 ° C exceeding the annual average, which shows that the area is consistent with global warming.

The average amount of precipitation for the period 1962 - 2016 is 541.7 mm, total nonuniformly distributed throughout the growing season of plants. Average interval 2011 - 2016 is 479.0 mm, which shows that in the area more frequently installs drought.

The main aim of the thesis is to improve monoecious hemp cultivation technology in order to improve crop.

In research we conducted the following objectives: establishing the optimal nutrition space on the production of strains and fiber at some varieties of monoecious hemp by applying "Secuieni method"; establishing the optimal nutrition space on the production of seed at some varieties of monoecious hemp by applying " Secuieni method "; reduction of height and diameter stems at specific varieties of seed in order to harvest grain combines directly from the field; comparative study between culture sown in the classic sistem and "Secuieni method" and expanding the zonal agriculture and not only the results of research.

To elucidate the issues proposed during 2011-2015 in the experimental field of S.C.D.A. Secuieni, on a soil type cambic typical faeoziom, with a water pH 7.05, 2.12% humus content, medium stocked with nitrogen (12.0 ppm), well supplied with phosphorus (162.4 ppm) and mobile potassium (638.6 ppm), They were placed polifactorial experience of the type A x B x C and an single factor experience.

The purpose of the first experiences, the type 3 x 2 x 3, was to establish the productive capacity at some varieties of monoecious hemp for fiber, applying "Secuieni method" at different distances between rows (Leonte *et al*., 2015).

A factor was represented by the variety as: a1 - Denise, a2 - Diana and a3 - Dacia, B factor by the distances between rows: b1 - and b2 25 cm - 50 cm, and C factor by pruning applied: c_1 - uncut; c_2 – cut only once, at 5-6 floors with opposite leaves (30-35 cm from ground level); c_3 – cut twice, over the first nipping at 15-20 cm. The second experiment was aimed to establish the adaptability to climatic conditions of the area at three monoecious hemp varieties created at A.R.D.S.

Secuieni, planted in the classical system, according to the production of stalks and fiber obtained. The varieties concerned in this experience were Denise Diana and Dacia.

The results obtained, averaged over the four years of experimentation, stressed that plant height and diameter of strains, regardless of variety and sowing distance, there is a direct correlation, the correlation coefficients were statistically calculated and interpreted as been very significant.

The average production of strains obtained has been fluctuating and varied depending on variety from 10250 kg/ha (Denise) to 11267 kg / ha (Dacia).

The variety of Dacia (11267 kg/ha) achieved an production spore significantly compared with the average experience and distinct significantly compared with the Denise variety.

The same was observed for average production of fibers which ranged from 2383 kg / ha (Denise) and 2898 kg / ha (Dacia).

Compared with the average production / experience, variety Dacia achieved a production spore (299 kg /ha) significantly distinct, and compared to ontained production of Denise variety, it achieved a production spore (515 kg/ ha) very significant.

Row spacing had a smaller influence on the strains production and fibers. Differences accomplished compared to witnesses - experience mediate (22 kg /ha) or sowing to 25 cm between rows (45 kg /ha) were not statistically interpreted.
A strong influence on the stalks production and fibers had made a applied cutting.
Thus, the average production of the strains obtained ranged from 9509 kg/ha (cut twice) to 11955 kg /ha (uncut).

In statistical terms, compared to the first witness (experience media) variants which applied the "Secuieni method" had realized differences of production (-1127 kg /ha) very significant negative, while variant uncut achieved a increase production very significantly (1320 kg/ha). Also, compared to the witness 2 (neretezat) the variants that were applied cuttings had realized were production differences (-1513 kg/ha and 2446 kg/ha) very significant negative.

The same was observed in terms of the average production of fibers,at the variant which was not aplied any cut It had achieved a very significant production increase compared with the average experience.

Compared with the witness two (uncut) at the nipping variants was achieved differences of production (-445 kg/ha and -720 kg/ha) very significantly negative.

The interaction factors studied has influenced to a large extent the production of stems and fiber achieved. Production of strains varied in very high limits from 8883 kg/ha (Diana x 25 cm x two cuts) to 12560 kg/ha (Dacia x 50 cm x uncut). Compared to the first witness (experience media), five variants have statistically achieved increases of production , two of which (1826 kg/ha 1968

kg/ha) they were very significant (Diana x uncut at the distances between rows 25 cm respectively 50 cm), two (1181 kg/ha şi 1271 kg/ha) significant distinct (Denise x 25 cm x uncut and Diana x 50 cm x uncut) and one (834 kg/ha) as significant (Diana x 25 cm x uncut).

As compared to control 2 (Denise x 25 cm x neretezat), but the variants sown at 25 cm between rows, which were applied the two cuts had realized differences of production (-1986 kg/ha, -2726 kg/ha and -1636 kg/ha) statistically interpreted as negative very significant, at all three monoecious hemp varieties studied Denise Diana and Dacia. The production of fibers were between 2096 kg/ha (Diana x 50 cm x two cuts) and 3378 kg/ha (Dacia x 25 cm x uncut). Compared to the control one (experience media) four variants had achieved production increases statistically, two of which (791 kg/ha and 671 kg/ha) were highly significant (Dacia x 25 cm x uncut and Dacia x 50 cm x uncut), one (376 kg/ha) significantly distinct (Diana x 50 cm x uncut) and one (281 kg/ha) significantly. Compared with the control 2 (Denise x 25 cm x uncut) only two variants have achieved production increases statistically, one of which (617 kg/ha) was very significant (Dacia x 25 cm x uncut) and other (497 kg/ha) significantly distinct (Dacia x 50 cm x uncut).

On average, the four years of experimentation, studied factors had influenced on a very large extent the seed productions which varied very widely, ranging from 771 kg/ha (Denise x 50 cm x uncut) and 1035 kg/ha (Dacia x 50 cm x two cuts). Compared with control one (experience media), three variants had achieved production increases statistically and interpreted as significant interactions between Denise x 25 cm x two cuts and Dacia x 25 cm x one cut, and one variant conducted a production increase significantly distinct at interaction between Dacia x 25 cm x two cuts.

In comparing with the production registered at variety two (Denise x 25 cm x uncut) were obtained higher production at the interactions Denise x 25 cm x Secuieni method (178 kg/ha and 203 kg/ha), and the interaction of the Dacia x Secuieni method at the distance of 25 cm and 50 cm between rows, which are statistically interpreted as very significant.

Net profit / ha calculated for the strains production in the system which had been applied " Secuieni method " varied very widely, from 30 729 lei (Diana x 25 cm x two cuts) to 44 414 lei (Dacia x 50 cm x uncut). In the classical system, had ranged between 37362 lei (Diana) and 44037 lei (Dacia).

The higher cost of production for one kg of seed was 3,650 lei / kg and was conducted by interaction between Denise variant feature x 50 cm x neretezat, and the cheapest variant in monoecious hemp culture was Dacia x 50 cm x two cuts, with a production cost of 2,815 lei/kg.