

## RESEARCH ON SOME PARAMETERS OF SEED PRODUCTION OF CUCUMBER VARIETY 'CALIBRI'

### CERCETĂRI PRIVIND UNII PARAMETRI AI PRODUCȚIEI DE SEMINȚE LA SOIULUI DE CASTRAVEȚI 'CALIBRI'

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**Abstract.** *Calibri cucumber variety with semi-long fruit intended for fresh consumption and for canning has been approved in 2015. During the period 2013 - 2014, determinations were performed on coefficients of variation for the main characters of the variety Calibri. Thus, the character of the fruit shape index registered a low variability in both technological maturity (5.4% - 7.0%) and physiological maturity (6.2% - 9.0%), which represents a great uniformity of variety on the shape of the fruit. Concerning the characteristics of quality, variety Calibri achieved an overall good organoleptic assessment (82.1%) compared to Rodnicioc F1 (69.2%), showing a pleasant commercial aspect, fine texture and good flavor - without bitterness. From the synthesis of data on the behavior of Calibri variety results that the main characters studied fall within the limits of variation of the analyzed variety, which shows a good conservative routing selection.*

**Key words:** cucumber, quantitative characters, qualitative characters, correlations, Calibri variety, Rodnicioc F1 variety.

**Rezumat.** *Soiul de castraveți Calibri cu fructe semilungi, destinate pentru consum în stare proaspătă și pentru conserve, a fost omologat în anul 2015. În perioada anilor 2013 – 2014, s-au efectuat determinări cu privire la coeficienții de variabilitate la principalele caractere ale soiului Calibri. Astfel, la caracterul indicelui de formă a fructului s-a înregistrat o variabilitate mică, atât la maturitatea tehnologică (5,4% - 7,0%), cât și la maturitatea fiziologică (6,2%-9,0% ), ceea ce reprezintă o mare uniformitate a soiului cu privire la forma fructului. În privința caracteristicilor de calitate, soiul Calibri realizează o notă generală de apreciere organoleptică bună (82,1%) față de Rodnicioc F1 (69,2% ), prezentând aspect comercial plăcut, textură fină și gust bun – fără amăreală. Din sinteza datelor cu privire la comportarea soiului Calibri rezultă că principalele caractere luate în studiu se încadrează în limitele de variație ale soiului analizat, ceea ce denotă și o bună dirijare a selecției conservative.*

**Cuvinte cheie:** castraveți, caractere cantitative, caractere calitative, relații, soiul Calibri, soiul Rodnicioc F1.

## INTRODUCTION

Economic and social impact of the product to the olericulture is the introduction and use new modern methods and techniques that have the effect of getting new genotypes with benefits resulting from the implementation in production activity and is well received by users. Characteristics of the economic impact are very well known,

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they are specific to new products the modern in general, and its impact on society and on the processes of research and production are sufficiently publicized, so the debate of the positive effects and benefits attracted by introducing synthetic varieties and of new commercial hybrids F1 in vegetable production. I consider that is absolutely necessary the production of new varieties and hybrids, at the base of which are re-found the autochthonous genetic resources, and which will produce the revision of research activity and olerioculture production.

Lately, two qualities have acquired a great importance: resistance and tolerance. In this paper, Resistance: is used to describe varieties with genes that prevent or reduce the rate of multiplication of pests and diseases, and tolerance: is used to describe varieties of which fruit production on a land infected by diseases and pests is completely reduced from their attack.

In European countries, the cucumber improvement is divided into two stages: first, to entrust the research institute or some highly specialized groups who seek to gain parental material. This is taught to licensed companies or resorts of practical improvement to be implemented in the improvement, applicative multiplication.

In recent years, the first stage has grown significantly, both in volume of performed biological material, and through theoretical problems scientifically based. Parent material has a great advantage that shows resistance to diseases, pests and aphids are relatively known heredity, giving a high proportion of offspring with valuable qualities. This priority given to creating scientifically parental lines is reflected in the major percentage that represents them in the origin of cultivated varieties of cucumber.

## MATERIAL AND METHOD

The investigations were conducted on a culture material from last year, in experiments conducted at the Scientific and Practical Institute of Horticulture and Food Technologies from Republic of Moldova.

In setting up the culture at the first stage in experimental plots was used the hybrid Rodnicioc F1 and the used biological material was the variety of cucumber 'Calibri' created at the Practical- Scientific Institute of Horticulture and Food Technology and approved in 2015, in solarium cucumbers were grown by seedling, preventive sown and grown in plastic trays that were sown on date 05/10/2015 aged 35 days, the planting on experimental plots was held on 14/06/2015.

During were made the vegetation the observations on completing the main phenological phases (sow - east, east - flourished, east - technological maturity, sunrise - physiological maturity).

At the technological and physiological maturity were performed biometric measurements on the following characters: the index of the fruit form, seed production, seed number, seed number in fruit and number of harvested fruits per plant.

For each character were calculated the following statistical indices: arithmetic mean ( $\bar{x}$ ), the variation amplitude ( $a$ ), variation ( $s^2$ ), standard deviation ( $s$ ), dispersion ( $k = x + -s$ ) (Dumitrescu, 1977; Pena, 1986; Săulescu and Bălașa, 1968).

Also, it was monitored the correlation degree of these characters. In assessing the quality of the fruit, the data taken in experimental plots were correlated with the results of lab chemical analysis.

## RESULTS AND DISCUSSIONS

Variability of the studied main characters of the Calibri variety during 2014-2015 is presented in table 1.

**The shape index of the fruit (cm).** In the reviewed period, this character has varied between 3.4 – 4.3 cm, with an average of 3.8 cm. The variability coefficient for the two years has an average of 7.5% (tab. 1). Coefficient value of variability was low and in the case of determinations made at technological maturity (5.4 to 7.0%), which demonstrates the fruit uniformity of this variety.

**Production of seeds (g).** The Rodnicioc F1 hybrid and the Calibri cucumber variety had a high variability coefficient of between 29.0 to 37.1% during the years 2014 to 2015. The average production of seeds was 9.5 g seed / plant (in terms of limiting the number of fruits per plant).

Table 1

**Variability of characters variety of cucumbers  
'Calibri' during 2013-2014**

| Characters                               | Variation Limits | Average (x) | Deviation Standard (s) | The coefficient of variation (s%) |
|--|------------------|-------------|------------------------|-----------------------------------|
| Index form                               |                  |             |                        |                                   |
| 2013                                     | 3.4 – 4.3        | 3.8         | 0.5                    | 9.0                               |
| 2014                                     | 3.4 – 4.1        | 3.7         | 0.4                    | 7.4                               |
| Production of seed ( g / ul)             |                  |             |                        |                                   |
| 2013                                     | 11.3 - 20.6      | 16.0        | 4.6                    | 29.0                              |
| 2014                                     | 4.0 – 3.8        | 3.9         | 0.1                    | 37.1                              |
| The number of seeds in the fruits        |                  |             |                        |                                   |
| 2013                                     | 180.3 – 250.3    | 217.3       | 35.0                   | 25.1                              |
| 2014                                     | 129.2 – 202.0    | 165.6       | 36.4                   | 21.9                              |
| The number of harvested fruits per plant |                  |             |                        |                                   |
| 2013                                     | 2.3 – 4.1        | 3.2         | 0.9                    | 29.3                              |
| 2014                                     | 1.3 – 2.1        | 1.7         | 0.4                    | 24.2                              |

**3. The number of seeds in the fruit.** At this character have been registered values between 180.3 to 250.3 seeds, with an average of 215.3 seeds / fruit. The coefficient of variation had an average of 25.1%, indicating a high variability (tab.2.) Between the number of seeds per plant and seed production there is a strong direct correlation (fig.1).

**4. The number of harvested fruits per plant.** Under conditions of limiting the number of fruit at physiological maturity was collected between 1 and 4 fruits per plant, fruit with an average of 2.4. The coefficient of variation had high values every year (24.2 - 29.3%).

Calibri variety reach the technological maturity after 51-66 days after emergence (tab.3, fig.2) recording a peak of production at 73 days after emergence (18% of total) (tab.4). Until physiological maturity of this variety are needed in average 117 days.

The analysis indicates that between the number of fruits per plant and fruit production is no direct correlation.

Table 2

Summary of results obtained in the period 2013-2014

| Character analyzed          | Average (x) | The coefficient of variation (s%) | Standard deviation (s) |
|-----------------------------|-------------|-----------------------------------|------------------------|
| Index form                  | 3.88        | 7.56                              | 0.29                   |
| Prod. of seed (g/ pl)       | 9.53        | 31.61                             | 3.20                   |
| Nr. Fruit seeds             | 70.86       | 28.16                             | 20.20                  |
| Nr. harvested fruit / plant | 2.40        | 27.06                             | 0.65                   |

The amount of seeds per fruit (g) Seed / fruit - 20.6

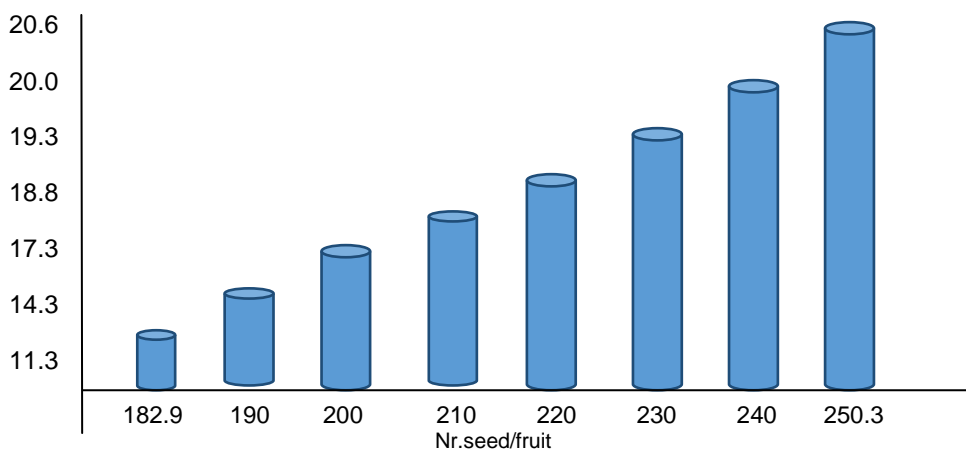


Fig. 1 The relationship between the number of seeds / fruit and seed production on the plant for the Calibri cucumber variety

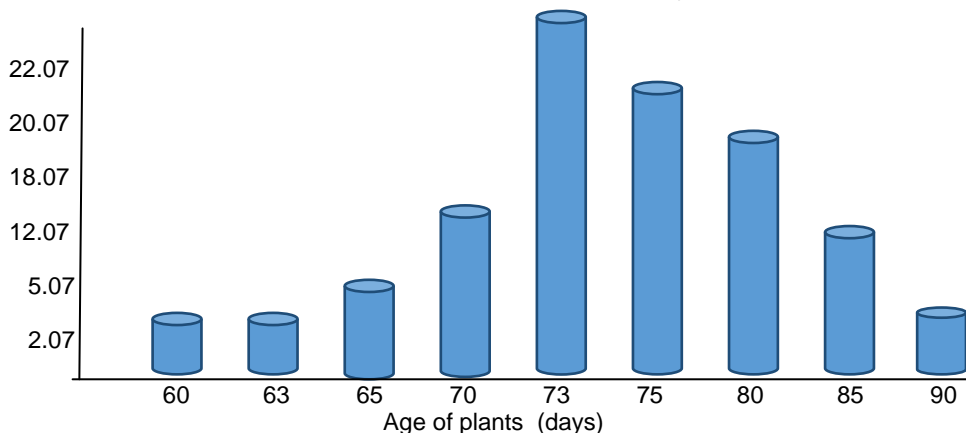
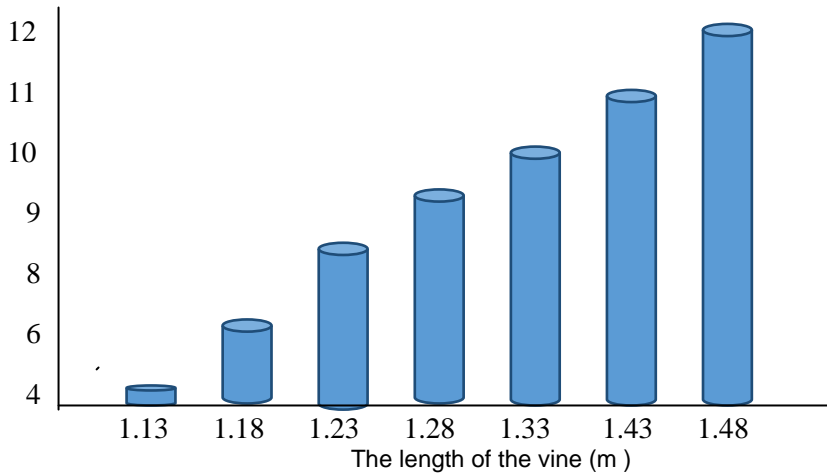


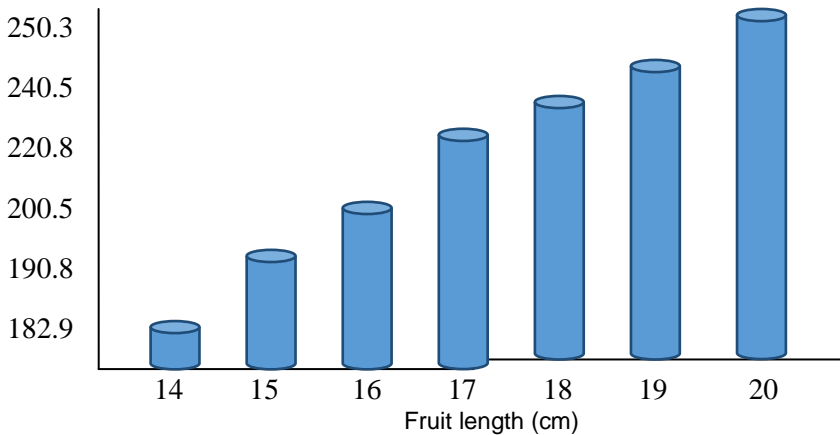
Fig. 2 Harvest dynamics for the Calibri cucumber variety

The number of fruit / plant



**Fig.3** Correlation between the length of vine and the number of harvested fruit per plant

The number of fruit



**Fig. 4** The correlation between fruit length and number of seeds in the fruit

Regarding the relationship between vine length and number of harvested fruits at technological maturity, was proved the existence of a moderate correlation.

Also, it has been established that there is a significant and moderate correlation between the length of fruit at physiological maturity, and number of seeds in fruit. Analyzing the relationship between fruit diameter at the physiological maturity and the number of seeds in the fruit, it has resulted in a weak correlation, statistically uninsured.

Table 3

## Phenophase's duration of Calibri variety

| Phenophase           | Number of days<br>2013 | Number of days<br>2014 | Average<br>(2013 – 2014) |
|----------------------|------------------------|------------------------|--------------------------|
| Seeding – sunrise    | 7                      | 6                      | 6                        |
| Sunrise – flowering  | 48                     | 40                     | 44                       |
| Sunrise tech. mat.   | 60                     | 57                     | 58                       |
| Sunrise physic. mat. | 124                    | 111                    | 117                      |

Table 4

## Harvesting dynamic for the Calibri variety

| Date of harvest | Ageplant<br>(days) | No. Plants | Production / kg | %<br>of total |
|-----------------|--------------------|------------|-----------------|---------------|
| 02.07           | 60                 | 415        | 31.5            | 5.1           |
| 05.07           | 63                 | 415        | 33.8            | 5.5           |
| 09.07           | 67                 | 415        | 41.8            | 6.8           |
| 12.07           | 70                 | 415        | 72.2            | 11.8          |
| 15.07           | 73                 | 415        | 110.3           | 18.0          |
| 18.07           | 77                 | 415        | 93.1            | 15.2          |
| 22.07           | 80                 | 415        | 80.9            | 13.2          |
| 26.07           | 83                 | 415        | 63.0            | 10.3          |
| 02.08           | 87                 | 415        | 48.1            | 7.8           |
| 06.08           | 90                 | 415        | 39.0            | 6.3           |

## CONCLUSIONS

The uniformity of fruits of this variety is proven by the shape index, which has a low variability for both fruits that reached technological maturity (5.4 to 7.0%) and physiological maturity (6.2 to 9.0%).

It has been shown that there is a significant correlation between the number of fruit and fruit production per plant, as well as between the number of seeds and seed production per plant.

There have been established high levels of coefficients of variability in seed production per plant (29.0 to 37.1%) and the number of seeds in the fruit (21.9 - 25.1%).

The data presented show that in the period 2013 - 2014, by directing the selection process, the variety Calibri has maintained within the limits of normal of variability.

## REFERENCES

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