



University of Agronomic Sciences and Veterinary Medicine of Bucharest
Faculty of Horticulture

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COMPARATIVE STUDY OF SOME IMPROVED HOT PEPPER
GENOTYPES AT V.R.D.S .BUZAU, CULTIVATED IN ECOLOGICAL
SYSTEM

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Introduction

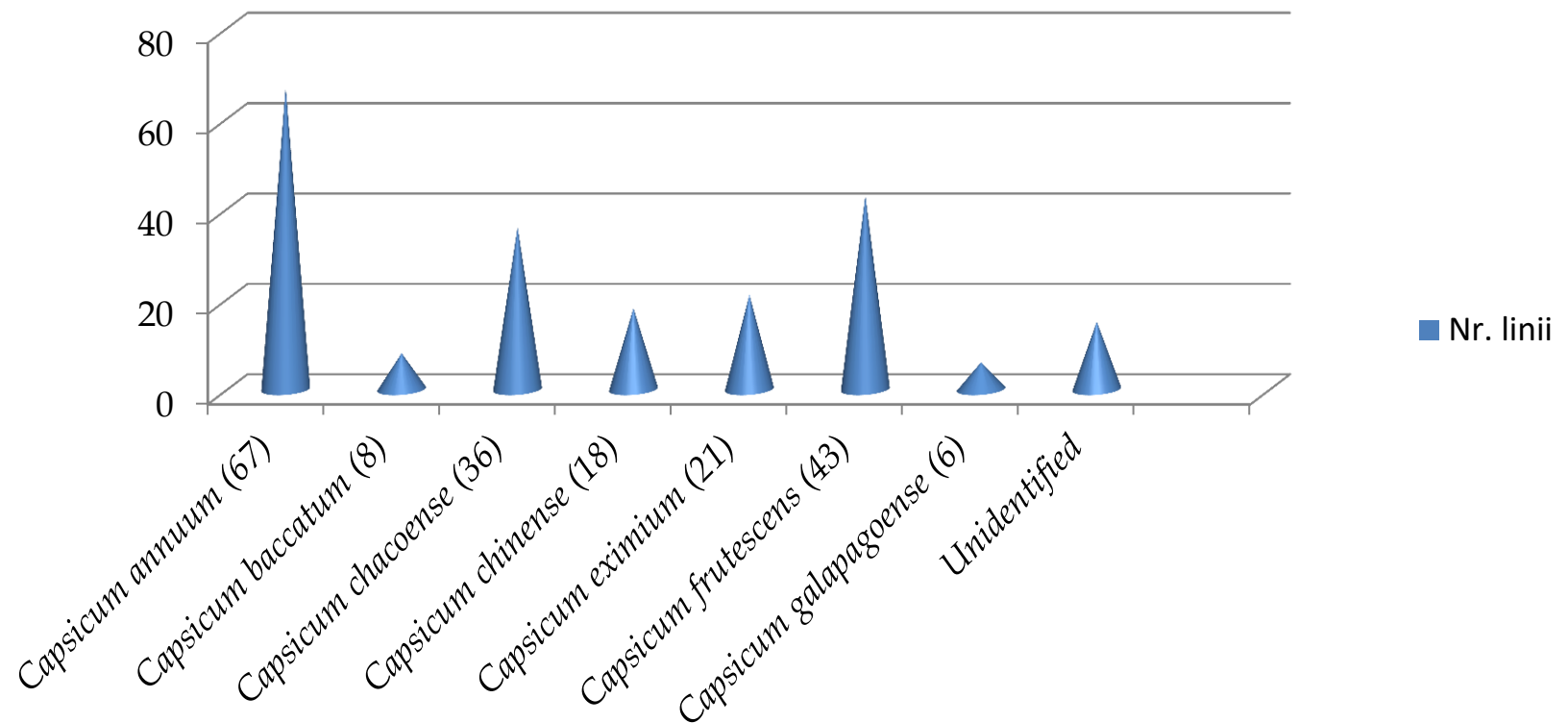
- Hot pepper (*Capsicum sp.*) belongs to the Solanaceae family. The number of global species within the *Capsicum* genus has long been subject to debate, with various authors ascribing 25 species to the genus, 33 by Morrison in 1680, 27 by Tournefort in 1700, 2 by Linnaeus in 1753, and 5 by Smith and Heiser (Basu and De, 2003).
- There are presently considered to be five domesticated species of *Capsicum* from approximately 25 recognised species in the genus, the primary distinguishing characteristics being flower and seed colour, shape of the calyx, number of flowers per node and their orientation; these five species are *C. annuum*, *C. frutescens*, *C. chinense*, *C. baccatum* and *C. pubescens* (Hawkes et al., 1979; Basu and De, 2003; Aguilar-Melendez et al., 2009).
- The species *C. annuum* is native to the Americas (Acevedo-Rodriguez and Strong, 2012) but its exact origin is uncertain. It has been speculated to originate from a district of Central America (Basu and De, 2003), or to have been domesticated in Mexico (Aguilar-Melendez et al., 2009).

Introduction

- As one of the first domesticated plants of Mesoamerica, *Capsicum* has been known since the beginning of civilization in the Western hemisphere and has been part of the human diet since 7500 BC. It was either Christopher Columbus or his accompanying physician Chanca who first reported the use of *Capsicum* in the Americas around 1493-1494 and certainly Columbus who introduced it to Europe; by the mid-17th century *Capsicum* was being cultivated throughout southern and middle Europe as a spice and medicinal drug, with introductions of one species to Japan and five to India (for mass cultivation in the colonies, from the Portuguese) around this time (Basu and De, 2003).
- The *Capsicum sp.* represent one of the most economically important vegetable crops in the world due to their innovative and versatile uses, both in the food and pharmaceutical industry (González-Pérez et al., 2014) as well as ornamental plants (Rêgo et al., 2009).

Materials and Methods

The Laboratory of Genetics, Breeding and Biodiversity from VRDS Buzau has a valuable germplasm collection of *Capsicum annum* sp. having over 200 genotypes.



Materials and Methods

- In the present study were chosen 11 stable genotypes with distinct phenotypic expressiveness(A6, A8, A9A, A10A, A10B, A14A, A16, A17, A37A, A40A, A41).
- Phenological, biometric and laboratory measurements were carried out during the vegetation period.
- The variability of the qualitative and quantitative characters and the correlation between them was made, which is very important for the process and the conservative selection.
- The research experiences were carried out in the research field of VRDS Buzau, on an alluvial soil, but also on a small area from Pleșești Buzau.

Materials and Methods

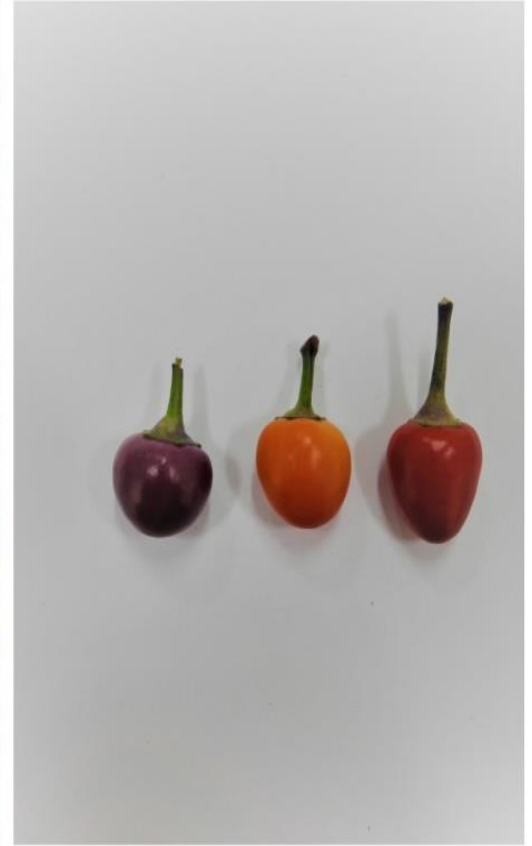


Crop detail

Materials and Methods



Materials and Methods



Crop detail- seedling, plant and fruit A6

Materials and Methods



Crop detail- seedling, plant and fruit A8

Materials and Methods



Crop detail- seedling, plant and fruit A8A

Materials and Methods



Crop detail: seedling, plant and fruit A10A

Materials and Methods



Crop detail: seedling, plant and fruit A10B

Materials and Methods



Crop detail: seedling, plant and fruit A14A

Materials and Methods



Crop detail- seedling, plant and fruit A16

Materials and Methods



Crop detail- seedling, plant and fruit A17

Materials and Methods



Crop detail- seedling, plant and fruit A37A

Materials and Methods



Crop detail- seedling, plant and fruit A40A

Materials and Methods

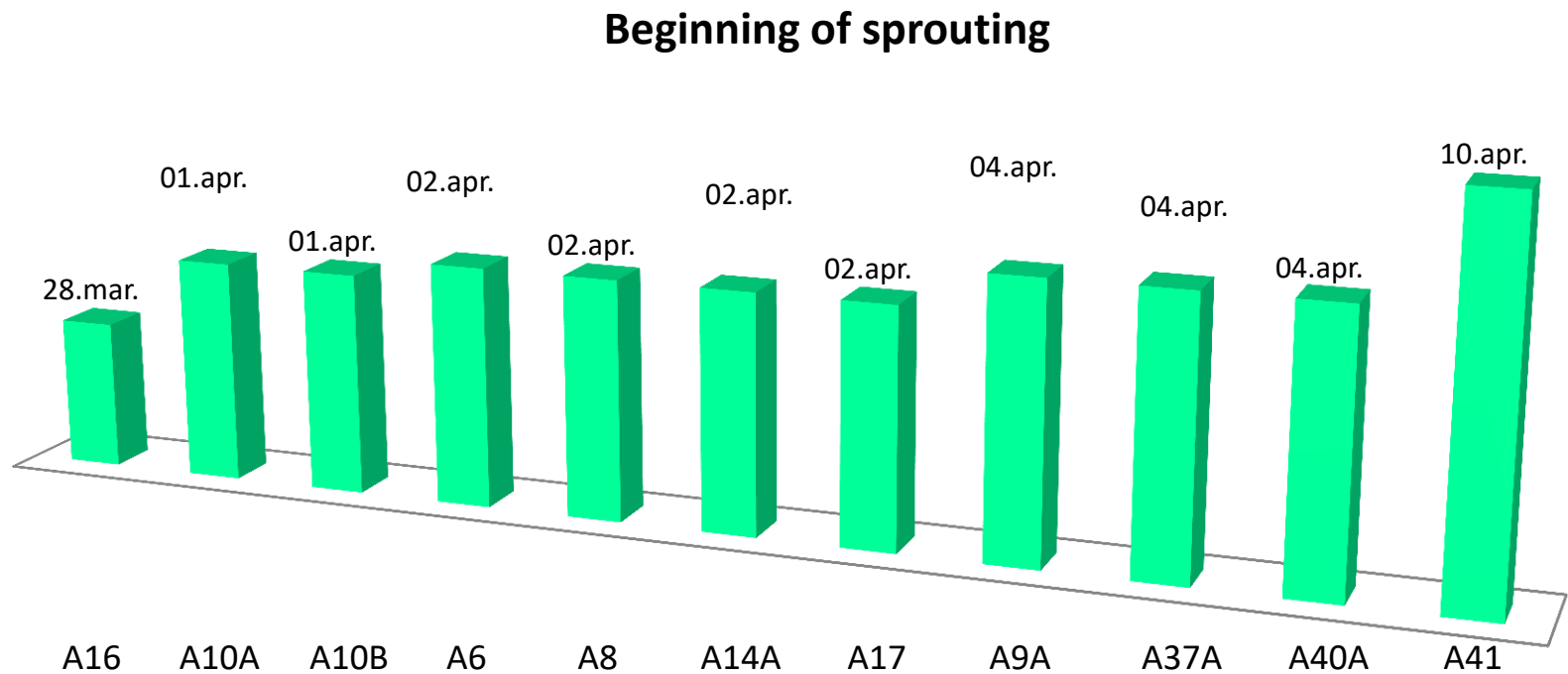


Crop detail- seedling, plant and fruit A41

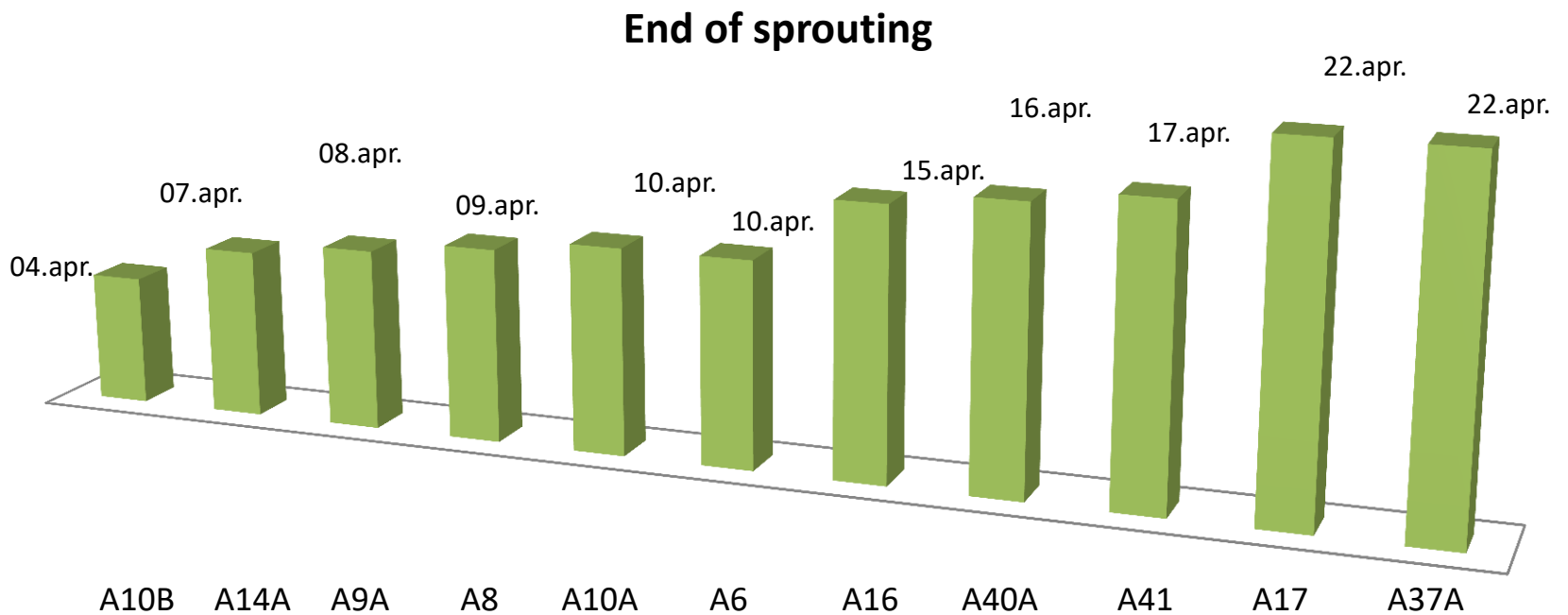
Results and discussions

- Throughout the vegetation period, all the eleven cultivars studied were the subject to phenological, biometric and laboratory measurements.
- The observation were made for 23 qualitative descriptors and 19 quantitative descriptors according to UPOV Guidelines.
- A wide variability was note in most of the characters included as descriptors in this research.

Results and discussions



Results and discussions



Results and discussions



Types of hot pepper flowers

Results and discussions

Descriptors	A6	A8	A9A	A10A	A10B	A14A	A16	A17	A37A	A40A	A41
Plant height (cm)	35,6	72	64,7	132	71	42,7	52,4	61,8	48	49	53,3
Plant diameter(cm)	42,5	55	48	75,5	66	32,8	32,6	3,04	26	28,8	43,3
Length of stem(cm)	12,6	22	19	40,4	11	15,2	21	39,6	29,5	21,75	18,65
Stem diameter(cm)	0,63	0,9	1,1	1,02	1,2	0,94	1,27	1,03	0,7	0,9	07,5
The number of main shoots(pcs)	2	2	2	2	2	3	3	3	2	2	2
Length of main shoots(cm)	33,5	42,3	37,2	91,6	45,3	38,1	30,6	24	22,6	27,8	30,4
The number of secondary shoots (pcs)	33	29	52	54	52	15	23	15	20	57	77
Length of leaf (cm)	5,73	7,85	5,6	9,2	10,3	8,5	9,73	10,8	8,36	7 ,5	5,5
Width of leaf(cm)	2,71	3,46	4,9	3,9	5,9	4,33	4,6	5,8	3,6	3,66	2,96
Length of petiole(cm)	1,96	2,7	10,7	3,8	5	4,14	4	5,36	3,1	4,27	3,35

Quantitative traits of plant

Results and discussions

Descriptors	A6	A8	A9A	A10A	A10B	A14A	A16	A17	A37A	A40A	A411
Number of fruit/plant(pcs)	60	130	18	15	21	16	10	7	10	100	135
Length of fruit(cm)	1,66	2,5	4,5	2,95	3,35	2,83	15,27	17,8	5,33	2,96	1,99
Width of fruit (cm)	1,77	0,93	2,29	3,85	5,2	29,1	3,34	3,05	2,25	0,86	0,77
The fruit- diameter of the base(cm)	1,73	0,73	2,7	2,03	5,2	29,1	29,3	3,05	2,25	0,77	0,56
The fruit- diamter of the middle(cm)	1,77	0,93	2,29	3,85	3,92	31,02	30,34	2,45	2,2	0,86	0,77
The fruit- diamter of the bottom end	1,68	0,41	1,83	0,12	3,22	27,02	0,4	0,25	0,91	0,28	0,50
Weight of fruit(cm)	2,8	1,34	13,52	8,51	21,35	12,48	52	55	11,63	1,37	0,62
Weight of fruit pulp	1,1	0,67	9,34	6,51	18,1	8,67	37,64	38,6	9,14	0,82	0,46
Pericarp tickness	0,15	0,16	0,27	0,15	0,29	0,29	0,65	0,39	0,38	0,17	0,07

Quantitative traits of fruit

Results and discussions



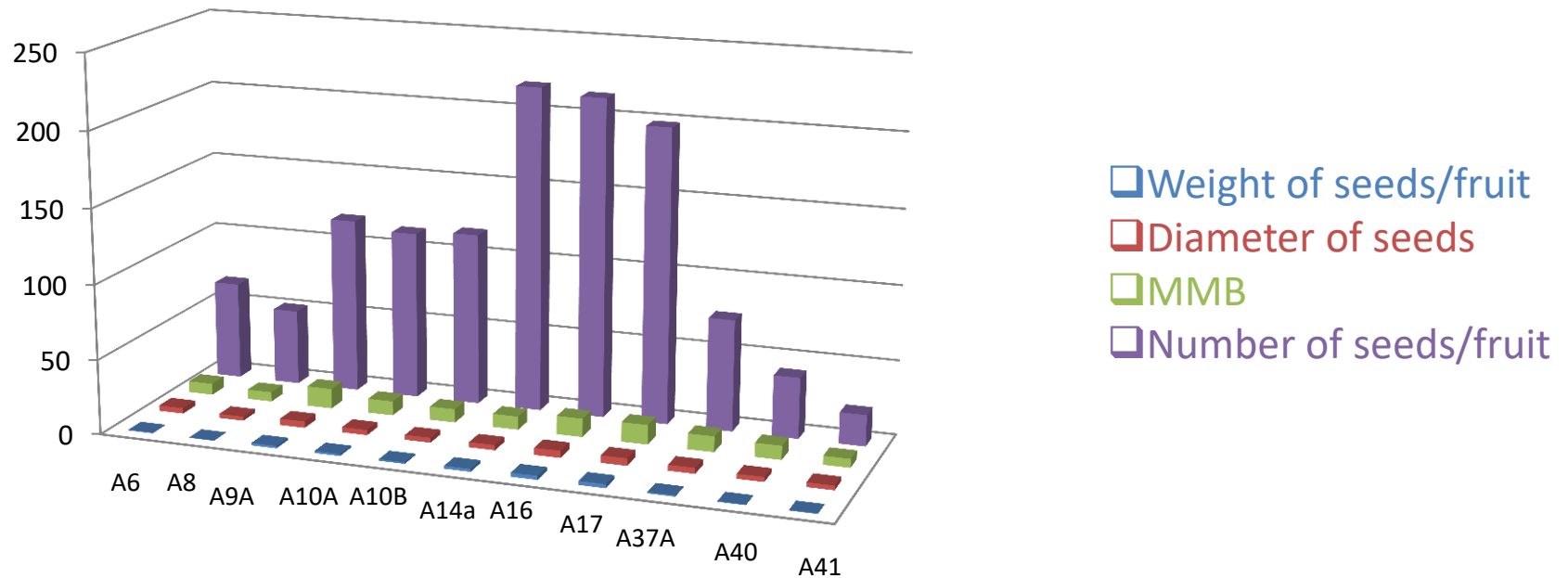
A16 - Shape of fruit in longitudinal section

Results and discussions

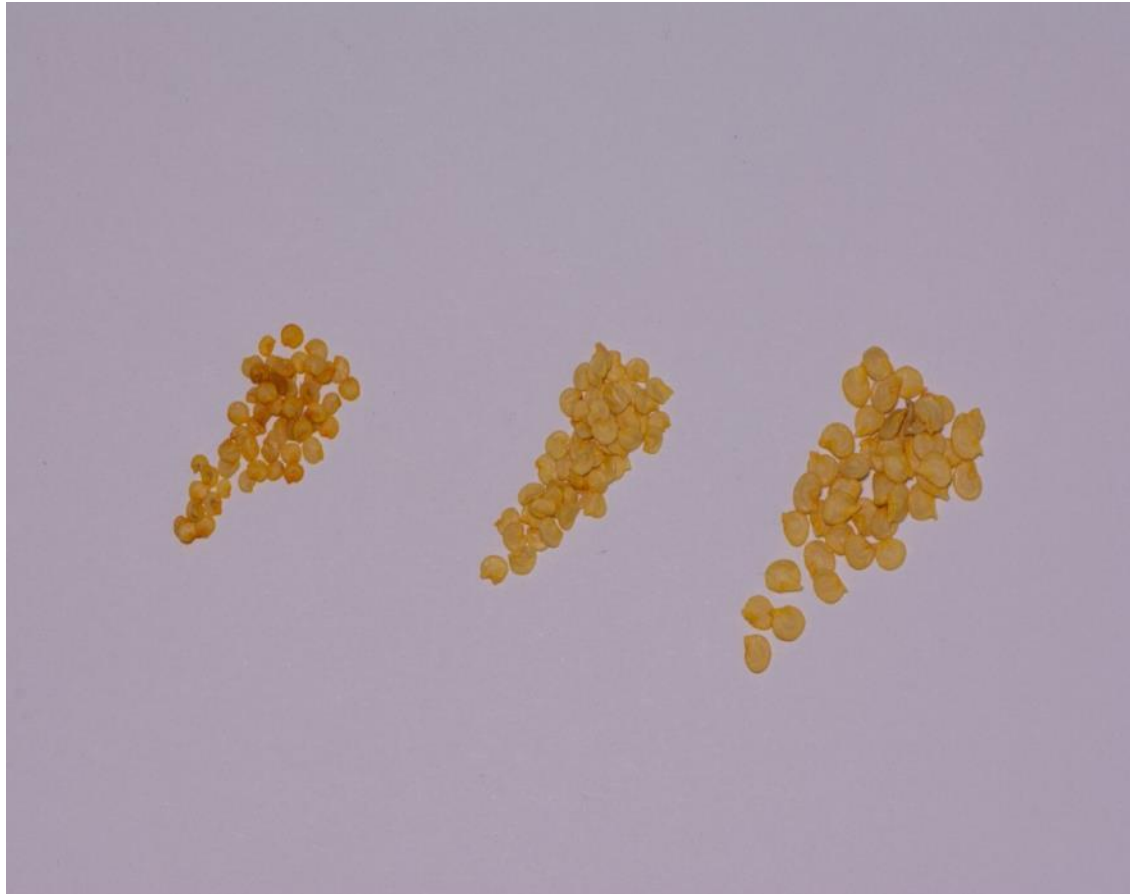


A17-Shape of fruit in longitudinal section

Results and discussions

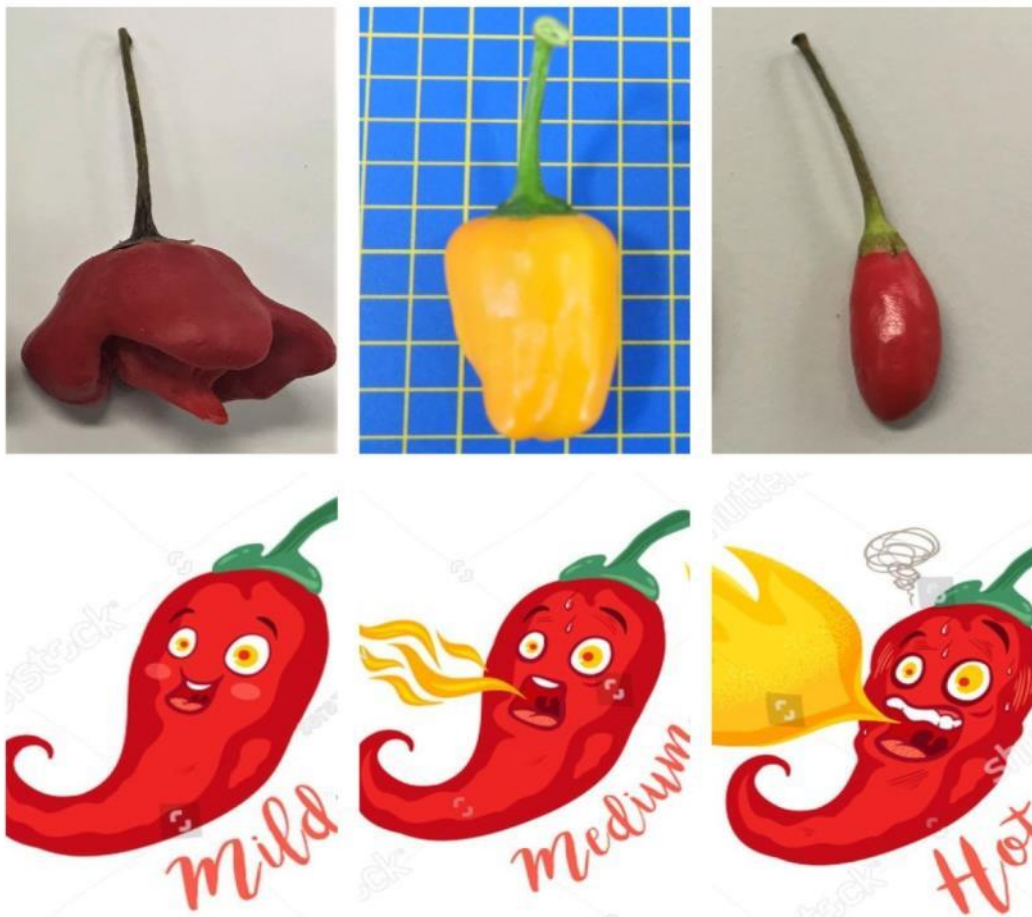


Results and discussions



Seeds of different sizes

Results and discussions



Conclusions and recommendations

- Following the agro-morphological characterization, it can be concluded that there was a great variability within studied genotypes of chilli peppers.
- Significant variation was observed in terms of quantitative parameters and the highest variation was observed in plant height and also in weight and in length of fruit . At the same time, most of the qualitative characters showed distinct variation among the germplasm studied accessions.

Conclusions and recommendations

- Hot peppers can be successfully grown in organic system, as there were no significant losses caused by diseases and pests, and the plants had a normal development.
- The results will be used in the breeding program to obtain new genotypes adapted to the pedo-climatic conditions of Romania.

References

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Thank you for your attention!

