Bulletin UASVM Horticulture, 69(1)/2012
Print ISSN 1843-5254; Electronic ISSN 1843-5394

Researches on the Behaviour of Certain Genotypes of Vegetable Marrow (*Cucurbita pepo* L. convar. *giromontia* Alef.) at the Thermic and Hydric Stress

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Abstract. For assessing the behaviour of the vegetable marrow to the abiotic factors, six genotypes of vegetable marrow were studied (L-201, L-189, L-190, Perfect, Horizon and Happy organized in 3 technological variants: V1- culture irrigated by irrigation standards assuring optimal conditions for the plants' growing and development; V2- culture for which small irrigation standards are administered, in critical moments; V3- non-irrigated culture, as of bedding the culture. In the conditions of technological variant V3, the plants went through the first phenophases due to the precipitations accumulated in May-June; the excessive temperatures and lack of precipitations from June-July determined significant differences between the technological variants and between the genotypes, with respect to fruits' quality and production potential.

Keywords: vegetable marrow, genotype, drought, excessive temperatures

Introduction. The climate changes over the last years determined the orientation of the research programmes towards selecting some genotypes that are resistant/tolerant to the thermic and hydric stress, while preserving the quality traits and the productive potential. The need for assuring the water in the soil and atmosphere for growing the vegetable plants is imposed by their very high content of water which exceeds 90%. The water quantity consumed by the vegetable plants during the vegetation period is determined first of all by the level of the perspiration coefficient, by the perspiration productivity, by the water balance and by the consumed water utilization coefficient (Voican *et al.,* 1994). The optimal temperature for the vegetable marrow growing and development is of 22-30^{0}C, the minimum one being of 13^0 C, while the resistance to intense heat is up to 60^{0}C. Having a deep radicular system (1.80 m), it is well-resistant to drought, but in order to obtain rich quality productions the vegetable marrow must be cultivated in irrigation conditions. The lack of water from the soil manifests itself by temporary or long-term withering, with negative repercussions on the plants' growing and productivity. Since the leafs lack the mechanic tissue, they appear as withered even if the soil is sufficiently humid, but the heat is very high. The lack of water from the soil disturbs the flower differentiation process and pollen formation, while affecting the flower fecundation process, with repercussions on the plants' growing and fruiting process. In the absence of water the fruits remain small and deformed, they do not reach the characteristic form for their type, while the production significantly decreases. The atmospheric drought affects the viability of the pollen small grains and especially their germination on the stigma.

Aims and objectives. The paper aims at testing the resistance to the thermic and hydric stress, for six genotypes of vegetable marrow at ICDLF Vidra.

Materials and methods. For assessing the behaviour of the vegetable marrow to the abiotic factors, six genotypes of vegetable marrow were studied (L-201, L-189, L-190, Perfect, Horizon and Happy organized in 3 technological variants: V1- culture irrigated by irrigation standards assuring optimal conditions for the plants' growing and development; V2- culture for which small irrigation standards are administered, in critical moments; V3- non-irrigated culture, as of bedding the culture. The experience was planted by seedling on May

11, 2012. For testing the genotypes as to the thermic and hydric stress the following observations and determinations were made: occurrence of male and female flowers, occurrence of first fruits, number of fruits/plant, fruit weight. The results obtained represent average values and the interpretation of the differences' significance was made following the multiple comparison method (Duncan).

Results and discussion. The climate conditions of 2012 had a special evolution, the levels of precipitations recorded differing a lot from the normal levels for the southern part of the country. The big quantity of precipitations recorded in May (174.5 l/sq.m.), exceeded by far the multi-annual average of this month which is of 81 l/sq.m. In the same period the temperatures suddenly decreased, being by 8-10^{0}C lower than the multi-annual average of this month. In June the precipitations were of only 21.5 l/sq.m, distributed in the first part of the month, while in July there were no precipitations. With regard to temperature, it recorded higher and higher values, from one month to another. In June there were maximum values of more than 34^{0}C, and in July of more than 35-38^{0}C at umber and more than 55^{0}C at soil. The precipitations from May caused, including for variant V3 (non-irrigated), the catching percentage at transplantation to be of 100% as well as the normal carry-out of the first phenophases. The small precipitations from June-July, doubled by excessively high temperatures, enhanced the drought effect, triggering a significant decrease in the production of variants V2 and V3. By July 15 there were differences found between the technological variants as well as between the genotypes under study. In the conditions of the technological variant V3, the best behaviour was that of Horizon type, where all plants formed at least one fruit by July 15. This is also due to the fact that this type is an early one (the first fruits for consumption were obtained on June 18), which proves that it benefited more from the water reserve accumulated during the months of May and June. The poorest results in the same technological conditions were recorded for Happy type (no fruit was formed), this being a late genotype. Genotypes with small foliar surface, short stem and without ramification tendency (L-201, L-189, Perfect, L-190 and Horizon) had a much better behaviour than Happy type which is characterized by a lush vegetation. With regard to fruits' quality and size for the technological variant V3 it was noticed that they are deformed, with early maturation tendency and very small (40-50g) for all genotypes under study. In the conditions of variant V1, the fruits keep their commercial aspect (form, gloss), as well as the fruits' weight (200-250g at technological maturity). There are no significant differences between the technological variants V1 and V2 for the characteristics under.

Conclusion. Starting from the results obtained in the climate conditions of 2012, the following conclusions can be drawn: in the conditions of technological variant V3, the plants went through the first phenophases due to the precipitations accumulated in May-June; the excessive temperatures and lack of precipitations from June-July determined significant differences between the technological variants and between the genotypes, with respect to fruits' quality and production potential. There are no significant differences between the variants V1 and V2. For the fruits' quality (form, gloss) as well as for the number of fruits/plant there are significant differences among variants V1, V2 and variant V3.

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