The Influence of Cultivation Method on Crop Production of Bitter Gourd (*Momordica charantia* L.)

Attila KESERÜ¹, Erzsébet BUTA¹, Orsolya BORSÁI¹, Cornel NEGRUȘIER¹ and Dănuț MĂNIUȚIU^{1*}

¹Department of Horticulture and Landscaping, University of Agricultural Sciences and Veterinary Medicine, 3-5 Mănăstur Street, 400372, Cluj-Napoca, Romania

^{*}Corresponding author, e-mail: dan_maniutiu@yahoo.com

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Abstract

Momordica charantia L. (bitter gourd or bitter melon) has been used in Asian traditional medicines for a long time, but in our country is less known. However the leaves, fruits and seeds can be used in many ways. Encapsulated products are valued for regulating triglyceride or cholesterol. In Asia (China, Japan and India), the fruits are used for diet of diabetic people and for curing people in natural medicine. In the recent time the *Momordica* extracts are used to inhibit cancer cells. Due to these considerations researches were set up at UASMV Cluj - Napoca to find the best way of cultivation to obtain high yield and quality fruits. The results concerning the influence of cultivation method on crop production of bitter gourd show that the higher early production (0.72 kg/plant, respectively 0.93 kg/sm) was registered if the cultivation way was on two branches. The lowest crop production (0.53 kg/plant, respectively 0.69 kg/mp) was obtained in case of cultivation on the main stem. The cultivation method on two branches generates differences of 0.19 kg/plant and 0.24 kg/mp. This cultivation method generates the higher early production.

Keywords: bitter melon, cultivation technology, early production

Introduction

Bitter gourd (*Momordica charantia* L.) is a well known vegetable in Asian countries. The fruit of *Momordica* is popular in traditional medicine, in diet of diabetic people and it's commonly used in cooking (Kumar *et al.*, 2010; Joseph and Jini, 2013). In the recent time, bitter gourd is used for its valuable chemical compounds (Fohs *et al.*, 2014) to cure many human diseases, especially to treat some kind of cancer. Ray *et al.* (2010) and Shobha *et al.* (2015) demonstrate the cytotoxic activity of *Momordica* extract in breast and cervix cancer. The results were significant and shown that the *Momordica* extract can inhibit breast cancer cell growth and development. Also, *Momordica* fruits can be used as a dietary supplement for prevention of breast cancer.

In Romania, few years ago, *Momordica* was completely unknown. But today, the fruits are

used in various diets and the leaves are utilized for tea preparation due to the high antioxidant properties.

Aims and objectives

The high interest for this vegetable and the demand on the Romanian market determined us to study the cultivation technology of *Momordica*. This study represents a possibility to grow *Momordica* in Transilvanian Plateau and to establish the best cultivation method for this vegetable.

Materials and methods

Biological material was represented by 'Enaja' a new cultivar of *Momordica charantia* L. The seeds of this cultivar were bought from Oradea from a private farm. The experiments were carried out in 2015 in a greenhouse belonging to UASMV Cluj - Napoca. As an experimental factor a different

Tab. 1. The influence of cultivation ways on early production (kg/plant and kg/mp) of *Momordica*

Symbol	Cultivation ways	Early production (kg/plant)	Early production (kg/mp)
V1	One branch	0,60 ^b	0,77 ^b
V2	Two branches	0,72 ^a	0,93 ^a
V3	Main stem	0,53 ^c	0,69 ^c
	LSD 5%	0,04	0,02

Tab. 2. The unilateral influence of cultivation method on early production of bitter gourd

Cultivation ways	Early production		Early production		±D	±D
	kg/plant	%	kg/mp	%	kg/plant	kg/mp
One branch - V1	0,60	114,6	0,77	111,6	0,07***	0,08***
Two branches - V2	0,72	136,1	0,93	134,3	0,19***	0,24***
Main stem - V3 (control)	0,53	100,0	0,69	100,0	0,00	0,00
LSD 5%					0,02	0,03
LSD p 1%					0,03	0,05
LSD p 0,1%					0,05	0,09

cultivation method was used (one branch, two branches and main stem). The harvest of the early production took place in 24.08.2015. Obtained results were statistically interpreted using Duncan test.

Results and discussion

As the results of Table 1 show the higher early production (0.72 kg/plant, respectively 0.93 kg/sm) was registered if the cultivation way applied is on two branches. The lowest crop production (0.53 kg/plant, respectively 0.69 kg/mp) was registered in case of cultivation on the main stem.

Data of Table 2 present that the cultivation method on two branches generate differences of 0.19 kg/plant and 0.24 kg/mp. The differences between cultivation methods were very significant and statistically assured as demonstrated by Fohs *et al.* (2014).

Conclusions

In the current experiment the best cultivation method for *Momordica charantia* L. was on two branches. This method generates the higher early production. The obtained result shows the possi-

bility to grow *Momordica charantia* in Transilvania.

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