

COMPARATIVE STUDY ON GROWTH AND DEVELOPMENT IN *TAGETES* GENUS

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Abstract

Tagetes species are well known and grown both in cities and in villages. They are appreciated for their long flowering from early summer to late autumn. Improvement of technological links to the species *Tagetes* in solar is one of the main concerns of flowers growers that yields high quality products and low production costs. As a result of widening the range of *Tagetes* varieties is constantly necessary of their study in comparative cultures to see how expressing the genetic heritage in areas where are grown.

Key words: *Tagetes*, technological links, solarium.

INTRODUCTION

About the total area planted with flowers in Romania today it is hard to say. In 1987 there were about 135 ha planted with flowers, greenhouses belonging to the state sector. Other 1,500 ha were recorded with flower field crops and nurseries. Areas planted with flowers, both in protected crops and out, were much bigger if we consider the private sector that work in this area of activity, but these did not recorded in official statistics (Şelaru, 2008).

Currently, the trade balance is negative (import is increasing and exports almost nonexistent). The main causes are the production decline due to outdated technologies, overcome assortment and, above all, a favoured commercial policy.

For Romania, the main problem is to align external quality standards, recover old markets and break into new ones through diversification of the assortment, upgrading, using seedlings. Floriculture future depends on how are provided: quality, quantity and production continuity.

Tagetes genus includes about 30 species of which only three annual species shows more interest in ornamental plants culture (Drăghia and Chelariu, 2011). They are appreciated for their long flowering period from early summer to late autumn, but also to control and combat *Pratylenchus* nematodes in vegetable gardens in terms of environmental technologies without

the use of insecticides. The results show the possibility to fight *Pratylenchus* nematodes with 40-70% depending on the used species (Prohab and Borcean, 2009).

Improvement of technological links to the species *Tagetes* in solar is one of the main concerns of flowers growers that yields high quality products and low production costs. As a result of widening the range of *Tagetes* varieties is constantly necessary of their study in comparative cultures to see how expressing the genetic heritage in areas where are grown.

MATERIALS AND METHODS

The experience was conducted in solarium conditions, in 2015, in Pitesti area, Argeş county. As biological material were used seven *Tagetes* hybrids, that represented the experimental variants as follows:

V₁-*Tagetes patula nana* „Aton Spry” (Figure 1)

V₂-*Tagetes patula nana* „Aton Flamed” (Figure 2)

V₃-*Tagetes patula nana* „Aton Bee” (Figure 3)

V₄-*Tagetes patula nana* „Aton Orange” (Figure 4)

V₅-*Tagetes patula nana* „Durango Bolero” (Figure 5)

V₆-*Tagetes erecta* „Antigua Yellow” (Figure 6)

V₇-*Tagetes erecta* „Antigua Orange”(Figure 7)

No studies have been made on these hybrids of *Tagetes*. During the growing season, 16.04-04.06.2015, there were applied proper care works. Biometric measurements have been made weekly from planting to sale: the height of plants, number of leaves, leaf length and width, also the number of flowers.



Figure 1. V₁— *Tagetes patula nana* „Aton Spry”



Figure 2. V₂— *Tagetes patula nana* „Aton Flamed”



Figure 3. V₃— *Tagetes patula nana* „Aton Bee”



Figure 4. V₄— *Tagetes patula nana* „Aton Orange”



Figure 5. V₅— *Tagetes patula nana* „Durango Bolero”



Figure 6. V₆— *Tagetes erecta* „Antigua Yellow”



Figure 7. V₇— *Tagetes erecta* „Antigua Orange”

RESULTS AND DISCUSSIONS

It was determined the rate of growth in height of plants by taking measurements weekly from planting to sale (Figure 8). Growth in *Tagetes* varieties was different from one variety to another. The best was developed as expected a representative of the *Tagetes erecta* species namely *Tagetes erecta* "Antigua Orange" -V7 with 26.3 cm and the weakest *Tagetes patula nana* "Aton Durango Bolero"-V5 with 20.7 cm.

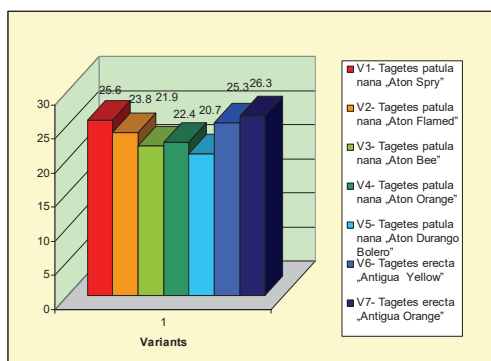


Figure 8. Growth in height of plants

The number of leaves per plant is shown in Figure 9.

At transplanting date (14.03.2015) all plants had the same number of leaves (2), but at the end of the measurements (4.06.2015) as we can see the number of leaves per plant varied depending on the variety.

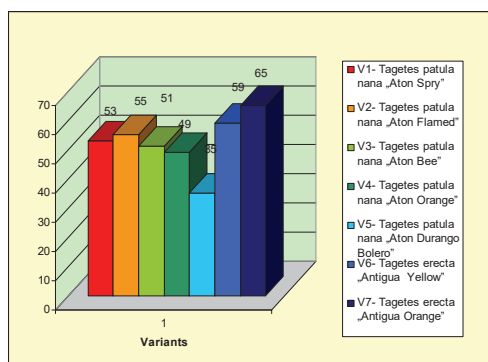


Figure 9. The total number of leaves per plant

The total number of leaves per plant was different from one variety to another and ranged between 35 leaves at V5- *Tagetes patula nana* – "Durango Bolero" and 65 leaves at V7- *Tagetes erecta* "Antigua Orange".

The number of flowers per plant varied from one variety to another (Figure 10). On 16.04.2015 flourished varieties of *Tagetes patula nana* and on 23.04.2015 flourished *Tagetes erecta* varieties, with flowers obviously higher than those of the species mentioned above.

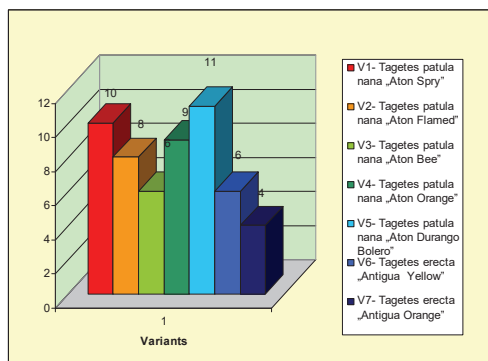


Figure 10. The number of flower per plants

The best results were registered for the variety *Tagetes patula nana* "Durango Bolero" by 11 flowers per plant, and the worst results were recorded in *Tagetes erecta* "Antigua Orange" with a maximum of 4 flowers per plant.

It is noted that representatives of the *Tagetes patula nana* had a larger number of flowers per plant compared with representatives of *Tagetes erecta*.

CONCLUSIONS

Comparative study of new varieties of *Tagetes* is required to recommend the most suitable varieties to growers according to their destination.

Rhythm of growth in plant height proves again that the species *Tagetes erecta* show higher growth compared to *Tagetes patula*.

It appears that at transplanting moment all plants have the same number of leaves, but at the end this character differs depending on the variety.

Antigua orange variety shows the best results in terms of this character, while the lowest values recorded in Durango Bolero variety.

The best results in case of flower number were registered for the variety *Tagetes patula nana* "Durango Bolero" by 11 flowers per plant, and the worst results were recorded in *Tagetes erecta* "Antigua Orange" with a maximum of 4 flowers per plant.

If you are looking for the highest plant with larger flowers we recommend the cultivation of

the species *Tagetes erecta*, and if desired cultivation of varieties shorter but more abundant flowering we recommend the choice of the species *Tagetes patula nana*.

All varieties studied were characterized by good growth rate, high percentage of flowering and looked very attractive.

The study undertaken can confidently recommend cultivating of new varieties because they have high productivity, particularly commercial aspect and resistance to handling and transport.

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