

## RESEARCH ON THE INFLUENCE AGRO ON SOME PHYSIOLOGICAL INDICATORS OF QUALITY TO RADISH (*RAPHANUS SATIVUS*) ON A CHERNOZEM VERTIC

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**Abstract.** *The research was performed on a vertic mold from Giarmata, Timis County. The peculiarities of the microclimate of the territory are determined by its geographical location, so that it is characterized by a temperate continental climate with mild winters shorter and, being frequently under the influence of cyclones and air masses that cross the Mediterranean and Adriatic, general features of climate is marked by diversity and irregularity of atmospheric processes. Radishes prefer soils with medium texture, loose, with a high content of humus and nutrients in forms easily assimilated with a pH of 6.2 to 7.4 and with good water retention capacity. Clay soils, compact, not suitable for the roots deforms and light soils, sandy, root tissues because sponges favors poor water regime. In terms of radish crop fertilization, organic fertilizer is given prior culture (HORGOS A., 2002). The main quality indicators that were studied concern: plant height in cm; leaf area in cm<sup>2</sup>; The total amount of chlorophyll, SPAD units; radishes firmness in LVR; soluble carbohydrate content in BRIX; the acidity of the juice obtained from radish (pH) and the amount of dry substance in%. Setting the duration of phenological phases was made using the identification coding system BBCH stages of plant development. The measurements were carried out in three stages of growth: 4.1 - 4.3 (10 to 30% by weight of made green), 7.1-7.3 (10 - 30% of the size of the radish made) and 8.9 (full ripening and the end of the growing season).*

**Keywords:** *soil, agrofond, physiological indices, phenophases, fertilization*

### INTRODUCTION

The peculiarities of the microclimate of the territory are determined by its geographical location, so that it is characterized by a temperate continental climate with mild winters shorter and, being frequently under the influence of cyclones and air masses that cross the Mediterranean and Adriatic, general features of climate is marked by diversity and irregularity of atmospheric processes.

Average yearly temperature is 10,9°C, the average yearly rainfall of 631.0 mm was.

### MATERIAL AND METHODS

Study biological material was represented by three varieties of radish, watermelon, French Breakfast radishes and beer, Birra di Monaco. Experience has been placed in the field, in the commune Giarmata.

The experiment was located on the territory of Giarmata and agro aimed influence on quality indicators in three varieties of radish.

Setting the duration of phenological phases was made using the identification coding system BBCH stages of plant development. It was developed by specialists of leading large corporations producing pesticides in the world: Bayer (B), BASF (B) Ciba - Geigy (C) and Hoechst (H) - Shering in order to find a unified way, based on a common language for

identifying the stage of development is the plant. The coding system is unitary and is valid for all species of plants, both cultivated and wild. (Sumalan R., 2009).

During the experiment were studied following quality indices:

- Plant height - (cm)
- Foliar surface - (cm<sup>2</sup>)
- The total amount of chlorophyll - (SPAD units)
- Firmness radishes - (LVR)
- The content of soluble carbohydrates - (BRIX)
- Made from radish juice acidity (pH)
- The amount of solids - (%)

The measurements were carried out in three stages of growth: 4.1 - 4.3 (10 to 30% by weight of made green), 7.1-7.3 (10 - 30% of the size of the radish made) and 8.9 (full ripening and the end of the growing season).

Leaf area (cm<sup>2</sup>) was determined by the parameters of the leaf. It measured the length and width of leaf lamina half the length.

Radishes correction coefficient is 0.654.

The total amount of chlorophyll (SPAD) of leaves was determined using SPAD-502 portable clorofilmetrului. The apparatus determines the relative content of chlorophyll, by measuring the absorbance of a leaf in two wavelength ranges. The device measures the absorbance of light leaf red light radiation within the IR area. Using this principle clorofilmetru calculates a numerical value SPAD (single photon avalanche diode) which is directly proportional to the amount of chlorophyll in the leaf.

Determination of soluble sugars. Soluble solids are measured by a digital refractometer. Radishes were scraped, then squeezed juice to the lens. Lower plastic coating over juice careful and do readings. Testing refractometer with plain water should be zero.

Fruit firmness is one of the most important aspects of quality of fruit. Fruits designated to be stored over a long period in rooms with controlled atmosphere must have a firmness of 15 pounds or more imperial. In a room with controlled atmosphere storage helps to maintain the firmness of the fruit.

Fruit firmness is achieved by penetrometer. Thus, by using a knife and two small discs were removed. Radish was held down on a solid surface (this is most important), then forced the piston top center with a constant pressure continues for a period of 1-2 seconds, then do the readings.

Determination of pH. Radishes were scraped off, after which 30 ml were squeezed juice, which is then introduced into the pH meter. When the stabilization of parameters, and readings made.

Determining the percentage of dry matter radish was performed using a thermobalance Kern.

## RESULTS AND DISCUSSION

With regard to plant height, we can see that in the development stage 4.1 to 4.3, Watermelon variety registered a higher than 13.82 cm, and in the last stage (8.9) - 29.77 cm. The lowest was recorded in French class Breakfast (19.6 cm) (Table 1).

Table 1.

Experimental results on plant height (cm)				
Nr.crt.	Variety	Plant height (cm)		
		Development stage 4.1- 4.3	Development stage 7.1-7.3	Development stage 8.9
1.	French Breakfast	12,13 ± 0,35	13,93 ± 1,13	19,6 ± 0,89
2.	Birra di Monaco	13,15 ± 0,76	15,9 ± 0,58	26,4 ± 0,72

3.	Watermelon	13,82 ± 0,24	17,07 ± 1,07	29,77 ± 0,67
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In the leaf area (Table 2), it can be seen that the lower leaf surface was performed at Monaco di Birra variety stage 4.1-4.3 (42.75 cm<sup>2</sup>) and in French Breakfast variety state recorded 8.9 161 cm<sup>2</sup>. Cea greater leaf area recorded a Watermelon with 370.92 cm<sup>2</sup> (Table 2). And in terms of total chlorophyll content, the highest value was recorded also for the variety Watermelon (ADP 43.77) and the lowest in French Breakfast (29.9 ADP) in stage 8.9. (Table 3).

Table 2.

Experimental results on leaf area (cm<sup>2</sup>)

Nr. crt.	Variety	leaf area (cm <sup>2</sup> )		
		Development stage 4.1-4.3	Development stage 7.1-7.3	Development stage 8.9
1.	French Breakfast	55,53 ± 0,81	96,33 ± 1,21	161 ± 1,39
2.	Birra di Monaco	42,75 ± 0,50	176,8 ± 0,92	341,46 ± 0,26
3.	Watermelon	90,25 ± 1,04	235,17 ± 1,1	370,92 ± 0,46

Table 3.

Experimental results on the total chlorophyll content (SPAD units)

Nr.crt.	Variety	chlorophyll (SPAD units)		
		Development stage 4.1- 4.3	Development stage 7.1-7.3	Development stage 8.9
1.	French Breakfast	19,7 ± 0,64	28,5 ± 1,35	29,9 ± 1,80
2.	Birra di Monaco	18,5 ± 0,59	35,8 ± 0,42	37,22 ± 0,19
3.	Watermelon	23,8 ± 1,72	41,4 ± 1,08	43,77 ± 1,26

Firmness is the best indicator of maturity radishes. The firmness of a sample is measured by a penetrometer, which measures the force required for penetration radishes, expressed in pounds or kilograms.

Of the three varieties, Birra di Monaco had the highest values both in terms of content of soluble carbohydrates (4.9), firmness (9.21 LVR) and dry matter (9.01%) (Table 4). firmness lowest indicated a 5.23 Watermelon with LVR, and the lowest percentage in the dry - French breakfast (3.11%) (Table 5.4).

Table 4.

Experimental results on some biochemical characteristics

Variety	% soluble carbohydrates (BRIX)	juice acidity	Firming (LVR)	dry matter (%)
French Breakfast	3,5	6,08	8,26	3,11
Birra di Monaco	4,9	5,51	9,21	9,01
Watermelon	4,0	6,09	5,23	4,19

Regarding the amount of soluble carbohydrates, variety Birra di Monaco had the highest percentage (4.9%), but recorded a lower acidity (5.51) compared to the other two varieties.

## CONCLUSIONS

Variety Watermelon presented as greater leaf area and total chlorophyll content in three stages when the measurements were made, and the lowest data were recorded for the variety French Breakfast.

Regarding the biochemical characteristics, Birra di Monaco variety registered firmness, soluble carbohydrate content and higher dry matter compared with French Breakfast which had lower values.

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