

DETERMINAREA APEI ȘI SUBȘTANȚEI USCATE PRIN METODA GRAVIMETRICĂ LA ARBORII DE CHAMAECYPARIS LAWSONIANA BLUE PIRAMIDAL (A. MURR.) PARL
DETERMINATION OF WATER AND DRY MATTER BY THE GRAVIMETRIC METHOD AT TREES CHAMAECYPARIS LAWSONIANA BLUE PIRAMIDAL (A. MURR.) PARL.

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Abstract

The work is to determine water and dry matter content by the gravimetric method on *Chamaecyparis lawsoniana Blue Piramidal* (A.Murr.) Parl. To achieve an accurate assessment an average sample of plant material was taken. This sample is obtained by mixing as homogeneous sample of at least ten parts using the quarter's method. Average sample is obtained by cleaning of the impurities and finely grinding the materials.

Keywords: ornamental trees, dry matter, water, the gravimetric method.

Cuvinte cheie: arbori ornamentali, substanta uscata, apa, metoda gravimetrica.

1. Introduction

The amount of water in plant body is generally 70-80% of their weight. It varies by species, different organs and was higher in the leaves than in stems and roots, and in which are higher than in ripe seeds. The amount of water depends on their age and is influenced by their living conditions. The test results were made with plant material expressed as a percentage.

2. Materials and methods

Biological material used in making the experience was trees of *Chamaecyparis lawsoniana* 'Blue Pyramid' (A. Murr.) Parl. belonging to the family *Cupresaceae*, planted in nursery of RSFG Iasi. On these plants during 2006 - 2010 were made a fungicide treatment plant with saprophytic and parasitic micromicetelor, to the five variants, namely: witness untreated, V₁ = Alcupral 50 PU (0.2%), V₂ = Funguran OH 50 WP (0.2%), V₃ = Champion 50 WP (0.2%), V₄ = Oxicupron 50 PU (0.2%) (Untreated control samples containing 48 and the other four versions, each with 42 copies). From 2009 to 2010 all the trees *Chamaecyparis lawsoniana* Blue Pyramid (A. Murr.) Parl. We continued performing determinations of water and plant dry matter respecting the same experimental variants.

It consists in measuring the mass loss of water sample analysis by heating them to 105 ° C. To achieve an accurate assessment, it is used an average sample of material plant. This sample is obtained by mixing as homogeneous as possible at least ten partial samples using the quarters. Average sample obtained are cleaned of impurities and grinded.

First adjust to constant mass weighing a vial of glass or metal. After were washed thoroughly, place in oven at 105 ° C for one hour, then cool in desiccators and weighed on analytical balance. The operation is repeated until the mass becomes ampoule constant.

To determine the actual, place the vial "n" g plant material in sample average. Open vial with cap sitting upright on her mouth, is placed in an oven equipped with ventilation and dry mouth only at a temperature of 105 ° C. After 1-2 hours drying container cover with lid and move in a desiccators with anhydrous CaCl₂, which take time an hour to cool, then weigh the analytical balance. Repeat until a constant weight of material weighed. Loss dry mass of material (humidity) is calculated as:

$$U = \frac{A - B}{A} \times 100, \text{ where:}$$

U = percentage of weight loss on drying (%),

A = fresh sample mass (in grams);

B = sample weight after drying (in grams);

100 = to express results in percentages.

$$SU = 100 - U, \text{ where:}$$

SU = dry matter (in percent);

U = humidity (in percent);

3. Results and discussion

Following the determinations of water and dry matter during the 10 months study was obtained the following results: in terms of dry matter (Fig.1.) in June 2009 the largest amount of dry matter was obtained from control variant of 41.26% and the smallest amount of 33.65% in V_1 . In July 2009 the largest amount of dry substance was obtained from the 36.87% V_4 , and the smallest quantity of 31.72% V_1 in October 2009, a large amount of dry matter was recorded in the control variant of 42.13% and smallest amount to 39.76% V_3 . In November 2009 the highest value of dry matter of V_3 was on the 44.45%, the lowest amount of dry matter was obtained from V_4 to 41.93% in December 2009 V_3 has the highest amount of active substance of 50.77%, the less is obtained in V_4 of 46.77%. In January 2010 the highest amount of dry matter was obtained in untreated control variant of 49.65%, the lowest being obtained the V_3 of 43.78% in February 2010 the best results were obtained from 46.89% in V_3 and less well on the control variant of 40.91%. In March 2010, the V_2 record large amount of active substance of 46.81%, the smallest of the V_4 is obtained at 45.36% in April 2010 V_1 showed the greatest dry matter 46.61% and lowest amount to 39.12% obtained from the V_3 . In May 2010 the highest value of dry matter was the V_4 of 38.64% and lowest 35.11% in V_1 .

Regarding the determination of water (Fig. 2.) For a period of 10 months was noted following: in June 2009 the largest amount of water was obtained from V_1 and the 66.35% of water was recorded in V_4 of 58.07% and less water was 55.55% V_3 . Month December 2009 the highest value of water was recorded at 53.23% and V_4 of small amount. The water was the V_2 49.23%. In January 2010 large amount of water was obtained from the 56.22 % V_3 less water being 50.35% of the control variant. February 2010 is characterized by value greater water control variant of 59.09% and 53.11% lower in V_3 , in March 2010 V_4 is the highest value of 54.64% water lowest water was the V_2 53.19%. In April 2010 increased amount of water was recorded at 60.88% of the V_3 low of 53.39% as at V_2 in May the highest value recorded a water control variant of 67.46% and the lowest was obtained on V_4 of 61.36%.

In fig. 3, are the values of average temperature and atmospheric humidity. In June 2009 average temperature of 20.2°C was 66% and humidity in July 2009 average temperature recorded value of 22.4°C and humidity of 64% in August 2009 had a average temperature of 21.1°C and 61% humidity and temperature in September 2009 averaged 17.3°C and humidity of 61%. The average temperature recorded in October values of 10.8°C and humidity of 79% in November 2009 with the average temperature value of 5.4°C and humidity of 84.4%, also in December 2009 mean temperature -1.5°C was and humidity of 87%. Average temperature in January 2010 recorded a value of -6.4°C humidity of 91% in February 2010 is characterized by an average temperature of -1.1°C humidity of 76%. March 2010 had a mean temperature of 4.5°C and humidity of 91% in April with an average temperature of 12.5°C, humidity of 61% in May 2010 was an average temperature of 17.3°C and a humidity of 6.3%.

4. Conclusions

Following the analysis results on variants (Fig. 1.) we found that the control variant has the highest amount of dry matter during the 10 month study representing about 70%.

Figure 1 shows that the largest amounts of solids were obtained in the months December, January, February, March, April, when these months showed a temperature average of 8°C and a humidity of 78.6%.

Analyzing the data in Figure 2 variants, one can see that the control variant has largest amount of water which is a 80%.

On Fig.2 the largest amounts of water were identified in the months: December, January, February, March, April, May in these months when there were an average temperature of 4.2°C and average humidity of 76%.

5. References

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Foto.1. *Chamaecyparis lawsoniana* 'Blue Pyramid' (A. Murr.) Parl (original).

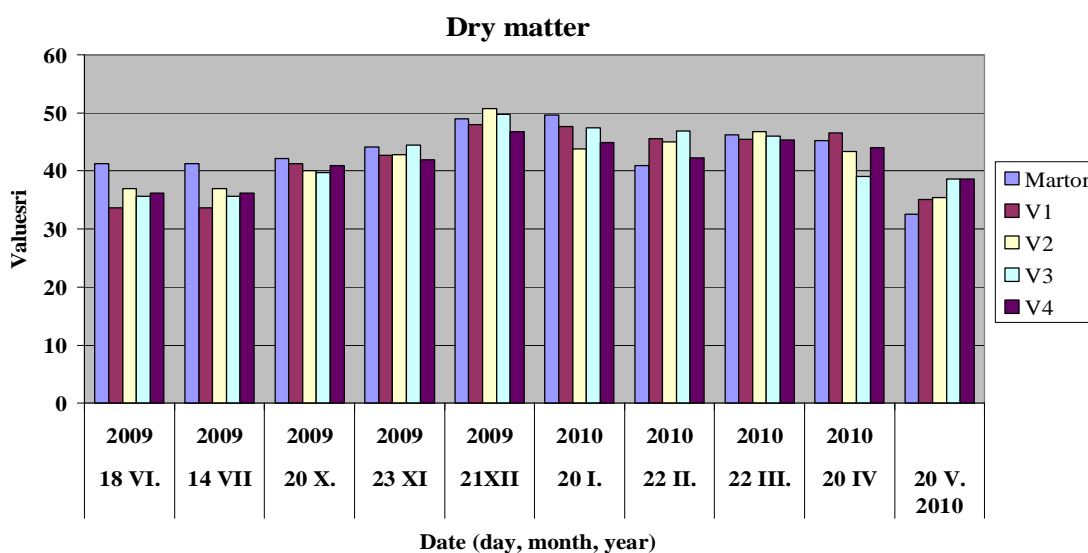


Fig.1. The amount of solids produced during 18.06.2009 – 20.05.2010

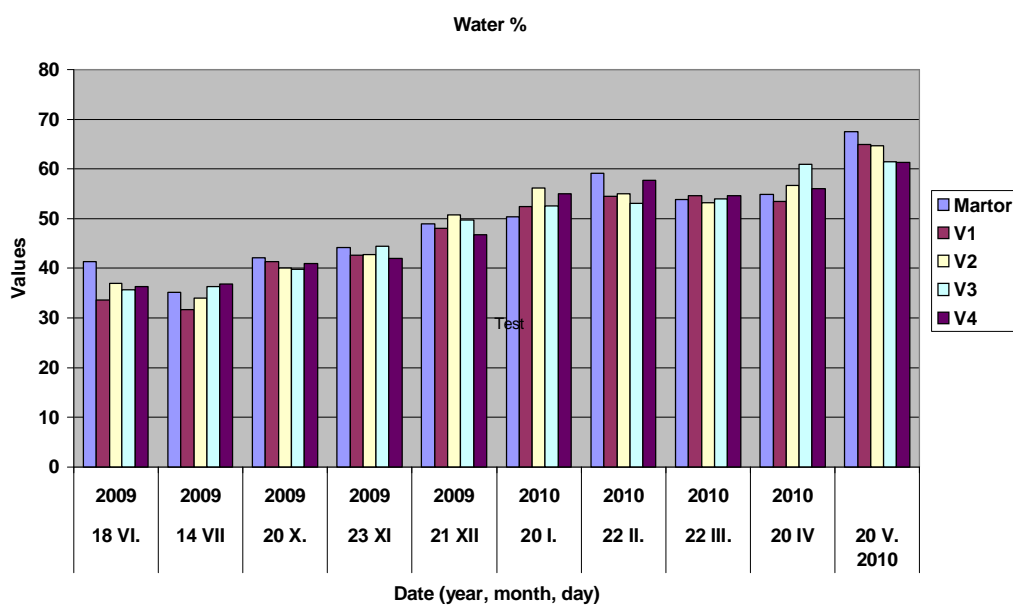


Fig. 2. The amount of water (%) obtained during 18.06.2009 – 20.05.2010

