

## PERFORMANCE OF ALFALFA VARIETIES IN THE IRRIGATED PURE CULTURE IN THE HILLY REGION OF OLTENIA

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### ABSTRACT

*Ecological Zoning of various species of fodder plants targeted choice of the most suitable species for each region and their locations in succession to lead to the achievement of optimal production for each crop in hand, and a whole assortment of crops.*

*In this context alfalfa, green areas is recommended, culture is the most valuable protein.*

*Among the varieties of alfalfa taken experimentation best adapted following: Magnat (7.5 t / ha dry matter ), Daniela (7.3 t / ha dry matter ) and Sandra (7,1 t / ha dry matter ).*

*If we refer to crude protein production, it ranged between 711,9- 1826,7 kg /ha.*

### INTRODUCTION

Different species of perennial fodder plants are characterized by highly variable requirements to climate and soil (Cotig , C., 2010 ).This requires the location of each species in the most favorable conditions to allow maximum production potential evidence (Cotig ,C., 2012 ).Based on modern genetic methods succeeded in obtaining special varieties with characteristics capable of meeting greater natural conditions ( Moga, I., Schitea Maria, 2000).

Alfalfa is characterized by a higher power to accommodate highly variable environmental conditions (Moga, I., Varga, P., Kellner, E., Burlacu, GH., Paulian, FI.,Ulinici, A., ipo GH., 1983 ).However, in temperate zones, and well stocked on deep soils in nutrients and water, alfalfa achieved maximum production of biomass and requires a greater permanence ( Moga,I., Schitea Maria, Mateia i, M., 1996).

### MATERIALS AND METHODS

The experience was seating in two - factor ploats in four repetitions:

The,, A " factor - mineral fertilizer with nitrogen -fertilized with nitrogen graduations a1 (N 0) and nitrogen fertilized a2- (N 80).

The ,, B " factor - alfalfa varieties with graduations: b1 - Adonis, b2- Daniela, b3 - Roxana, b4 - Magnat, b5 - M d lina, b6 - Sandra. The agro was P70 K50.The sampling was carried out under the hay. Samples were taken determination of dry biomass and chemical analysis.

Experimental data were obtained from S. C. D.A imnic Craiova and valued in the range 2011-2013, using analysis of variance calculation.

### RESULTS AND DISCUSSIONS

The average for the three years of experimentation (Table 1) behavior on luvo soil alfalfa varieties from S.C.D.A. imnic was the following:

- the level of dry matter production varied between 4.3 t / ha d.m variant without nitrogen (N 0 ) the Adonis variety and 9.4 t / ha dry matter version with nitrogen N 80 Daniela variety;

- the productivity of the two varieties of nitrogen fertilization is as follows: the level of fertilizer N 0, harvest ranged between 4.3 t / ha d.m. Daniela variety and 5.7 t / ha d.m. Magnat variety; N 80 fertilizer on the harvest ranged from 8.1 t /ha d.m. Adonis variety and 9.4 t / ha d.m. Daniela variety, when she obtained the maximum increase of 5.1 t / ha d.m. compared to control, very significant statistically.

**Table 1**

**The productivity of alfalfa varieties in the irrigated pure culture on luvosoil from imnic, averaged over three years (2011-2013).**

| Doses of nitrogen                 | The variety | The Absolute production t / ha d.m. | The relative production % | The difference | The Significance |
|-----------------------------------|-------------|-------------------------------------|---------------------------|----------------|------------------|
| Unfertilized with nitrogen (N 0 ) | ADONIS      | 4,3                                 | 100                       | Tw             | -                |
|                                   | DANIELA     | 5,2                                 | 121                       | 0,9            | -                |
|                                   | ROXANA      | 4,7                                 | 109                       | 0,4            | -                |
|                                   | MAGNAT      | 5,7                                 | 133                       | 1,4            | *                |
|                                   | MADALINA    | 4,6                                 | 107                       | 0,3            | -                |
|                                   | SANDRA      | 5,6                                 | 130                       | 1,3            | *                |
| Fertilized with nitrogen (N 80)   | ADONIS      | 8,1                                 | 188                       | 3,8            | ***              |
|                                   | DANIELA     | 9,4                                 | 219                       | 5,1            | ***              |
|                                   | ROXANA      | 8,6                                 | 200                       | 4,3            | ***              |
|                                   | MAGNAT      | 9,2                                 | 214                       | 4,9            | ***              |
|                                   | MADALINA    | 8,7                                 | 202                       | 4,4            | ***              |
|                                   | SANDRA      | 8,5                                 | 198                       | 4,2            | ***              |
|                                   | DL 5 %      |                                     |                           | 1,3 t/ha d.m.  |                  |
|                                   | DL 1 %      |                                     |                           | 2,5 t/ha d.m.  |                  |
|                                   | DL 0,1 %    |                                     |                           | 3,7 t/ ha d.m. |                  |

If analyze the separate impact of nitrogen on productivity of alfalfa varieties (Table 2), we find that the average yield on three years of experimentation has the following representation:

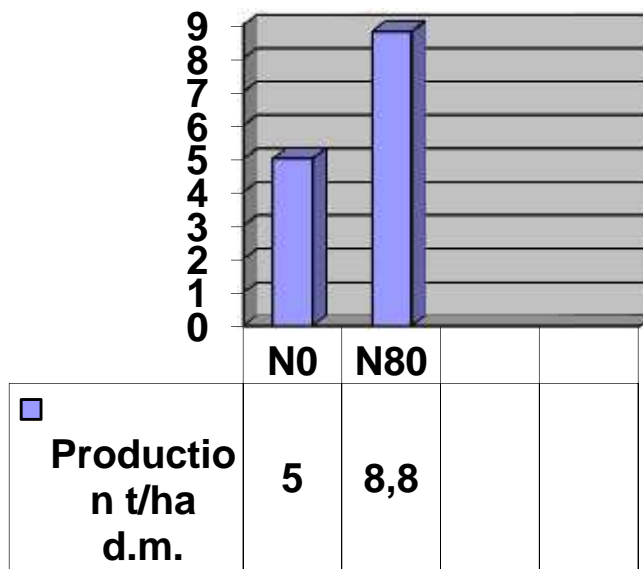
The variant N 0 was obtained a yield of 5.0 t / ha d.m., as the fertilization N 80 production was 8.8 tons / ha d.m, which is 176% compared to the control taken into account ( Fig.1).

The production increase of 3, 8 t / ha d.m. obtained at fertilization with N 80 is very significant in statistical terms.

**Table 2**

**The Influence of nitrogen on dry matter production in some varieties of alfalfa in pure culture in non - irrigated on luvosoil from S.C.D.A imnic, averaged over three years (2011-2013).**

| Dozes of nitrogen | The absolute Production t / ha d.m. | The relative Production % | The Difference | The Significance |
|-------------------|-------------------------------------|---------------------------|----------------|------------------|
| N 0               | 5,0                                 | 100                       | Tw             | -                |
| N 80              | 8,8                                 | 176                       | 3,8            | ***              |
|                   | DL 5%                               |                           |                | 1,1 t / ha d.m.  |
|                   | DL 1%                               |                           |                | 2,3 t / ha d.m.  |
|                   | DL 0, 1 %                           |                           |                | 3,5 t / ha d.m.  |



**Figure 1. The effect of nitrogen on dry matter production in some varieties of alfalfa in pure culture, on luvisol from S.C.D.A imnic, averaged over three years (2011-2013).**

If we follow the behavior of alfalfa varieties luvisol from imnic on average over the three years of experimentation (Table 3), we find the following:

- The dry matter yield ranged from 6.2 t / ha d.m. Adonis variety and 7.5 t / ha d.m. in yield the Magnat variety, when practically obtained and maximum increase of 1.3 t / ha d.m. significant statistically;

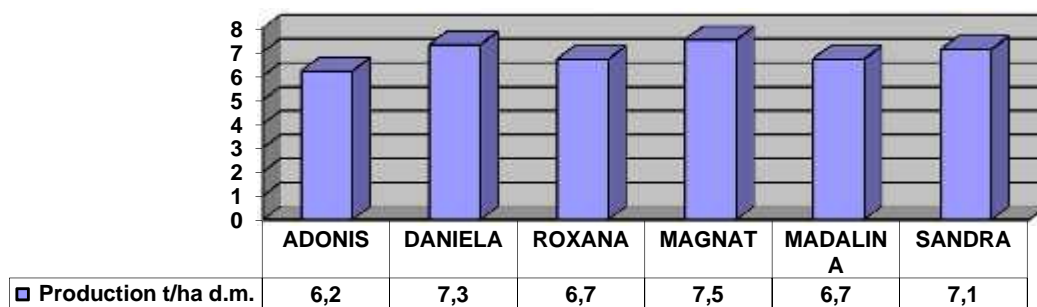
The significant crop increases have given Daniela varieties (1.1 t / ha d.m. with a production of 7.3 t / ha d.m.) and Sandra varieties (1.1 t / ha d.m., with a production of 7.1 t / ha d.m). (Fig.2)

**Table 3  
The Productivity in pure of alfalfa varieties in the non- irrigated luvisol from S.C.D.A imnic, averaged over three years (2011- 2013).**

| Soiuri   | Producția absolut s.u. t/ha | Producția relativ % | Diferența | Semnificația |
|----------|-----------------------------|---------------------|-----------|--------------|
| ADONIS   | 6,2                         | 100                 | Mt        | -            |
| DANIELA  | 7,3                         | 118                 | 1,1       | *            |
| ROXANA   | 6,7                         | 108                 | 0,5       | -            |
| MAGNAT   | 7,5                         | 121                 | 1,3       | *            |
| MADALINA | 6,7                         | 108                 | 0,5       | -            |
| SANDRA   | 7,1                         | 115                 | 0,9       | *            |

DL 5%  
DL 1 %  
DL 0,1%

0,7 t / ha s.u.  
1,6 t /ha s.u  
2,2 t /ha s.u.



**Figure 2 The Productivity in pure of alfalfa varieties in the irrigated luvisol from S.C.D.A imnic on average over three years of experimentation (2011-2013).**

If analyze the level of crude protein in some alfalfa varieties under study (two-year average) (Table 1), we find that it has fluctuated from 711.9 kg / ha PB variety Adonis version has not received nitrogen (N 0) 1826.7 kg / ha in variant fertilized with N PB 80 Daniela variety..

We also found that the average crude protein per variety and nitrogen fertilization systems is 851.4 kg / ha N PB version 0 and 1681 kg / ha PB version which received N 80.

**Table 4**

**The Production of crude protein in some varieties of alfalfa  
(kg / ha) 2011-2012 average.**

| Variants           |                 | The crude protein | %          | The Difference |
|--------------------|-----------------|-------------------|------------|----------------|
| <b>N 0</b>         | <b>ADONIS</b>   | 711,9             | 100        | Tw             |
|                    | <b>DANIELA</b>  | 915,4             | 129        | 203,5          |
|                    | <b>ROXANA</b>   | 768,9             | 108        | 57,0           |
|                    | <b>MAGNAT</b>   | 964,6             | 135        | 252,7          |
|                    | <b>MADALINA</b> | 771,5             | 108        | 59,6           |
|                    | <b>SANDRA</b>   | 976,0             | 137        | 264,1          |
| <b>The Average</b> |                 | <b>851,4</b>      | <b>120</b> | <b>139,5</b>   |
| <b>N 80</b>        | <b>ADONIS</b>   | 1504,7            | 211        | 792,8          |
|                    | <b>DANIELA</b>  | 1826,7            | 257        | 1114,8         |
|                    | <b>ROXANA</b>   | 1565,2            | 220        | 853,3          |
|                    | <b>MAGNAT</b>   | 1724,1            | 242        | 1012,2         |
|                    | <b>MADALINA</b> | 1710,3            | 240        | 998,4          |
|                    | <b>SANDRA</b>   | 1754,7            | 246        | 1042,8         |
| <b>The Average</b> |                 | <b>1681,0</b>     | <b>236</b> | <b>969,1</b>   |

**CONCLUSIONS**

Based on the results obtained and presented, we conclude the following:

- all varieties of alfalfa studied behaved well to environmental conditions offered by the experimentation;
- average growth of crops fertilized with N 80 was 3,8 t / dry matter , which proves very significant low nitrogen supply luvosol from S.C.D.A imnic.
- among varieties tested,best were adopted following: Magnat (7,5 t / ha dry.matter.), Daniela ( 7,3 t / ha dry matter.) and Sandra ( 7,1 t / ha dry matter. );
- if we refer to the production of this raw protein varied according to the level of nitrogen fertilization ie from 851,4 kg / ha, fertilized with N 80 B.P.

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