

## THE INCREASING OF FODDER YIELD IN THE CENTER PART OF OLTENIA FOR SUSTAINABLE DEVELOPMENT OF LIVESTOCK

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### ABSTRACT

*The environmental conditions from experimental area (ARDS Simnic, Dolj, Romania) offers favorable conditions for temporary meadows that give increased yield of quality feed. The proper fertilizing schedule combined with a good management contributes to a long permanence of temporary pasture.*

### INTRODUCTION

The fodder mixtures including perennial legumes and grasses requires lower fertilizing levels with nitrogen comparatively with only perennial grasses mixtures (Moga I. et al., 1996; Cotiga, C., 2010). On the reddish luvisol from ARDS Simnic the mixtures including alfalfa and cocksfoot requires higher level of nitrogen as well as the ratio of grass increases (Moga I. et al., 1996; Cotiga C., 2010). When fodder is fertilized with manure during the last three years, then the nitrogen rate should decrease with 30-50% (Barbulescu C. et al., 1991).

### MATERIAL AND METHOD

The trial was laid out on the experimental field from Agrotechnics Laboratory in Agriculture Research and Development Station Simnic, Dolj county, Romania, following split plots method, in four replications. Standard fertilizing level was P<sub>50</sub>K<sub>50</sub> and different nitrogen fertilizing levels: N<sub>0</sub>, N<sub>60</sub>, N<sub>120</sub>, N<sub>180</sub>. In natural environmental conditions were evaluated two grass mixtures: Dactylis glomerata (cocksfoot) 60% + Medicago sativa (alfalfa) 40%, respectively Dactylis glomerata (cocksfoot) 30% + Lolium hybridum (reygrass) 30% + Medicago sativa (alfalfa) 40%.

### RESULTS AND DISCUSSIONS

Analyzing the results regarding the effect of grass mixtures and fertilizing levels for temporary meadow (table 1), it was noticed that on three years the fodder yield ranged between 3.1 t/ha dry matter (for the mixture Dactylis glomerata (cocksfoot) 60% + Medicago sativa (alfalfa) 40%) without nitrogen and 8.7 t/ha dry matter for the same mixture but fertilized with N<sub>180</sub> kg/ha. Similar result (8.2 t/ha dry matter) was obtained for the same mixture fertilized with N<sub>120</sub> kg/ha, when the average yield increase comparatively with the control variant was 5.1 t/ha dry matter (very significant yield increase, as well as the value recorded for highest nitrogen level applied).

For the fodder mixture including Dactylis glomerata (cocksfoot) 30% + Lolium hybridum (reygrass) 30% + Medicago sativa (alfalfa) 40% the yield ranged between 3.3 t/ha dry matter for the variant without nitrogen to 9.8 t/ha dry matter for the variant fertilized with highest nitrogen level N<sub>180</sub>, recording an yield increase of 6.7 t/ha dry matter (very significant) comparatively with the control. Also a very significant yield increase (6.3 t/ha dry matter) was recorded when it was applied 120 kg/ha nitrogen comparatively with the control.

**Table 1**

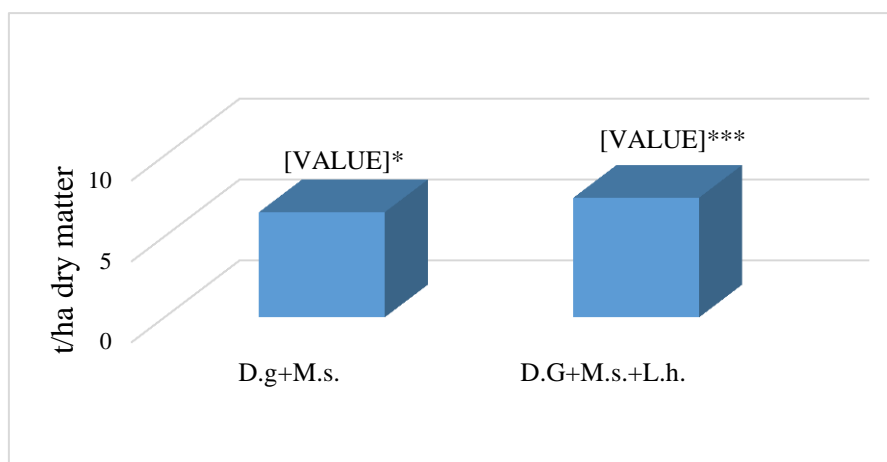
**The influence of fodder mixture and nitrogen fertilizing on the temporary meadow yield (2015-2017)**

| Fodder mixture  | Nitrogen level   | Yield (t/ha dry matter) |      |      | Average yield (2015-2017) | Yield % | Difference | Significance |
|---|------------------|-------------------------|------|------|---------------------------|---------|------------|--------------|
|   |                  | 2015                    | 2016 | 2017 |                           |         |            |              |
| Dactylis glomerata (cocksfoot) 60% + Medicago sativa (alfalfa) 40%                                  | N <sub>0</sub>   | 3.1                     | 3.6  | 2.7  | 3.1                       | 100     | Control    | -            |
|   | N <sub>60</sub>  | 6.0                     | 7.3  | 5.1  | 6.1                       | 196     | 3.0        | *            |
|   | N <sub>120</sub> | 8.2                     | 8.9  | 7.4  | 8.2                       | 265     | 5.1        | ***          |
|   | N <sub>180</sub> | 8.7                     | 9.2  | 8.1  | 8.7                       | 281     | 5.6        | ***          |
| Dactylis glomerata (cocksfoot) 30% + Lolium hybridum (reygrass) 30% + Medicago sativa (alfalfa) 40% | N <sub>0</sub>   | 3.3                     | 3.9  | 2.8  | 3.3                       | 106     | 0.2        | -            |
|   | N <sub>60</sub>  | 6.7                     | 8.1  | 6.0  | 6.9                       | 222     | 3.8        | **           |
|   | N <sub>120</sub> | 9.8                     | 10.2 | 8.1  | 9.4                       | 303     | 6.3        | ***          |
|   | N <sub>180</sub> | 10.3                    | 10.6 | 8.7  | 9.8                       | 316     | 6.7        | ***          |

DL 5%  
DL 1%  
DI 0.1%

1.7 t/ha dry m.  
3.5 t/ha dry m.  
5.0 t/ha dry m.

The best fodder mixture for a temporary meadow is the one that includes Dactylis glomerata (cocksfoot) 30% + Lolium hybridum (reygrass) 30% + Medicago sativa (alfalfa) 40% when in the environmental conditions from ARDS Simnic the yield may reach 7.4 t/ha dry matter (Fig.1).



**Fig.1. The influence of fodder mixture on the yield dry matter for temporary meadow (average 2015-1017)**

The highest level of nitrogen assured the highest yield level as average for three experimental years (9.2 t/ha dry matter) with an increase that only 0.4 t/ha dry matter comparatively with N<sub>120</sub> level (Fig.2).

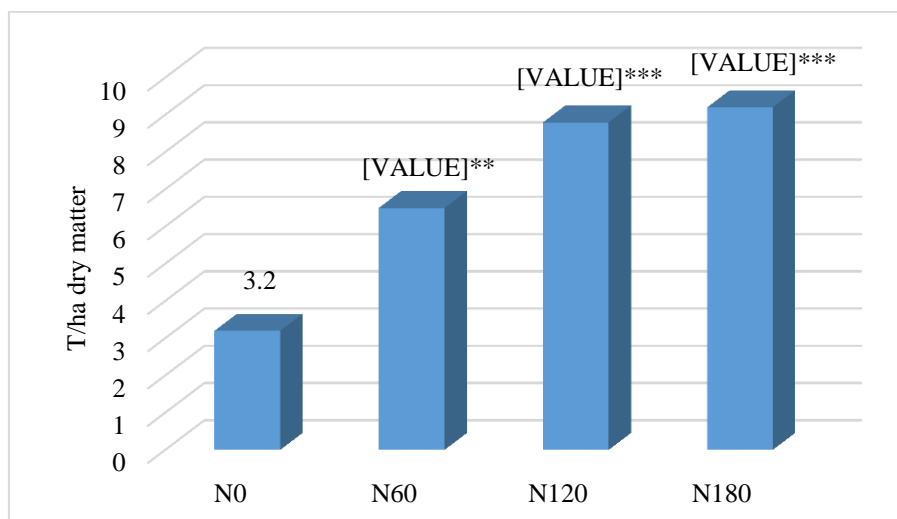


Fig.2. The Influence of fodder mixture on the yield dry matter for temporary meadow (average 2015-2017)

Regarding the temporary meadow mixture it was noticed that *Medicago sativa* (alfalfa) recorded higher ration within the mixture comparatively with grasses during the three experimental years, due especially to the biological particularities of this specie (Table 2).

Table 2

**The temporary meadow mixture for the second exploitation year (%)**

| Mixture   | The 1 <sup>st</sup> mower |    |    |   | The 2 <sup>nd</sup> mower |    |    |   | The 3 <sup>th</sup> mower |    |    |   |
|---|---------------------------|----|----|---|---------------------------|----|----|---|---------------------------|----|----|---|
|   | Ms                        | Dg | Lh | B | Ms                        | Dg | Lh | B | Ms                        | Dg | Lh | B |
| Dactylis glomerata (cocksfoot) 60% + <i>Medicago sativa</i> (alfalfa) 40%   | 40                        | 55 | -  | 5 | 41                        | 54 | -  | 8 | 42                        | 56 | -  | 2 |
| Dactylis glomerata (cocksfoot) 30% + <i>Lolium hybridum</i> (reygrass) 30% + <i>Medicago sativa</i> (alfalfa) 40% | 40                        | 30 | 26 | 4 | 40                        | 29 | 26 | 5 | 42                        | 26 | 26 | 6 |

**CONCLUSIONS**

Temporary meadows represent the best measure to improve the fodder production for the specific environmental conditions from central part of Oltenia. Nitrogen fertilizing represents the key to obtain a good meadow layer. A good management of temporary meadow that comes together with all technological measures lead to longer exploitation period.

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