

INCREASING FOODER PRODUCTION THROUGH AGROTECHNICAL MEASURES FOR LUCERNE CULTIVATED IN THE HILLY AREA OF OLTENIA

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ABSTRACT

In the specialized literature are made recommendations on lucerne harrowing without relying on rigorous experimental data. Our research partially confirms this aspect. If it is applied and a chemical control of weed, the results are considerable.

INTRODUCTION

It is confirmed the fact that through lucerne harrowing the soil is ventilated which will allow a more vigorous germination with repercussions on the level of harvest. Also through and appropriate chemical control will be obtained an increased and qualitative production of fooder (Berca, M., 1996; Cotigă, C., 2011; Moisuc A., Coste I., 2000).

MATERIAL AND METHOD

The researches were conducted during the period 2011-2012 at the S.C.D.A. – Șimnic Craiova, the versions taken for the research in the first experimental were:

V₁ = nonharrowed

V₂ = harrowed (years I and II)/ in spring

V₃ = harrowed (years I and II)/ in spring and after each mowing

Other experimental had the following versions:

V₁ = non-herbicide

V₂ = Pulsar 40 (EC) post. 1 l/ha

V₃ = Kerb 50 W post. 4 kg/ha

V₄ = Basagran forte (EC) post. 2 l/ha

V₅ = Pantera 40 (EC) post. 0,7 l/ha

V₆ = Leopard 5 (EC) post 0,7 l/ha

V₇ = Agil 100 (EC) post. 2 l/ha

RESULTS AND DISCUSSIONS

The results obtained and presented in table 1 concerning the effect of harrow on the production of lucerne dry matter (d.m.) show that, averaged on two years the yields of biomass increased from 8,3 t/ha d.m. for the nonharrowed version reaching 10,6 t/ha d.m. for harrowed version in the I-st and II-nd years early in the spring.

The production increase was of 2,3 t/ha d.m. compared with the testifier taken into consideration, increase statistically significantly distinct.

For the harrowed version years I and II and after each mowing the production level has a decreasing trend fact explained by the destruction of a good part of lucerne shoots by the mechanical machine.

Table 1

The effects of harrowing as a mechanical maintenance work for lucerne, on the production of dry matter (average 2011-2012)

| Version | Absolute production d.m. t/ha | | Average 2011-2012 d.m. t/ha | Relative production % | Difference | Significance |
|--|-------------------------------|------|-----------------------------|-----------------------|------------|--------------|
| | 2011 | 2012 | | | | |
| Nonharrowed | 8,2 | 8,3 | 8,3 | 100 | MT | - |
| Harrowed (years I and II)/ In spring | 9,4 | 11,7 | 10,6 | 128 | 2,3 | ** |
| Harrowed (years I and II)/ In spring and after each mowing | 8,1 | 9,4 | 8,8 | 106 | 0,5 | - |

1,1 1,3 1,2 t/ha D.M.
 2,1 2,4 2,3 t/ha D.M.
 2,9 3,7 3,3 t/ha D.M.

In the table 2 are presented the weed species and their number in the lucerne sown at S.C.D.A. – Șimnic.

Table 2

Weed species

| Weed Species | No. Of weeds per SQ.M |
|--|-----------------------|
| <i>Chenopodium album</i> | 48-366 |
| <i>Setaria glauca și Setaria viridis</i> | 126-421 |
| <i>Convolvulus arvensis</i> | 8-47 |
| <i>Xanthium strumarium</i> | 0-23 |
| <i>Solanum nigrum</i> | 0-16 |
| <i>Amaranthus retroflexus</i> | 0-19 |
| <i>Digitaria sanguinalis</i> | 0-27 |
| <i>Echinochloa crus galli</i> | 0-14 |
| <i>Capsela bursa pastoris</i> | 1-17 |
| <i>Poligonum aviculare</i> | 3-28 |
| <i>Ghypsophila muralis</i> | 0-3 |
| <i>Cynodon dactylon</i> | 0-4 |

From the data obtained and presented in table 3 regarding the herbicides effect on weeds found in the lucerne crops it has been observed:

Used

- All herbicides contributed substantially to weed control compared to the version which did not received any tratament.
- For the version non-herbiced, the total production of biomass was 58,3 t/ha pf which 25,7 t/ha were weeds and 32,6 t/ha were lucerne (in yearI), and in

Table 3

The effects of herbicides on the weeds from the lucerne crops at the S.C.D.A. – Șimnic during the period 2011–2012 (m.v.t./ha)

| Version | Dose l/ha *kg/ha | Age of application | 2011 | | | | 2012 | | | |
|-----------------------|------------------|--------------------|----------------|----------------|-----------|-------------|----------------|----------------|-----------|-------------|
| | | | M.V. Total (T) | Of which weeds | Weeds (%) | Lucerne (T) | M.V. Total (T) | Of which weeds | Weeds (%) | Lucerne (T) |
| Non-herbicided | - | Post | 58,3 | 25,7 | 44 | 32,6 | 51,0 | 20,5 | 40 | 30,5 |
| Pulsar 40 (E.C.) | 1,0 | Post | 55,6 | 7,4 | 13 | 48,2 | 58,5 | 3,1 | 5 | 55,4 |
| Kerb 50W | 4,0* | Post | 52,6 | 8,9 | 17 | 43,7 | 57,0 | 4,2 | 7 | 52,8 |
| Basagran Forte (E.C.) | 2,0 | Post | 48,4 | 8,8 | 18 | 39,6 | 51,5 | 4,1 | 8 | 47,4 |
| Pantera 40 (E.C.) | 0,7 | Post | 45,7 | 9,6 | 21 | 36,1 | 49,4 | 4,7 | 9 | 44,7 |
| Leopard 5 (E.C.) | 0,7 | Post | 45,6 | 9,9 | 22 | 35,7 | 48,7 | 4,9 | 10 | 43,8 |
| Agil 100 (E.C.) | 2,0 | Post | 42,5 | 9,8 | 23 | 32,7 | 43,8 | 4,6 | 11 | 39,2 |

- year II weeds production has a decreasing trend from 44% (2011) to 40% (2012).
- In year II (2012) the percentage of weeds in the lucerne crops for the herbicides versions diminished considerably with oscillations between 5–11% which was experienced on the production of lucerne.

The most effective herbicides were: Pulsar 40 (E.C.) at a dose of 1 l/ha which reduced weeds from 13% in 2011 to 5% in 2012, and the herbicide Kerb 50 W 4 kg/ha which reduced weeds from 17% in 2011 to 7% in 2012 (table 3).

CONCLUSIONS

Lucerne harrowing in the years I and II exploited early in spring brings increased production of over 2,3 t/ha d.m. as a result of soil aeration at the parcel level which allows a vigorous germination.

Due to the high number of weeds in the lucerne crops, it is recommended that since its setting up to be combated chemically (Ciorlaus, A. et al, 1968; Moisuc A., Coste I., 2000; Moisuc A., Samfira I., 2002).

The most effective herbicides for weeds control from the lucerne crops are: Pulsar 40 (E.C.) 1 l/ha and Kerb 50 W (4 kg/ha).

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