PRODUCITIVE IMPACT OF THE GREEN FORAGE SUPPLY
USAGE AT THE DAIRY FARMS

IMPACTUL PRODUCTIV AL FOLOSIRII CONVEIERULUI
VERDE ÎN FERMELE DE VACI CU LAPTE

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This paper presents the importance of the crop structure as a tool to maximize efficiency in the conceiving of the green forage supply scheme in a dairy farm. Several aspects are necessary to consider for proper green forage utilization by the cattle, as follows: climatic conditions, proper field operations for each crop, optimal harvest date, and farm technical and economical resources. With a high degree of succulence, green forage and derived products (silage, haylage), present advantages as compared to hay, having superior indices of nutritive value and palatability. A green forage supply scheme was applied on an area of 188 ha taking into account dairy cattle biological traits. Crop structure was as follows: forage maize, Sudan grass, Italian ryegrass, new lucern and old lucerne, and orchardgrass. Insuring the required superior green forage for the dairy cattle according to forage rations, represents one of the main techniques to maximize milk production and to minimize milk production cost.

Keywords: green forage supply, dairy cattle, forage rations.

Introduction

The planning of a green forage supply scheme represents a management system, which ensures the availability of green forage for entire dairy cattle effective from early spring to late autumn, being a technique to maximize milk production and to minimize milk production cost.

Arable land parcels of the farm located near the cattle stables ensure optimal conditions for the forage crop plan obtaining sufficient feed amounts (green forage, silage, haylage and hay) required for stalling period of cattle.

Desirable characteristics such as rapid growth, drought resistance, and good response to fertilizer and water, make annual grasses attractive to use in an overall management scheme for forage production.

The crop structure in the green forage supply scheme must consider the biological particularities of plant species and stage of development to obtain a good nutritive value of the forage at harvesting time.
With a high degree of succulence, green forage and derived products (silage, haylage), present addvantages as compared to hay, having superior indices of nutritive value and palatability.

Using green forage in the cattle rations leads to higher quantities of nutritive substances per land unit. Any conservation technique applied to green forage determines the diminishing of the initial nutritive value. Positive effects on the milk production result from the next quality indices of the green forage: balanced content of nutritive substances easier to digest, and energetic-proteic substances; high biological value from aminoacids, vitamins, and microelements; high palatability from succulence and flavour characteristics; green forage has diuretic and dietic actions. From the nutritive substances of the green forage composition, the energetic and proteic substances detain a crucial role to maintain high milk productivity.

Successful livestock production cannot be accomplished by ignoring either plant or animal requirements. Profitability to farmers is enhanced as there is improved nutrition for their dairy cattle resulting in increased animal productivity and better animal performance. This in turn improves their level of income and elevates their social status in the rural community.

Through proper developmental and management techniques, surface vegetation degradation, soil erosion as well as soil fertility reduction is avoided ensuring that the introduction of forages is an environmentally sustainable practice. It also needs more organised schemes to be introduced in order to control the use of the land by farmers and their livestock.

Optimal planning and utilization of each crop from the scheme represent the main goal of this paper.

**Materials and Methods**

Planning of the green forage supply availability depends on species biology and animal biology, animals that consume the obtained green forage. A series of aspects concerning the growth and development of the crops were considered together with the number and area of the parcels allotted for green forage.

A green forage supply scheme was applied on an area of 188 ha taking into account dairy cattle biological traits. Crop structure was as follows: forage maize (*Zea mays* L.), Sudan grass (*Sorghum sudanese*), Italian ryegrass (*Lolium multiflorum*), new lucern and old lucern (*Medicago sativa*) and orchardgrass (*Dactylis glomerata*).

Green forage supply scheme is specific for a pedoclimatic region and planning the scheme relied on soil and climatic conditions, and on land restrictions.

**Results and Discussions**

Table 1 presents the planned crop structure for the green forage supply scheme.
Crop structure in the green forage supply scheme

<table>
<thead>
<tr>
<th>Crop name</th>
<th>Crop structure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forage maize</td>
<td>33</td>
</tr>
<tr>
<td>Sudan grass</td>
<td>23</td>
</tr>
<tr>
<td>New lucern</td>
<td>17</td>
</tr>
<tr>
<td>Old lucern</td>
<td>4</td>
</tr>
<tr>
<td>Italian ryegrass</td>
<td>12</td>
</tr>
<tr>
<td>Orchardgrass</td>
<td>11</td>
</tr>
</tbody>
</table>

A proper planning of the green forage production relied on several techniques as follows: introduction of the crop species with different vegetative periods; utilization of maize hybrids with different vegetative periods; sowing in two periods with 10-15 days difference, which permitted a longer interval for the green forage harvesting from the same crop.

In this scheme, Italian ryegrass had a major contribution being an early forage crop which replaced the “borceag” autumn mixtures. Lucerne was an important crop, because of the longer period for utilization (May – September), high palatability and increased protein content of the forage. Sudan grass and orchard grass ensured large amounts of green forage. Forage maize has been harvested from the beginning of September to the end of October, providing necessary forage for the next year until the next crop cycle.

Table 2 presents the utilization periods of the crops for green forage resulting that the same crop might provide the necessary green forage in different periods.

Table 2

<table>
<thead>
<tr>
<th>Crops</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perennial crops</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Italian ryegrass</td>
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<td>-</td>
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<tr>
<td>Old and new Lucerne</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Orchard grass</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Annual crops</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forage Maize</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sudan grass</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

Crop succession in the green forage supply scheme and the assurance of the necessary green forage for the dairy cattle were as follows:
Italian ryegrass (*Lolium multiflorum*) was used as green forage in the dairy cattle rations from May 1-31, with amounts of 37 kg/dairy cow/day, from July 1-31, with 12 kg/dairy cow/day and from September 1-30 with 7 kg/dairy cow/day.

Old lucern was used as green forage in the dairy cattle rations from May 1-31, with amounts of 10 kg/dairy cow/day, from June 1-30, with 20 kg/dairy cow/day, from August 1-31, with 10 kg/dairy cow/day, and from September 1-30, with 10 kg/dairy cow/day.

Orchard grass ensured green forage for dairy cattle rations from May 1-31, with amounts of 10 kg/dairy cow/day, from June 1-30, with 37 kg/dairy cow/day, from July 1-31, with 10 kg/dairy cow/day, and from September 1-30, with 20 kg/dairy cow/day.

New Lucerne was used as green forage in the dairy cattle rations from July 1-31, with 10 kg/dairy cow/day, and from August 1-31, with 10 kg/dairy cow/day.

Sudan grass ensured green forage for dairy cattle rations from July 1-31, with 23 kg/dairy cow/day, and from August 1-31, with 25 kg/dairy cow/day and from September 1-30, with 10 kg/dairy cow/day.

Forage maize was used as cattle feed from September 1-30 using 10 kg/dairy cow/day.

Best available techniques must be applied to permit that the green forage is optimally valorized, such as proper field operations for each crop, optimal harvest date, and farm technical and economical resources.

Following the sequence shown should maximize the chances of selecting high quality, high yielding forage crops that will provide required green forage on a given site.

**Conclusions**

Using forage management schemes to supply green forage for dairy cattle a better planning is provided, which ensures a good production and utilization of the green forage from early spring to late autumn. A good selection of the species is required to optimize land use.

Efficient use of forages is seen as a critical component of maintaining an economically and environmentally healthy dairy farm industry, as the typical dairy ration includes 30 to 70 percent forage.

Mismanagement of animals, including excessive addition of nutrients to rations, can negatively impact the environment. Improved forage management in the field and in the cow will have a very positive effect on whole farm nutrient management as well as farm profitability.

The intervals of green forage utilization differ, which gives the farmer the opportunity to benefit from this less expensive resource for a longer period of time.

Assurance of the high quality green forage according to forage rations represents one of the most important techniques to improve milk production and to minimize milk production cost.
Environmental concerns and economical interests in sustainable agriculture are trends that will grow even stronger in the future, and forage crop production is one of the best means to act for land resources management.

Bibliography


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Valorificarea la maxim a fiecărei culturi din conveier reprezintă scopul principal al acestei lucrări. Pentru aceasta se aplică cele mai corespunzătoare procedee cu ajutorul cărora masa verde produsă să fie utilizată complet. Aceste procedee sunt legate de lucrările specifice fiecărei culturi, de epocă în care planta ajunge la maturitate, de posibilitățile de care dispune ferma și de condițiile climatice. Atât nutrețul verde, cât și formele derivate din el, conservate la un grad de succulență ridicat, prezintă avantaje evidente, comparativ cu formele de conservare prin uscare, având indici superiori de valoare nutritivă și consumabilitate. Ținând cont de particularitățile biologice ale vacilor de lapte, s-a organizat un conveer pe o suprafață de 188 ha, în care a intrat următoarele specii de plante: porumb pentru siloz; iarbă de Sudan; raigras italian; lucernă nouă și lucernă vechi și golomă. Asigurarea animalelor cu nutreț verde de calitate superioară, conform normelor de furajare, constituie unul din mijloacele principale în vederea sporirii producției de lapte, realizându-se în același timp și reducerea prețului de cost al laptelui.

Cuvinte cheie: conveier verde, vaci cu lapte, norme furajere.