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# SUMMARY

## THE USE OF SILAGE IN RABBIT NUTRITION

Two experiments were conducted in this study. The 1<sup>st</sup> one was carried out to determine the digestibility coefficients and the nutritive values of the commercial rabbit diet (CD), berseem silage (BS) and maize silage (MS). Twelve mature (6 months old) New Zealand White (NZW) rabbits, averaging 2.7 kg each; were distributed into 3 groups (4 rabbits each).

The 2<sup>nd</sup> experiment was designed to study the performance of growing NZW rabbits as affected by using both silages in their diets.

Fifty six NZW rabbits of mixed sexes, 6 weeks old with an average initial live body weight of 760-775 g were used. Rabbits were divided into seven similar groups; 8 rabbits in each group. Rabbits for each treatment group were fed of the experimental diets (on DM basis) for 12 weeks according the following:

G<sub>1</sub> 100% commercial diet (CD), G<sub>2</sub> 80% CD 20% BS, G<sub>3</sub> 60% CD + 40% BS, G<sub>4</sub> 40% CD + 60% BS, G<sub>5</sub> 80% CD + 20% MS, G<sub>6</sub> 60% CD + 40% MS and G<sub>7</sub> 40% CD + 60% MS.

Results obtained may be summarized as follows:

### A. Experiment 1:

1. Maize silage contained (on DM basis) lower CP, EE and ash content (8.86, 2.74 and 7.77%, respectively) and higher CF content (26.86%) compared to commercial rabbit diet and berseem silage.
2. The pH values of both silages ranged between 3.8 (MS) to 4.0 (BS). The highest values of VFA's and L.A were obtained for MS (1.75 and 3.0%) while the lowest values were recorded for BS (1.27 and

2.90%). Berseem silage had the highest content of ammonia nitrogen concentration (2.17%) compared to MS (1.40%).

3. Digestibility coefficients of OM, CP, EE and NFE were the highest for commercial rabbit diet (75.94%, 73.97%, 88.73%, 83.56%, respectively) whereas CF was the highest in maize silage (71.75%).
4. Commercial rabbit diet had the highest TDN (73.11%), DE (3223 Kcal/kg DM) and DCP (12.97%). On the other hand, MS had the highest TDN and DE (70.93% and 3127 Kcal/kg DM). The lowest value of DCP (4.99%) was obtained with MS. Berseem silage obtained 64.5% TDN, 2843 Kcal DE/kg, DM and 9.58% DCP.

#### **B. Experiment 2:**

1. Utilizing of BS and MS at levels of 20, 40 and 60% in the tested diets decreased CP, EE and NFE contents. However, CF % was increased.
2. The highest digestibility coefficients of OM was achieved with control diet (78.85%) followed by MS 20% diet (78.25%) and BS 20% diet (78.03%). Meanwhile diets contained 40 and 60% BS showed the lowest digestibility coefficients for OM.
3. Digestibility coefficients of CP were higher for MS 20% diet (79.99%) and control diet (78.74%) followed by BS 20% diet (76.25%). Whereas diets contained 40 and 60% BS and 60% MS showed the lowest CP digestibility coefficient.
4. The highest digestibility coefficients of EE was obtained for diets contained 20% BS or MS (88.97 and 88.42%, respectively). While diets contained 40 and 60% BS showed the lowest digestibility coefficient.
5. No significant differences in digestibility coefficients of CF.

6. The highest digestibility coefficients of NFE were obtained for control diet (84.00%) as well as diets 20% BS (83.01%) and 20% MS (82.12%). Means while lowest value was recorded for diet contained 60% BS (74.87%).
7. The commercial rabbit diet has suitable DE/DCP ratio (242) for feeding growing rabbits. Using BS in the 2<sup>nd</sup> and 3<sup>rd</sup> tested diets increased DCP and resulted in balanced diets of suitable DE/DCP ratio (259 and 261) compared to 6<sup>th</sup> and 7<sup>th</sup> diets contained 40 and 60% MS (304 and 346), respectively.
8. Increasing BS and MS levels from 20 to 60% on DM basis in experimental diets gradually decreased the average daily gain. Rabbits fed high level of both silages (60%) in groups 4 and 7 showed lower gains (17.70 and 18.20 g/day, respectively). Compared to the control group (24.00 g/day). Daily gain for BS 20% (22.40 g/day) and for MS 20% (22.70 g/day).
9. Increasing levels of BS or MS from 20 to 40% on DM basis (G<sub>2</sub>, G<sub>3</sub>, G<sub>5</sub> and G<sub>6</sub>) increased the average DM intake (101.04, 101.20, 96.76 and 103.87 g/day, respectively). While rabbits fed diets contained 60% BS or MS (G<sub>4</sub> and G<sub>7</sub>) showed significantly ( $P < 0.01$ ) lower feed consumption (89.72 and 91.60 g/day) in comparison with the control (95.08 g/day).
10. The inclusion of BS and MS in the diet of growing rabbits decreased feed conversion (kg DM/kg gain). This reduction of feed conversion was increased with increasing the levels of both silages in the diet.
11. Berseem silage resulted in a pronounced decrease in cecum pH values with increasing BS level compared to MS. The depression of cecum pH values as the level of BS and MS increases is associated with the increase of VFA's production.

12. Increasing BS level in the diet resulted in a significant increase in  $\text{NH}_3\text{-N}$  concentration of cecum content. MS showed the same trend where the concentration of  $\text{NH}_3\text{-N}$  of cecum content of rabbits was increased with increasing dietary levels of MS with the exception of G<sub>7</sub> (60% MS).
13. No significant differences among treatment groups in levels of plasma total protein, albumin and glucose were noted. While, there were highly significant variations ( $P < 0.01$ ) in urea concentrations among treatment groups.
14. Cholesterol concentration in blood plasma of rabbits fed different dietary treatments ranged from 34.66 to 50.33 g/dL, without significant differences among groups.
15. There were no significant differences among treatment groups in dressing and boneless percentages.
16. Meat dry matter ranged from 25.36 to 28.56%. The average protein content of meat for different groups were 74.63 to 77.26% on DM basis. While EE content ranged from 7.76 to 10.76%. Values of ash content were 4.40 to 5.33%.
17. From results reported herein, it is evident that berseem and maize silages were highly palatable roughages and their feeding values were good. It can be used successfully for feeding rabbits without any health troubles and adverse effects on meat quality. No mortalities were recorded during the experimental period in all groups.

## CONCLUSION AND RECOMMENDATIONS

Incorporation of BS and MS of suitable levels (60% for BS and 20 to 60% for MS) improved economical efficiency along with a decrease in the cost of feeding compared to feeding concentrate feed mixture.

Thus, these results encourage using these kinds of silages with the suitable level of 20% for BS and 20 to 40% for MS for feeding growing rabbits to improve their productive performance as well as saving considerable amounts of the expensive feeding concentrate. Meanwhile, protein content in the diet must be taken into consideration with maize silage specially with high levels (40 and 60%). The energy content in the diet must receive attention when berseem silage is used for feeding growing rabbits.

Berseem and maize silages were of practical importance in rabbit feeding and can be considered of high quality roughages for their high feeding values and cheap price.

From the nutritional, feed conversion and economical results of the present study, it is evident that berseem and maize silages are highly palatable roughages and their feeding values are distinctly high and can be used successfully for feeding rabbits without any healthy troubles and adverse effects on meat quality.