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LIST OF ABBREVIATIONS

ADF	Acid detergent fiber
ADG	Average daily gain
ADL	Acid detergent lignin
AIA	Acid insoluble ash
A.O.A.C.	Association of Official Analytical Chemists
B	Fresh berseem
BS	Berseem silage
BW	Body weight
CD	Commercial diet
CF	Crude fiber
CP	Crude protein
DC	Digestion coefficient
DCP	Digestible crude protein
DE	Digestible energy
DM	Dry matter
DE/DCP	Digestible energy/ digestible crude protein
EE	Ether extract
FBRS	Fodder beet roots silage
FCR	Feed conversion ratio
GNS	Groundnut shell
GNVH	Groundnut vines hay
GOT	Glutamic oxaloacetic transaminase
GPT	Glutamic pyruvic transaminase
GR	Growth rate
IU/L	International unit per liter
Kcal	Kilo calorie
LA	Lactic acid
LBW	Live body weight
MS	Maize silage
NB	Nitrogen balance
NDF	Neutral detergent fiber
NFE	Nitrogen free extract
NH₃	Ammonia
NZW	New Zealand White
OM	Organic matter
PNVH	Peanut vines hay
PNVS	Peanut vines silage
SPTS	Sugar beet tops silage
SV	Starch value
TDN	Total digestible nutriments
VFAs	Volatile fatty acids
WHC	Water holding capacity

5. SUMMARY

This study was conducted at Sakha Experimental Laboratories and Station, Animal Production Research Institute, Ministry of Agriculture in co-operation with Department of Animal Production, Faculty of Agriculture, Kafr El-Sheikh, Tanta University, during the period from October 2002 to August 2003.

Three experiments were carried out: The 1st one was conducted to determine the digestibility coefficients and nutritive values of clover hay (CH) and peanut vines as hay (PNVH) and silage (PNVS).

The second experiment was conducted to study the performance of growing NZW rabbits as affected by inclusion of peanut vines as hay or silage (PNVH, PNVS) replacing CH. Also, included the digestibility coefficient of nutrients, nitrogen balance, growth performance, feed conversion, some blood constituents, some carcass traits, cecum microbial activity and economic efficiency of experimental rations were determined.

Design of 2nd experiment:

Treatments	Dietary treatments
T ₁	Control 40% clover hay
T ₂	50% of clover hay was replaced by peanut vines hay
T ₃	75% of clover hay was replaced by peanut vines hay
T ₄	100% of clover hay was replaced by peanut vines hay
T ₅	50% of clover hay was replaced by peanut vines silage
T ₆	75% of clover hay was replaced by peanut vines silage
T ₇	100% of clover hay was replaced by peanut vines silage

The third experiment was carried out to study the effects of the experimental rations on reproductive performance including, conception rate, litter size and weight at birth, bunny weight gain at 14, 21, 28 and 35 days of age and mortality rate from birth till weaning (35 days). Semen

characteristics were also studied in terms of volume, color, sperm motility, dead spermatozoa and sperm concentration.

The results obtained could be summarized as follows:

Experiment 1:

1. On DM basis PNVS had higher CP 14.49% and lower CF 23.05%, compared with CH which contained 14.26% CP and 30.56% CF. PNVH contained 13.54% CP, 23.72% CF and the highest value of NFE (48.26%) and EE (3.48%), compared with CH which contained the lowest values of NFE (42.68%) and EE (2.36%). The ash content was almost similar in CH, PNVH or PNVS ranged from 10.14 to 12.39%.
2. pH value of PNVS was 4.4 and contained 3.44% VFA's of DM. While the fractions of VFA were within the range of good silage.
3. Digestibility coefficients of OM, CP and NFE were the highest in PNVH being 71.40, 78.10 and 73.36%, respectively, while the CH had the lowest values of OM (66.30%) and CF (59.32%). PNVS had digestibility coefficients similar to CH except for CF which was higher (65.68%) than CH (59.32%).
4. PNV hay or silage had higher TDN (66.82 and 62.33%, respectively), than CH 62.00%. On the other hand PNVH had the highest values of DCP and DE (10.57% and 2946 Kcal/kg, respectively).

Experiment 2:

1. On DM basis using PNV rations, generally, all tested rations contained nearly similar values for OM% and all of nutrients except CF, which decreased with increasing the level of PNVH or PNVS.
2. Digestibility coefficients of rations containing PNVS (T₆ and T₇) for OM, CP and NFE were the highest being (81.00 and 80.46%, 87.29 and 86.79% and 83.94 and 83.48%, respectively) compared with the other rations.

3. Rations containing PNVS (T₅, T₆ and T₇) showed the highest TDN values being 78.07, 79.10 and 78.48%, respectively, compared with control ration (75.15%). Also, the DCP values were higher in the same rations 14.48, 14.56 and 14.58%, respectively, compared with control ration (13.7%).
4. The results of the values of DCP and DE of the different experimental rations revealed that all rations have suitable nutritive ratio (1: 237 to 240).
5. The nitrogen balance was positive in all the tested rations, with significant differences ($P < 0.05$) between the treatments.
6. Rabbits fed rations containing PNVH gained (29.89 g/day), compared with both control treatment (27.84 g/day) and rabbits fed rations containing PNVS (27.28 g/day).
7. Average DM intake (6-16 weeks) for rabbits fed on T₂ or T₅ showed significantly ($P < 0.05$) higher fed intake (97.89 and 100.50 g/day, respectively), compared with the other tested rations.
8. The best feed conversion was obtained from rabbits fed on T₃ and T₄ (3.25 and 3.23 kg diet/kg gain), respectively, compared with the other treatments.
9. Rabbits fed on T₂ showed higher significant level of plasma total protein (7.51 g/dL), albumin (3.49 g/dL) and globulin (4.02 g/dL), than the other treatments.
10. The maximum level of plasma total lipids was observed for control ration (7.64 g/L), while the minimum values were obtained from rabbits fed on T₃ and T₅ (5.46 and 5.27 g/L, respectively).
11. Glucose concentration ranged from 115.20 mg/dL (T₁ control) to 130.66 mg/dL (T₅) with non significant differences between the treatments.
12. Non significant differences were found concerning GOT and GPT, the values ranged from 35.33 to 37.67 and 25.33 to 27.00 IU/L, respectively.

13. Urea concentration ranged from 3.52 to 4.05 mg/dL with significant differences ($P < 0.05$) between the dietary treatments. However, creatinine concentration ranged from 1.62 to 1.68 mg/dL, with non significant differences.
14. Cecum content of dry matter was the highest (23.48%) in rabbits fed on T₂, while the lowest value was 20.65% in rabbits fed on T₅, with significant differences ($P < 0.05$) between the treatments. pH of cecum contents ranged from 5.75 to 6.15. The results showed a decrease in cecum pH values for rabbits fed rations containing PNVS. The depression of cecum pH values is associated with an increase of VFA's production in rabbits fed rations contained PNVS.
15. No significant differences ($P < 0.05$) in VFA fractions were found between the different experimental treatments except propionate level which was significantly higher for rabbits fed on T₇. NH₃-N concentration, values ranged from 23.30 to 44.00 mg/100 dL, with significant differences ($P < 0.05$) between the dietary treatments.
16. The best values for dressing percentage were recorded for rabbits fed on T₂ and T₅ (64.24 and 64.12%), respectively. The highest percentage for boneless meat was recorded for rabbits fed on rations containing PNVT₂ (47.56%), with significant differences ($P < 0.05$) between the different treatments.
17. pH values of meat for rabbits in the different treatments ranged from 5.00 to 5.59, the colour of fresh meat ranged from 0.213 to 0.413. The average values of tenderness of fresh meat ranged from 2.05 to 2.77 cm² corresponding to 4.70 to 6.60 cm² water holding capacity.
18. The dry matter content of meat ranged from 27.02 to 28.48%. The average protein content of meat on DM basis for different treatments ranged from 80.79 to 81.90%, while EE content ranged from 10.69 to 11.98%, also, ash content of meat ranged from 6.19 to 7.69%. Generally there are significant differences ($P < 0.05$) between the different treatments for physical characteristics and chemical composition of meat except CP.

19. Concerning the economical efficiency, results revealed that rabbits fed on T₆ and T₇ were more efficient (356.62 and 395.05%, respectively), than those fed the other dietary treatments. Also, the relative economical efficiency (REE) was the best for previous treatments (192.87 and 213.66%), respectively. However, the lower PEE (118.16%), was found in T₂. Results indicated lower cost per kg gain for rabbits fed rations contained PNV as hay or silage.

Experiment 3:

1. In the first kindling, average of conception rate for NZW does ranged from 83.33 to 100.00%. The average of bunny weight at 35 days (at weaning) ranged from 25.14 to 32.14 g/day and mortality percentage during all period (from birth to the weaning) ranged from 9.53 to 24.77%, with significant differences ($P < 0.05$).
2. In the second kindling, reproductive performance decreased compared with the first kindling. The results showed that all differences in doe and offspring traits were not significant with the except of bunny weight at birth, weight gain at 21 and 28 days of age which were significant ($P < 0.05$) between the dietary treatments. Mortality percentage was higher compared with the first kindling.
3. The present results, also indicated that, ejaculate volume, sperm motility, pH and sperm concentration were not significant ($P < 0.05$) for bucks fed on rations contained different levels of PNV as hay or silage.
4. Concerning the economical efficiency of reproductive performance, the results showed that rabbits fed on T₇ recorded the highest values for economical efficiency and relative to control (713.20 and 177.57%, respectively), with significant differences ($P < 0.05$) between the different treatments.

CONCLUSION

The present results encourage using peanut vines as hay or silage up to 100% replacement of clover hay for feeding growing and does rabbits to improve their productive and reproductive performance as well as saving considerable amounts of the expensive roughage as clover hay.

Inclusion PNV as hay or silage in rabbit rations improved economical efficiency along with a decrease in the cost of feeding compared with feeding clover hay.

From the nutritional and economical results of the present study it could be concluded that PNV as hay or silage can be successfully used for feeding rabbits without any healthy troubles and adverse effects on meat quality or does and their offspring.

Because grinding and pelleted of feedstuffs are the most common feed processing methods used for rabbits in large scale farms. Therefore, using PNV as hay more suitable to incorporate into commercial rabbit diet, which is often pelleted, while PNV as silage can be used successfully in small farms.