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Chemical composition of willow trees for silage making based on harvest frequency

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Introduction

Willow silage is been newly introduced to small ruminant diets as non-conventional fresh forages with high protein contents (9.5% as DM basis). Feed availability is one of the major obstacles facing the livestock sector in the world, as well as in Jordan.

To increase farmer profitability, it's important to reduce feed costs by producing high quality forage with highest biomass. A frequent harvest of willow will probably produce high quality forages, but does it effect the final biomass produce by land?.



No study on the effect of harvest frequent of willow tree on chemical composition and biomass production willow silage were conducted in Jordan

The Objective

A study was conducted to evaluate the chemical composition and biomass production of willow tree for silage making for small ruminant based on harvest frequent.

Materials & Methods

A total of 9 plots (42 trees per plot) were randomly assigned into 3 harvest frequency (3 plots per treatment) per production year.

- H3 group: Plots were harvested on June, September and November.
- H2 group: plots were harvested on July and November.
- H1 group: Plots were harvested once on November.


- Plots were harvested and weighted for each treatment, total mass productions were calculated from the accumulative weight for treatment H3 and H2, while the total mass production for H1 were weighted at the end of the experiment.

- Average production per tree were also calculated for each treatment

- Willow leaves and stems were analyzed for moisture contents, CP, NDF, ADF, Fiber, either extract and ash.

Results

- Only moisture and CP contents were significantly different among the treatments.

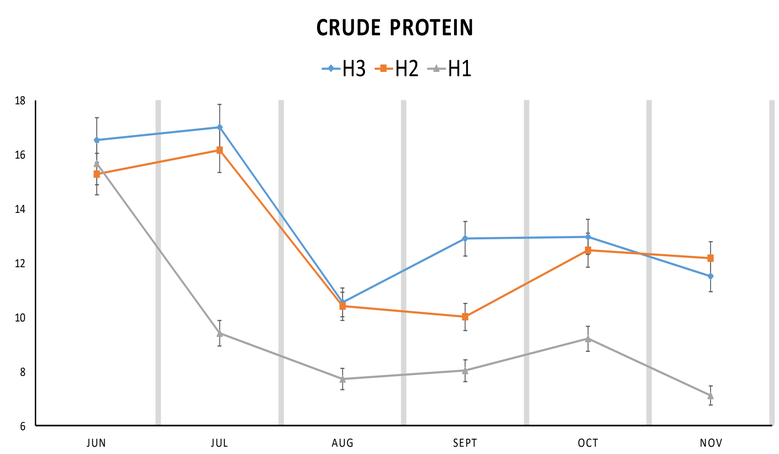
- The study shows that moisture content in H3 (62.8 %) and H2 (62.6 %) group were significantly higher than H1 (50.7 %).

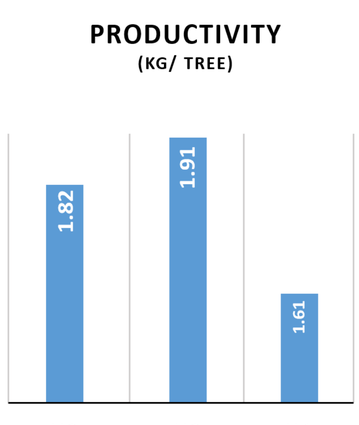
- H3 and H2 group were significantly higher protein contents (DM basis) compared to H1 (13.2 and 12.7 vs. 9.5 % CP, respectively).

- The total biomass productions were 173.1, 153.4 and 192.1 kg, with an average forage production of 1.47, 1.58 and 1.60 kg per tree for H3, H2 and H1, respectively.

Table 1. Chemical composition of willow trees based on harvest frequency in one year under no irrigation system

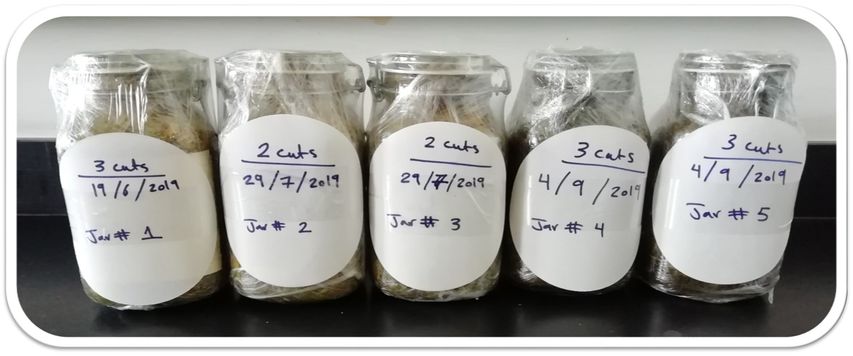
	H3	H2	H1	SEM	P - Value
No. Tree	121	114	118		
Moisture	62.8 a	62.6 a	53.8 b	7.75	0.036
CP	13.2 a	12.7 a	9.5 b	2.46	0.010
NDF	33.5	32.1	36.2	11.89	0.700
ADF	22.1	21.3	25.5	8.35	0.490
Fiber	22.9	21.6	22.4	7.39	0.925
Ash	5.7	5.6	5.4	0.54	0.508
Fat	2.1	2.1	1.6	0.59	0.268





Conclusions

In conclusion, for silage making, harvest willow trees twice or more in a production year produce higher biomass, with higher protein and moisture contents, which is ideal for silage making compare to harvest willow trees once in a production year.



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