A Study on the Utilization of the Bioresources in Thalae–Noi Basin as Animal Feed: 2 Chemical Compositions and Ruminal Dry Matter Degradation Parameters of the Bioresources in Thalae–Noi Basin Ensiled with Corn Stover at Different Levels

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Introduction

The Thalae–Noi is one of the most attractive tourist destination place in the south of Thailand. Thalae–Noi basin is a wetland area consisting of diverse species of plant that can be use for many purposes. For the animal nutritionist point of view, the bioresources in Thalae-Noi might be use as animal feed. The objective of this study was to determine the chemical compositions and the availability of the bioresources in Thalae–Noi basin for use as animal feed. Three prominent bioresources in Thalae–Noi basin, Wide-leafed water grass *(Hanguana malayana (Jack) Merr.)*, Thin Napier grass (*Pennisetum polystachyon (L.)* Schult.) and Water hyacinth (*Eichornia crassipes* (Mart.) Solms which have a high potential for use as animal feed were selected for ensilage with corn stover at 0 25 50 75 and 100% levels for determination on the chemical compositions and the ruminal dry matter degradation parameters.

Materials and Methods

Trial I Ensilage the bioresources with corn stover at different level and use for chemical composition analysis


Accidental random sampling of the Bioresources


Preparation for ensilage


Mixing with corn stover at different levels


Ensilage for 21 days


Quality test and sampling


Chemical analysis of the sample

Trial II: Rumen dry matter degradation parameters


Bag preparation


Weighing


Tied


Put into the nest


Warming at 39°C


Put into the rumen


Taking off


Washing


Oven dry


Desiccation and weighing


Curve fitting and generate data

Results

Table1 Physical and chemical properties of plant ensiled with corn stover at different levels

Corn :Grass species	Ratio	Fresh weight	Dry weight	Average pH value	color	ordor
All Corn	100	1500	300	4.92	Greenish yellow	lactic acid representing
Corn: Wide-leafed water grass	75:25	1300	305	4.68	greenish brown	lactic acid representing
Corn: Wide-leafed water grass	50:50	1500	260	4.70	greenish brown	lactic acid representing
Corn: Wide-leafed water grass	25:75	1250	242	4.37	greenish brown	lactic acid representing
Corn: Wide-leafed water grass	0:100	1500	227	4.45	greenish brown	lactic acid representing
Corn: Water hyacinth	75:25	1500	300	4.87	greenish brown	lactic acid representing
Corn : Water hyacinth	50:50	1500	220	4.62	greenish brown	lactic acid representing
Corn : Water hyacinth	25:75	1300	245	4.89	greenish brown	lactic acid representing
Corn: Water hyacinth	0:100	1300	175	4.91	greenish brown	lactic acid representing
Corn: Thin Napier grass	75:25	1500	422	4.28	Greenish yellow.	lactic acid representing
Corn: Thin Napier grass	50:50	1075	330	4.01	Greenish yellow.	lactic acid representing
Corn: Thin Napier grass	25:75	1500	383	4.73	Greenish yellow.	lactic acid representing
Corn: Thin Napier grass	0:100	1500	427	4.56	Greenish yellow.	lactic acid representing

Table 2 Chemical compositions of the bioresources in Thalae–Noi basin ensiled with corn stover at different levels (% on Dry matter basis)

Plant species	Ratio	chemical composition: Moisture**	Crude protein	Ether exttract	Crude fiber	crude Ash	Neutral detergent fiber (NDF)	Ligno cellulose (ADF)	Acid detergent Lignin (ADL)	Phosphorus
All Corn	100	10.43	8.94	2.51	33.76	10.27	66.35	40.09	6.01	0.17
Corn: Wide-leafed water grass	75:25	11.41	8.60	2.08	29.85	11.60	62.47	38.35	6.68	0.25
Corn: Wide-leafed water grass	50:50	10.67	8.15	3.92	28.36	13.02	59.70	36.54	7.49	0.23
Corn: Wide-leafed water grass	25:75	12.07	9.57	3.47	29.51	13.24	56.82	37.45	8.11	0.20
Corn: Wide-leafed water grass	0:100	10.50	9.77	3.09	22.54	15.05	50.05	37.98	8.44	0.16
Corn: Water hyacinth	75:25	11.84	9.92	2.67	29.01	11.68	59.03	36.26	4.50	0.23
Corn : Water hyacinth	50:50	11.67	7.69	4.96	28.96	11.64	58.95	34.94	4.20	0.23
Corn : Water hyacinth	25:75	13.44	7.64	1.86	26.96	12.12	57.35	35.10	4.36	0.21
Corn: Water hyacinth	0:100	14.52	6.87	2.47	26.29	13.7	55.85	35.32	4.10	0.16
Corn: Thin Napier grass	75:25	10.03	7.28	1.65	28.58	10.34	66.46	41.01	5.04	0.22
Corn: Thin Napier grass	50:50	11.08	6.68	1.29	28.65	10.07	66.63	37.69	4.66	0.19
Corn: Thin Napier grass	25:75	9.47	6.78	2.30	31.59	10.82	65.66	41.47	5.44	0.16
Corn: Thin Napier grass	0:100	9.26	5.41	2.09	32.23	10.14	68.34	41.89	6.28	0.13

** percent on air dry basis

Table3 Ruminal degradation parameters of the bioresources in Thalae–Noi basin ensiled with corn stover at different levels (%)

Plant species	Ratio	Ruminal degradation parameters (%): a	b	c(fraction/h)	ed 2	WL	PTDG
All Corn	100	20.50^{G}	46.04^{BCD}	0.027^{CD}	36.33^{G}	8.42^{M}	66.53^{BCDE}
Corn: Wide-leafed water grass	75:25	26.91^{C}	44.47^{BCD}	0.031^{C}	43.32^{CD}	19.66^{D}	71.38^{ABCD}
Corn: Wide-leafed water grass	50:50	30.14^{B}	43.89^{BCD}	0.024^{CD}	44.15^{C}	19.23^{E}	74.04^{ABC}
Corn: Wide-leafed water grass	25:75	27.33^{C}	38.30^{CD}	0.049^{A}	46.07^{B}	23.62^{B}	65.63^{CDE}
Wide-leafed water grass	100	35.86^{A}	35.25^{D}	0.035^{BC}	49.02^{A}	25.37^{A}	71.11^{ABCD}
Corn: Water hyacinth	75:25	24.73^{FE}	49.56^{ABC}	0.027^{CD}	41.67^{E}	18.58^{F}	74.28^{ABC}
Corn : Water hyacinth	50:50	25.95^{CDE}	48.38^{ABC}	0.025^{CD}	41.58^{E}	16.16^{J}	74.34^{ABC}
Corn : Water hyacinth	25:75	26.53^{CD}	51.66^{AB}	0.025^{CD}	42.68^{DE}	19.76^{C}	78.18^{AB}
Water hyacinth	100	31.13^{B}	51.58^{AB}	0.017^{DE}	44.42^{C}	18.06^{G}	82.71^{A}
Corn: Thin Napier grass	75:25	22.97^{F}	43.35^{BCD}	0.031^{C}	39.28^{F}	17.19^{H}	66.33^{BCDE}
Corn: Thin Napier grass	50:50	24.06^{FE}	38.17^{CD}	0.043^{AB}	41.28^{E}	16.51^{I}	62.23^{DE}
Corn: Thin Napier grass	25:75	19.64^{G}	39.41^{CD}	0.030^{C}	34.38^{H}	13.36^{K}	59.05^{E}
Thin Napier grass	100	19.96^{G}	58.03^{A}	0.012^{E}	30.25^{I}	11.56^{L}	77.99^{AB}
SEM		0.661	3.454	0.003	0.506	0.001	3.56

Conclusions

These research results implied that the bioresources in Thalae–Noi basin especially the Wide-leafed water grass, Thin Napier grass and Water hyacinth had been proven that they were essential feed resources for use as ruminant feed. Using of the bio resources in Thalae–Noi basin for the ruminants feed both as fresh and preserved form by silage making is the practical solution way to relieve the scarcity of roughage during the shortage period on the dry season in the south of Thailand.

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