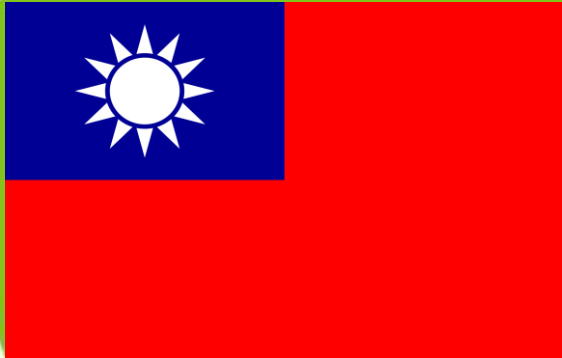


TAIWAN



GENETIC IMPROVEMENT IN SHEEP AND GOAT PROJECT, TAIWAN-BELIZE



Feeding Strategy: Different Resources

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INTRODUCTION

Belize is blessed with tropical weather, thereby we have multi-vegetation variety of plants all around.

There are various local Shrubs, and trees, which we can use to feed the sheep, with high crude protein percentage (CP%) and can contribute to the sheep's daily nutritional requirement.



GENERAL CONSIDERATIONS

- ✓ A practical diet for ewes in late gestation would include 5 to **6 pounds** of forage and from 1.0 to **2.0 pounds** per ewe per day of a grain concentrate such as corn(or other feeding options). Fresh water and mineral are also crucial. Lactation is a very demanding period for ewes.
- ✓ Mostly **sheep** eat grass, and forbs, and other pasture plants. They especially love forbs. In fact, it is usually their first choice of food in a pasture. A forb is a broad-leaf plant other than grass.
- ✓ If hand feeding in troughs, the lambs should be fed at least twice a day with no more than 1 to **1.5 pounds** concentrate per day, or other feeding options.

FEEDING OPTIONS (1. MADRE CACAO)

1. Madre Cacao (*Gliricidia sepium*) also known as: *Mata Ratón*; *Cacao de nance*, *Cachanance*, “*Madreado*” in Honduras; *Madre Cacao* or *Quickstick* in Belize; and *Madero negro* in Nicaragua, *Palo de Hierro* in El Salvador.



General Facts of Madre Cacao

- ✓ Madre de Cacao is nitrogen-fixing tree that can grow from 30 to 36 feet high
- ✓ Adaptable to almost any soil environment including infertile soils, tolerant to water logging and also drought for up to 6 to 8 months.
- ✓ In the Philippines, the extract obtained from its leaves is used to remove external parasites in animals.
- ✓ Of course, in Belize we use the leaves to feed sheep and cattle, firewood, as posts for live fencing.
- ✓ The leaves have a high Protein Content of 20-23%.
- ✓ Feed 1 to 2 lbs/day of madre cacao leaves per adult ewe. It is always recommended to provide a means of fiber (helps in ruminating) to go along with madre cacao or other forbs.

MADRE CACAO as animal feed



2. NACEDERO

2. Nacedero (*Trichanthera gigantea*)

- 18-20% Protein Content
- High Palatability
- Can be mixed with other forbs and pastures.
- Planting to be done on rainy season
- Planting distance: 5' x 5'.
- Leaves can be fed at 2-3 lbs per day for adult ewe, along with fiber (grass).



3. MULBERRY

3. Mulberry (*Morus alba*) Morera

- 15-25% Protein Content
- Digestibility: 75 – 95%, making it one of the most digestible even more than commercial concentrates.
- Young branch also has up to 14% Crude Protein.
- Leaves tend to “shrink” during dry season.
- Prune the tree annually to avoid “branchy” tree.
- Feed 2-3 lbs per day along with Pasture.



FEEDING MULBERRY



4. BOTON DE ORO

4. Boton de Oro (*Tithonia diversifolia*) – planta milagrosa.

- 18.9 to 28.8% Protein Content
- Leaves, flowers and branches are easily digestible.
- Easily propagated by branches 1.5' long and by seeds.
- Naturally grown in Belize.
- Uses: as organic fertilizer (green), as erosion prevention, silvopastoral systems.
- High digestibility in rumen.
- Rapid regrowth: 70 days cutting cycle.
- Feed 1-2 lbs per day with pasture.



BOTON DE ORO



5. NEPALI HOG PLUM

5. Nepali hog plum *Choerospondias axillaris*

- 14 to 15.1% Protein Content
- Grows naturally in Belize
- Easily planted by branches
- Fruits are very high in Vitamin C.
- Feed 2-3.5 lbs per day with pasture.



6. MORINGA

6. Moringa (*Moringa oleifera*) – La planta de la vida...

- ✓ provides 7 times more vitamin C than oranges, 10 times more vitamin A than carrots, 17 times more calcium than milk, 9 times more protein than yoghurt, 15 times more potassium than bananas and 25 times more iron than spinach.
- ✓ A research shows that immature pods contain around 46.78% fiber and around 20.66% protein content.
- ✓ Easily propagated by seeds (8-12 days) and by branches.
- ✓ Moringa can withstand severe drought (up to 8 months)
- ✓ Can be fed at 3 lbs per day, mixed with grass.



MORINGA



7. RAMON

7. Ramon (*Brosimum alicastrum*) Nuez Maya

- ✓ High Seed Germination rate (up to 95%)
- ✓ Leaves 16% Protein and Fruits 18%
- ✓ Propagation done by Seeds and by Branches. Planted 5 x 5 feet.
- ✓ Annual chopping of branches recommended
- ✓ Added value of fruits (can be sold).



Ramon



8. PIXOY

8. Pixoy (*Guazuma ulmifolia*)- *La pintura de los mayas*. Also known as: El guásimo, guásima, caulote, or majahua, or tapa c...

- ✓ Protein Content: Leaves 17%, Fiber: 26%
- ✓ Locally found anywhere your eye can see.
- ✓ Easily propagated by seeds and Branches.
- ✓ One of the highest drought resistance trees.
- ✓ Can be fed at 2 lbs per day with grass



Pixoy



9. SWEET POTATO

9. Sweet Potato (*Ipomoea batata*) – *Camote, camote morado*

- ✓ Protein Content: Leaves: up to 12%, tuber: 14%
- ✓ Highly Palatable and digestible
- ✓ Easily grown
- ✓ Both Tuber and Leaves can be fed, chopped and mixed with pasture.
- ✓ Can be fed at 2-3 lbs per day along with pasture



Sweet Potato



10. CASSAVA

10. Cassava (*Manihot esculenta*) commonly called cassava, manioc, yuca, macaxeira, mandioca .

- ✓ Protein Content: From 29 - 31%.
- ✓ Easily planted by branches.
- ✓ Planting distance is 5x5 feet. (tresbolillo)
- ✓ Dual purpose (forage and tuber)
- ✓ Can be fed at 1-1.5 lbs per day with pasture.
- ✓ Put the leaves to wilt under sun for 1-2 days before supplying to sheep as intoxication may happen.



Cassava



11. LEUCAENA

11. Leucaena (*Leucaena leucocephala*)

- ✓ Protein Content: Leaves and seeds: 25-30%
- ✓ One of the fastest growing leguminous trees
- ✓ Very adaptable to any soil in Belize
- ✓ Can be planted within the paddocks
- ✓ Can be fed at 1-2 lbs per day with pasture.



Leucaena



11. CHAYA

11. Chaya (*Cnidoscolus aconitifolius*)

- ✓ Protein Content: 12-15%
- ✓ Calcium content: 20-33%
- ✓ Can be planted in fence lines
- ✓ Easily propagated by branches.
- ✓ Can be fed at 2 lbs per day along with pasture.
- ✓ Put the leaves to wilt under sun for 1-2 days before supplying to sheep as intoxication may happen.



12. OTHER OPTIONS

BANANA LEAF: 10-17% Protein Content



Pumpkin Leaves: 25-30%
Protein Content, Seeds: up to 44%



Wild Grape (*Vitis riparia*):
Protein content: 32-35%



Chipilin (*Crotalaria longirostrata*)
Leaves: 30-35% Protein Content.



SUGGESTED MIXES

OPEN DISCUSSION

CONCLUSION

!Donde todos ven monte, yo veo alimento!

!Thanks for your Attention and Participation!