

# Livestock Production Island Style

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Today I'll be presenting some information on livestock production on an island. It will be general information about livestock and what it takes to raise them. Much of the information referred to in this presentation will be dealt with in greater detail in other talks as part of this workshop.

This information was generated based on the experience I have working in the US Virgin Islands with sheep and cattle. I have also used other sources such as textbooks and the internet, where much of this information can be read in much more detail.

## Island Issues

- Limited land availability
  - Small farm size
  - Terrain
  - Rainfall
- Limited access to supplies
  - Few local vendors of farm supplies
  - Animal health personnel and supplies



Besides the obvious remote location, islands present a unique situation for agriculture in general, and livestock production more specifically. Because most islands are small in comparison to many countries around the world, the first and most obvious limitation is the amount of land available for agriculture. Farm sizes tend to be smaller than in the US or other large countries. And in many cases the terrain does not lend itself to much besides agriculture, and livestock production is a bit more flexible than crop production in this respect.

A second issue about island life is the limited number and variety of vendors for supplies. Because the industry is small it is difficult to justify support in the animal health area as well. There may be veterinarians on islands but they may have little, or no, farm animal experience. In many cases the producer has to develop their own knowledge and skills for animal health care along with all other aspects of livestock production.

## Island issues

- High cost of importing/exporting
  - Feed
  - Materials
  - Animals/Meat
- Limited market
  - Small population
  - Local production



Because of the geographical location away from other places the cost of importing and exporting materials can be a limitation. Shipments can only be done by air or boat and that can get expensive.

The small local population means there is a small market and in many cases local demand is low or can be met by off islands suppliers who have lower costs of production (economy of scale, sources or raw materials, cheap labor, etc.)

## What animals can we raise?

<b>Species</b>	<b>Cultural</b>	<b>History</b>	<b>Market</b>	<b>Potential</b>
Pigs	Yes	Yes	Yes	Excellent
Goats	No	Brief	Develop	Good
Cattle	No	Brief	Develop	Good
Sheep	No	None	??	??

Species that are being raised here, or can be raised here are shown in this table. There is room to expand into other species and strengthen the existing species. That's one of the purposes of these workshops.

## Breeds of livestock

<b>Species</b>	<b>Breed</b>	<b>Benefits</b>		
Goats	Boer	Good meat production	Available	
Cattle	Tropical breeds	Adapted to climate	Available through AI	
Sheep	Hair breeds	Adapted to climate	Parasite tolerance	Hardy

Within each species there are some breeds that may be more suitable than others for the climate and conditions found in Palau.

Some breeds are adapted to the climate, some have parasite tolerance and others are known for their meat production.



Breeds of goat that are suitable include the Boer which is known for heavy muscling and good meat production. The St Croix White is a breed of hair sheep that is well adapted to the tropical environment. It has parasite tolerance, is prolific and can graze on forage and browse. Senepol is a breed that was developed on St Croix, US Virgin Islands and is very well adapted to the tropics. It has a mild disposition, is a good mother and yields high quality beef.

# Herd/Flock Management

- Type of livestock
  - Species – pigs, sheep, goat, cattle
  - Breeds – tropical climate



- Type of housing
  - Confinement – pens
  - Grazing – pastures, tie out
  - Mixed



Managing your animals will vary depending on the type of animal you are raising. Cattle, sheep and goats all have different needs, although there are some things that are similar. Many of the management practices will also depend on how you house your animals. Animals kept in confinement will have different needs compared to those on pasture or grazing systems. In some cases you may decide to use a mixed system that better fits the resources you have available.

## Events in Production cycle

- Breeding
- Gestation
- Birthing
- Lactation
- Vaccinating
- Castrating
- Deworming
- Weaning
- Select Replacements
- Finishing
- Marketing



There are key events in the production cycle of your animals that you need to pay attention to. They will occur at different times depending on the species, but they are all important points. Some will require more input from you, such as labor or medicines. Others, such as birthing, just require that you monitor the animals more closely than at other times. By establishing a herd/flock management plan you can schedule these activities and be prepared in advance for them to occur. This makes for more efficient use of your time and resources.



# Feeding

- Concentrate
  - Expensive
  - No local grain production
- Cut & Carry
  - Labor intensive
  - Impacted by rainfall
  - Access to grass to cut



Decisions on feeding can severely impact your budget. Using high cost concentrate feed may not be an option due to cost and availability. The high cost is mainly due to shipping charges, which in some cases can double the price of feed.

Cut & carry systems use local forage but are still labor intensive and can be costly due to the amount of time it takes to harvest the forage. If high quality forage is available for this method livestock can be fed to meet their nutrient requirements very well.

# Grazing

- Land availability
  - Carrying capacity of pastures
  - Forage quality and quantity
  - Own vs rent
- Tie out
  - Labor intensive
  - Carry water to animal
  - Security concern



For sheep, goats and cattle one of the best ways to get them their feed is through grazing. This can only be done if there is adequate land and forage available. The forage needs to be in adequate quantity and of high quality to support maximum productivity. This also ties in to the issue of land ownership or renting.

If animals are tied out for grazing this is also somewhat labor intensive. The animals need to be moved frequently and water needs to be provided daily. It takes time every day to deal with the animals and their feeding.

In each situation you need to decide just what you can afford to do and if you have the resources to do it. These resources include, but are not limited to, land, forage, feed source, time, labor.

## Water

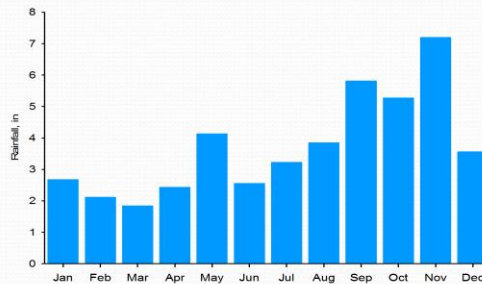
- ***Fresh*** water is required daily!
  - Environmental influences – heat, humidity, sunshine
- Requirements vary by age and stage of production
  - Lactation adds to demand
  - Forage provides some
- Used to cool animal and keep hydrated
- Allow animals to have access to fresh water at all times and they will drink as much as needed



Fresh water is a vital requirement for all livestock. Many things can influence the amount of water consumed each day. Animals need to have access to fresh, clean water every day to ensure their proper metabolism and health. Humans and animals can go without food longer than they can go without water. The hot climate found in Palau makes water an even more critical aspect of your animal's needs.

## Rainfall limitations

- Seasonal rainfall, limited forage availability and limited land area make pasture management a critical aspect of small ruminant farm management on islands
- Cut and carry systems are used when grazing areas are not available if there is a supply of forage nearby



The source of water can vary. If you have a pond or a stream they can be used. Otherwise you may need to run water lines from a water source or haul water to the animals. You can also harvest rainwater into a storage tank and then distribute it to the animals in a variety of ways.

Rainfall can also influence your forages. Knowing when the dry season is and planning ahead you can manage your resources to get you through the tough times.

## Breeding your animals

<b>Species</b>	<b>Age at puberty</b>	<b>Length of heat cycle</b>	<b>Length of pregnancy</b>	<b>Offspring born</b>
Pigs	5-7 months	20 days	114 days	6-12
Sheep	7-10 months	17 days	147 days (5 months)	1-3
Goat	5-7 months	21 days	149 days (5 months)	1-4
Cattle	10-18 months	21 days	283 days (9 months)	1

This shows the age at puberty, when an animal achieves the ability to reproduce, length of the heat cycle and pregnancy and the number of offspring produced. This information is needed to develop breeding programs, manage your animals production cycles and allocate labor and feed resources to critical points in the cycle.

# Breeding systems

- Open breeding
  - Males and females together at all times
  - No genetic control
  - Hard to manage nutrition, animal health and marketing
- Managed breeding
  - Males and females together only during breeding season
  - Use identified animals of superior quality
  - Helps with overall management – nutrition, health, marketing
  - Limited number of males kept



Open breeding systems are easy to use because it takes no input. The males and females stay together at all times and nature takes its course. In the long term it can cost you more time spent dealing with offspring, trying to manage nutrition for animals that are at all different stages of their production cycle.

Managed breeding takes a lot less time and effort. The makes are put with the females at specific times for a defined duration. This leads to uniform offspring as far as age, ease of managing nutrition for large groups because they are all at the same stage of the production cycle, and ease of marketing because you have a more uniform product.

## Problems with “Open” Breeding

- Birthing all year round
- Hard to manage nutrition of herd/flock
  - Females at different stages of production cycle
- Difficult to schedule labor needs
- Multiple sires make it tough to manage pedigrees
  - Select replacements from better animals



Open breeding leads to births occurring at all times of the year. This makes it difficult to manage the herd/flock for nutrition at the various stages of the production cycle. There can be animals at all or several stages of the production cycle at any given time. It is also difficult to manage genetics and pedigrees if multiple sires are used. There is no way to select for superior animals and using the superior sires and dams, or selecting replacement animals.

## Benefits of Managed Breeding

- Better utilize resources – labor, feed, facilities
- Produce for time specific markets
- Uniform product



Managed breeding, using one sire with a group of females for a limited time makes it easier to manage the animals. Nutrition can be tailored for the demands of the various stages of the production cycle. A uniform group of offspring can be produced and marketed at one time or scheduled to meet times of high demand.



# Animal identification

- Benefits
  - Select high performance
  - Manage genetics
  - Establish ownership
- Methods
  - Ear tag
  - Neck rope



Knowing who your animals are is important when making decisions regarding breeding and marketing. You'd hate to sell one of your best breeding animals for meat, and you'd hate to keep a low quality animal for breeding when it should be sold for meat.

# Animal health

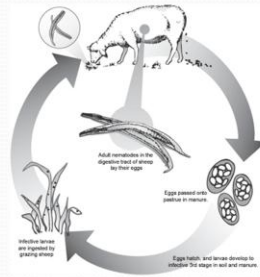
- Issues
  - Few diseases because of isolation and limited animal traffic
  - Parasites can be a big problem in tropics
    - Internal
    - External
  - Good nutrition can help to mitigate disease response
  - Housing can impact disease occurrence and transmission
    - Clean
    - Adequate space
    - Clean water
    - Isolate sick animals from herd/flock
  - Veterinary services



Animal health can have a big impact on your production and your budget. It is better to be proactive and keep your animals healthy than to try and treat diseases. When you do need to administer drugs to your animals consult a veterinarian, if possible. And the least read and follow the label instructions as to the dose, route of administration, when to use a drug and the withdrawal period before you can slaughter the animal for meat.

# Parasite control

- Gastrointestinal parasites can be a problem in a hot, humid environment
- Hair sheep breeds tend to have a tolerance for gastrointestinal parasites
- Even with this tolerance producers still have to monitor their animals and treat them for gastrointestinal parasites
- There have been reports of parasites developing resistance to the anthelmintics in various regions



Parasites can be a major problem in the tropics. External parasites like ticks can transmit diseases. Internal parasites will depress the growth and health of your animals. Treatments are available for each kind of parasite and are effective when used properly.

# Farm management

- Fences
  - Permanent
  - Temporary
- Wire
  - Barbed
  - Mesh
  - Electric



Good fences make good neighbors

If you decide to graze your animals then fences become important. They keep your animals in and other animals out.

Types of fencing can vary depending on how much fence you need and the type of livestock. Barbed wire works well with cattle. A mesh fence works better with sheep and goats. Electric fences work with all species and can be used with solar panels.

## Farm security

- Pastures/paddocks are surrounded by fences
- Keeps animals in, other animals (livestock and predators) out
- Helps in managing rotational grazing, pasture management and breeding groups
- Can help with disease/parasite management by keeping your animals isolated from others



Fences also play a role in farm security. They can keep predators out. They establish property lines. They can help you manage your forages by allowing you a way to confine your animals to certain areas for grazing for a limited time.

## Livestock guard dogs

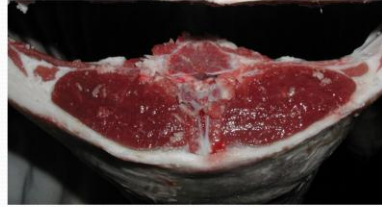
- Protect livestock from predators
  - 2 or 4 legged variety
- Raised with animals and bonds with flock/herd
- Can work with sheep, goats and cattle



Guard dogs can also protect your livestock. They are an investment and take some time to train them properly but they do have their place. It is an option that can be explored.

# Sales

- Meat
  - Individual meat sales
  - Meat animals sold to consumer
    - Per pound
    - Flat rate per animal
- Breeding Animals
  - Flat rate per animal
  - Based on quality of animal



A goal of livestock production is to produce food. By producing a high quality, consistent and economically priced product you will be able to expand and develop markets for your product. These markets can be for meat cuts, whole carcasses or breeding animal sold to other farmers. Wherever you can find a market you should try and develop the opportunity.

## Resources

- National Sustainable Agriculture Information Service
  - <http://www.attra.ncat.org/>
- Southern Consortium for Small Ruminant Parasite Control
  - <http://www.scsrpc.org/>
- American Sheep Industry Association
  - <http://www.sheepusa.org/>
- Beef Improvement federation
  - <http://www.beefimprovement.org/>
- University of the Virgin Islands – Animal Science
  - [http://www.uvi.edu/sites/uvi/Pages/AES-Animal\\_Science-Home.aspx?s=RE](http://www.uvi.edu/sites/uvi/Pages/AES-Animal_Science-Home.aspx?s=RE)
- Breeds of Livestock
  - <http://www.ansi.okstate.edu/breeds/>



# Questions?

