Small Ruminant Containment in Protective Sheds

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Summary

Under extensive livestock production systems, goats and sheep spend days browsing and nights in open fields or makeshift confinement. Poorly confined animals are exposed to predators and theft and must roam excessively to feed. At the same time, close cohabitation with humans predisposes livestock producers to infectious diseases that spread from animals to humans. Housing is particularly important to young animals by protecting them from inclement weather and providing better feed, waste management and biosecurity. Small-scale farmers may not be able to afford the cost of building elaborate shelters, but designs are available to construct simpler shelters using locally available materials. This section provides some guidelines for constructing such shelters.

Technical Description

A shed can be built from locally available materials such as timber, bamboo, or lumber off-cuts in combination with wire and fencing. These sheds usually include access to nearby daytime grazing. Proper shelter includes feed and water troughs that may be wooden, metal or plastic, sometimes fed through automated devices. The shed should be well drained and ventilated. Floors are best raised and made from wood or other insulated material. Once weaned, kids and lambs are best kept separately from adults, requiring between 0.2 to 0.3 m2 for up to three to four months, increasing to 1.5 m2 or more over time.

Uses

Low-cost containment sheds are more common among mixed livestock-crop farmers than pastoralists, the latter preferring fences of natural materials (or bomas) to structures. These sheds are common features across smallholder farming areas in Cote D’Ivoire, Ethiopia, Ghana, Kenya, Mali, Nigeria, Uganda and elsewhere. To a large extent, weather and location dictate the design and materials used. In the lowlands, more space and open designs permit ventilation and cooling, in highland areas sheds are designed to conserve heat, and in less populated places priority is placed upon excluding predators. Under warm conditions, shade trees are advantageous.

Composition

Floors are best raised to 1 m aboveground and composed of wooden planks 2.5 cm or more thick. A gap of 1 cm placed between planks allows urine and feces to drop to the ground. Wider slits predispose animals to leg injury. Alternatively, PVC, non-slip flooring is commercially available for purchase online and from livestock accessory sellers. Side walls are built with brick or wood to a height of 0.5 to 0.75 m and the upper wall finished with wire mesh to a height of 2.5 m. Gable roofing of corrugated sheets is preferred. Extended eaves 0.5 m from the wall provides better shading and protection from rain splash, and allows space for externally mounted feeding troughs. In some cases, nylon or tarpaulin covers are attached to the eaves, and dropped for protection from cold and inclement weather. Where possible, smaller, separate sheds confine and isolate sick animals.

Means of application

Sheds in the tropics are best built along an east-west orientation for better shading. The size is determined by the number of animals to be housed. A practical size is about 12m x 8 m (or 96 m2), able to accommodate 50 or so adult females. Other complementary structures are dipping tanks or a spray race, a weighing bay, gangways for controlling flock movement, and a feed store. It may be advantageous to establish fenced grazing areas around the shed.

Agroecologies	Dryland area, Highlands, Moist savanna.
Regions	Africa South of Sahara.
Developed in Countries	Burkina Faso, Cameroon, Ethiopia, Mali, Niger, Nigeria, South Sudan, Tanzania, Uganda, Zimbabwe.
Available in	Burkina Faso, Cameroon, Ethiopia, Mali, Niger, Nigeria, South Sudan, Tanzania, Uganda, Zimbabwe.
Solution Forms	Management.
Solution Applications	Livestock Production.
Agricultural Commodities	Small livestock.
Target Beneficiaries	Agro-dealers, Commercial farmers, Small-scale farmers.

Commercialization

Commercialization Category

Commercially available

Startup Requirements

Designs for modular sheds are available, as are those intended to combine poultry and ruminant operations. Simple mobile sheds for housing 5 to 10 goats or sheep can be constructed of salvaged materials. Ample opportunities exist for artisans such as masons and carpenters to specialize in constructing larger livestock shelters.

Production Costs

The costs of constructing low-cost sheds for small ruminants depends on the type and quality of materials used, and available skills. In villages, where farmers have access to inexpensive wooden posts and planks, and that rely upon grass roofing, a suitable shed can be constructed for as little as US $200. Buildings that are more elaborate are constructed for about US $2,000 (at $20 per m2). Market intelligence allows harvests during periods of peak demand, particularly festive seasons.

Customer Segmentation

Smaller and less elaborate structures are useful to small-scale producers intent on meeting their household needs for meat and milk. Larger and more complete structures are suited to those engaged in commercial production.

Potential Profitability

The profitability of the sheds is measured in terms of reduced mortality, theft, and feed wastage. Every young goat or sheep protected reflects a savings of about US $150. Every female animal saved translates to increase of 6 to 10 offspring over their reproductive lifetimes. A shed housing 50 animals can accrue value of US $12,000 over a few years.

Licensing Requirements

There are no licensing requirements for building containment small ruminants shed, but larger structures fitted with water and electricity may require building permits.

Innovation as Public Good

Building plans for low-cost sheds are freely available as Public Good from national extension agencies and expert centers like ILRI.

Solution Images

Upper-end protective containment of goats and sheep

Age (m)	Inside shed space m^2
0-3	0.20 – 0.30
3 – 9	0.60 – 0.75
9 – 12	0.75 – 1.00
>12 Ewe/Doe	1.50 - 2.20
>12 Ram/Buck	2.50 - 3.50

Space requirements for small ruminants of different ages

An open structure suitable for warmer areas

Institutions