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LIVESTOCK GUARDIAN DOG FEEDING STATIONS

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Livestock guardian dogs (LGDs) are extensively used in sheep flocks and goat herds to reduce the loss of livestock to predators. The LGD nutrition program is crucial to keep dogs healthy and capable to perform their roles. Additionally, LGDs that are not properly fed may predate themselves upon livestock and wildlife to manage proper nutrition. In this regard, one of the common issues faced by producers is to establish an efficient and cost-effective feeding method.

LGDs may respond differently in terms of feed protection behavior. Some dogs will protect their feed from non-target species, such as livestock and wildlife, and even other dogs. Others are passive and stand back, letting even lambs or kids (i.e., young goat under 1 year old) consume their feed. Dogs may snarl and sound very aggressive, but oftentimes this is just a threatening display and posturing toward the livestock.

This publication aims to present feeding methods and cost analyses to guide producers to make management decisions based on current knowledge and best practice methods of feeding LGDs.

HAND-FEEDING

For those who have daily interaction with their dogs, hand feeding is a feasible option. Bringing feed out to the LGDs' location daily and placing it in a feeding bowl has several positive benefits:

- Allows regular socialization of the dog,
- Allows frequent health checks,
- Does not require an expensive feeder,
- Usually results in very little non-target consumption of feed.

This method requires the owner to train the dog(s) to come when called. This can be time consuming, and it may be difficult to locate the dog in large pastures. In addition, it is difficult to feed multiple dogs in several locations. Much like finding horses on pasture when they are needed, it may be most efficient to have them trained so that they will be fed regularly (e.g., daily) at a certain place and time.

BULK/SELF-FEEDERS

Many owners choose to use bulk feeders because LGDs can access them freely at any time. Using a self-feeder will keep the owner from having to be there at a specific time to feed their dogs. It also means there is always free-choice food available to the dog(s) so that they are rarely away from the flock or herd looking for food. Dominance issues among LGDs—regarding feed—may or may not be resolved with using self-feeders. Make sure to use a game camera at feeding stations to monitor if the dogs are resource guarding.

Self-feeders are commonly available at local farm supply stores. Feeders that hold 25 to 50 pounds are the most common. A feeder with a capacity that will hold enough kibble to feed the dog(s) until someone is able to return and refill it is needed. It is important not to place too much feed in the feeder, as it may spoil and attract insects—especially during rainy periods. If spoiled, feed must be discarded to avoid heath issues. Daily feed intake, temperature, humidity, and insect activity in specific areas and regions are major points to consider in determining the amount of feed that can effectively be stored in the feeder and still provide quality kibble to the LGD(s).

In certain conditions, it is helpful to use insecticide strips to keep insects from infesting the feeder. Insecticide application around the feeder, or approved insecticide strips placed inside the feeder, are common approaches to control pests. Read the label to ensure that the product is safe to be placed near a food source for LGDs. Adding short legs to the bottom of the feeder to raise it off the ground, and also placing the legs of the feeder in containers of liquid, will also help to keep crawling pests away.

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To improve the unit's sturdiness and usability, a few modifications can be made by: adding extra rivets on the rear panel, handles on the sides, a hasp and snap on the lid and hooks on the rear of self-feeders (Fig. 1).

Figure 1. Self-feeder with improvements. *(Photo courtesy of Texas A&M AgriLife, Costanzo 2021)*

FEEDING STATIONS

"Feeding station" is the common term for a small pen (e.g., roughly 4 × 4 feet) that allows LGDs to access the feeder but prevents livestock from entering. Some feeding stations have a roof to deter birds from accessing the feed, while others have a floor to prevent animals from digging into the station (Fig. 2). In most cases, non-target species will be attracted to self-feeding stations, and careful consideration should be taken to prevent them eating the LGDs' food. For increased security, especially if wildlife are a concern, a fully enclosed feeding station with a Radio Frequency Identification (RFID) door to allow only your LGD to enter should be considered (see Fig. 13). Based on research done at the Martin Ranch in Menard, Texas, it was found that LGDs would leave livestock unprotected to find feeding stations. Texas A&M AgriLife LGD Research Specialist recommend that feeding stations be placed at all water locations so the dogs can easily find feed when livestock are watering.

Figure 2. LGD digging a hole to enter the feeding station used in the 2018 study at the Martin Ranch in Menard, Texas. *(Photo courtesy of Texas A&M AgriLife, Walker 2018)*

The chart in Figure 3 depicts data collected from a research study in 2018 at the Texas A&M Martin Ranch in Menard, Texas, which tracked the usage of LGD feeding stations by different species. The feeding stations used in this study were livestock panels wired together. One side contained an opening for the dogs to dig under to enter the feeding station. Surprisingly, feral hogs visited the feeding stations more often than LGDs. The hole dug by the dogs to get in the feeding station was an easy way for hogs and other animals to enter the station. It also allowed feral hogs to damage the self-feeders and feeding stations.

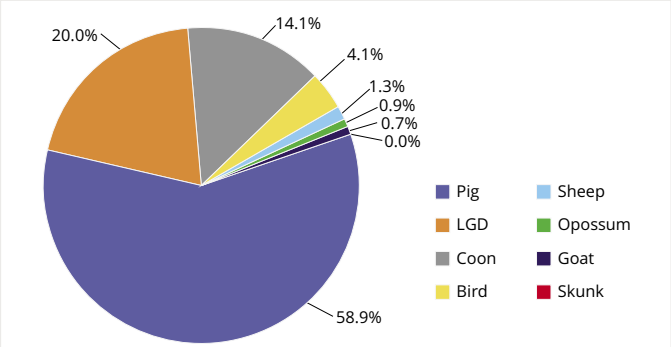

Figure 3. Frequency of different species in LGD feeding stations identified by game cameras in Menard, Texas, 2018.

To protect the feeding station from non-target species, an entry gate can be installed. Livestock panels can be placed around the feeder (e.g., 4 × 4 inch or 4 × 2 inch) with a hole cut in the panel about 30 to 32 inches off the ground. The hole should be 12 to 14 inches square, triangled, or round depending on the LGDs' size (Fig. 4). If birds are a concern, adding chicken wire horizontally with rectangular holes

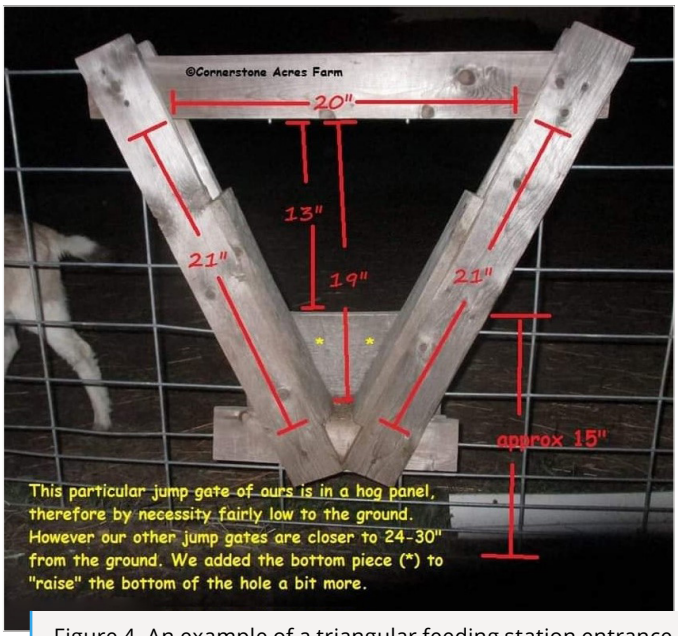

Figure 4. An example of a triangular feeding station entrance. *(Photo courtesy of Teresa Neese, 2021)*

Figure 5. Feeding station adaptations.
(Photo courtesy of Texas A&M AgriLife, Costanzo 2020)

as another layer is helpful. In certain cases, a small gate that allows dogs to get in but prevents sheep or goats from accessing the station is recommended. Make sure any sharp edges or points are smoothed off to protect the LGDs against injuries when they go through, considering it can be a tight fit for them.

Figure 5 shows a feeding station designed to mitigate feral hog problems, as the LGDs can only jump through the gate to enter the feeding station. A floor could be added to control digging by the dogs and non-target species.

To teach LGDs how to use the feeding station, place them in the enclosure, show them the food, and shut the gate. Very often, they can figure out how to get back out, but stay with the dog until they have exited to ensure they do not get stuck. The training may need to repeated a few times until the LGD is can master entering and exiting. This same type of gate can be used for puppies by using hose clamps to attach the mesh panel to the gate frame and to adjust the opening as the puppies grow.

The following is a plan for a simple wood panel constructed with 2 × 6 wooden boards (Fig. 6). Using screws or bolts is recommeneded, as nails may become loose over time. Gates using swinging doors or other designs can be used with additional training of the LGDs.

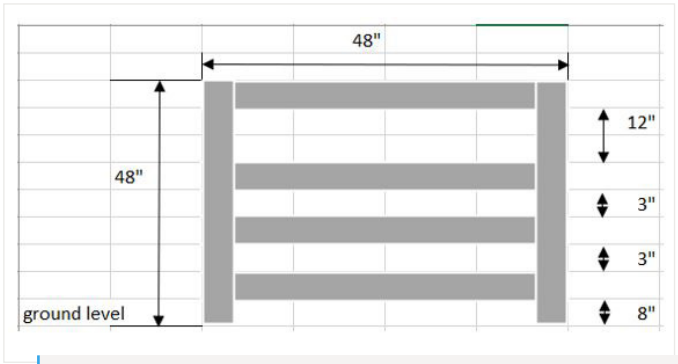

Figure 6. Specs for a wooded jump gate for a feeding station.
(Photo courtesy of Texas A&M AgriLife, 2021)

If it is suspected that sheep or goats have figured out how to get into the feeder, here are three options:

1. Reconfigure the feeder entrance with a different height from the ground and a smaller hole.
2. Remove the animal from the pen where the feeder is located.
3. Feed the LGDs individually.

The following images in Figures 7, 8, and 9 show examples of different types of LGD feeding station designs.

Figure 7. The gate is turned upside down to allow the LGDs a larger opening to enter. The producer cuts small pieces of dog-safe pest strips and places them inside a plastic container with holes to keep out bugs. It is attached to the feeder lid with heavy-duty Velcro strips.
(Photo courtesy of Texas A&M AgriLife, Costanzo 2019)

Figure 8. A somewhat unconventional idea that is working for this producer: Using an old hunting blind on a trailer.
(Photo courtesy of Susan Wheless, 2019)

Figure 9. This pen is 5-feet-wide × 6-feet-long × 4-feet-high. The hole is 12½ inches in diameter and 22 inches off the ground. *(Photo courtesy of Windy Ridge Livestock, 2017)*

TIMED FEEDERS

Timed feeders are also an option for producers that want to regulate feed for the LGD and control non-target feed consumption. There are several types and sizes available from different companies (Fig. 10). The feeders are powered by a solar panel and a rechargeable battery. Make sure to purchase a feeder made for dogs and not another species—often the hopper and dispenser are designed for a specific size and type of feed, which may limit the amount of kibble the LGDs receive.

Texas A&M AgriLife LGD Research indicated timed feeders decreased the amount of non-target feed consumption while maintaining the same amount of time that LGDs used the feeders. The blue bars in the Figure 11 chart depict the frequency of usage of a metal self-feeder, while the orange bars depict frequency of usage of a timed feeder by animals. Using a timed feeder does not necessarily increase feed intake by the LGD, but they do decrease consumption by non-target species. Producers should analyze the cost of timed feeder's versus self-feeders, as well as feed costs and losses before deciding to switch to a timed feeder.

Figure 10. Examples of timed feeders. *(Photo courtesy of Crossfire Feeders and Lamco Feeders, 2020)*

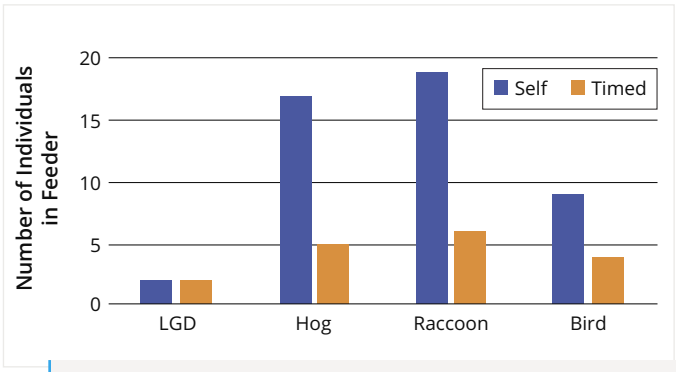

Figure 11. Usage of a self-feeder (blue bars) versus usage of a timed feeder by LGDs and varmints (orange bars), 2018.

RADIO-FREQUENCY IDENTIFICATION (RFID) FEEDERS

Figures 12 and 13 show two examples of using radio-frequency identification (RFID) technology to control feed consumption by non-target species. Both examples use inexpensive pet doors equipped with RFID readers to allow only the LGDs to access feed. The dog door placed on the Aggie Feeding station (Fig. 12) has shown the most potential for adoption in the field, as the metal on the Aggie self-feeder interferes with most

Figure 12. Aggie LGD RFID Feeder. *(Photo courtesy of Texas A&M AgriLife, Costanzo 2018)*

Figure 13. Aggie LGD Feeding Station with RFID door. *(Photo courtesy of Texas A&M AgriLife, Costanzo 2018)*

inexpensive RFID dog door systems. Each system uses a tag worn by the dog on its collar that allows access to the feeder. The door will not open unless it is programed to each RFID tag. It is possible to only allow certain dogs into certain feeding stations if needed. Research has been conducted on the effectiveness of these systems to provide producers with an inexpensive option to control feed consumption by non-target animals. RFID dog doors can be purchased from retailers online for approximately $150.00.

FEEDING RECOMMENDATIONS

It is important to evaluate body condition score (BCS) of LGDs on a regular basis to make sure the nutrition program can meet the demand (i.e., quantity and quality of feed throughout the year). A BCS sheet can be found using this link: *https://www.purina.co.uk/dogs/health-and-nutrition/exercise-and-weight-management/dog-body-condition-tool*.

The following is a summary of important points to remember when feeding a LGD puppy or adult, whether it is by hand-feeding, using a self-feeder, or a feeding station. These are basic reminders for feeding all types of dogs. Make sure to check with the LGDs' veterinarian for specific guidelines for each dog.

1. Always provide access to fresh water.
2. Use a standard measuring cup to deliver feed amounts. A cup of kibble is 5 ounces.
   a. 1 pound = 3.2 cups, therefore a 50 pound bag of food contains 160 cups.
3. Puppies that are 2 to 12 months old require 2 to 3-times the amount of feed as adult dogs by body weight.
4. Provide free-choice feeding for pregnant or nursing female dogs.

FEEDING SYSTEM PROS AND CONS

Feeding System	Pros	Cons	Varmints Excluded
Hand	• Monitor feed usage • Regular health checks • Regular socialization of the dog • Low-cost feeder	• Tougher with multiple dogs and locations • Requires more time • Training dogs to come eat	All
Self-feeder	• Refill feeders less often • Dogs eat on their own schedule • Easier to feed multiple dogs • Adequately protects feed from weather	• More expensive feeder • Non-target consumption of feed • No socialization of dog • No regular health checks	Small birds
Timed Feeder	• Refill feeders less often • Easier with multiple dogs • Reduced feed waste to varmints • Protects feed until dispensed	• Expensive feeder • Non-target consumption of feed • No socialization of dog • No regular health checks • Dog must be at feeder when feed is dispensed	None
Feeding Station	• Keeps out most varmints • Reduces feed costs • Reduces feeder damage • Provides a safe zone for younger dogs	• Cost varies with design • Can be difficult to move unless on a trailer	Large hogs, large birds, livestock
RFID Door on Feeding Station	• Relatively inexpensive • Eliminates feed waste to varmints	• If RFID tag is lost, dogs cannot eat • Must keep batteries fresh • Must train dogs to use • Door can malfunction	Large birds, raccoons, livestock, hogs

In conclusion, planning a LGD feeding system according to a specific ranch situation requires knowledge of feeding systems, identifying key concerns, and understanding the potential presence of non-target species. With the Texas A&M AgriLife Research findings and practical information, producers have the tools necessary to make the right decision for their ranching operation and their LGDs.