

SO YOUR DIRECTOR WANTS A FARM IN THE ZOO

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Abstract

It seems that humans have always craved animal contact. Even at a zoo, a place designed for wild animals, visitors want and even expect to be able to touch an animal. Petting corrals, touch tanks, feeding stations, etc. are the most popular exhibits at a zoo, especially for families with young children. Contact areas can provide a valuable educational experience as well as satisfy visitors ever growing desire for entertainment. A farm in the zoo is often proposed to fulfill these needs. Zoos contemplating this type of exhibit need to consider a variety of issues including: goals and educational message; type of operation and the level of medical and management assistance required; protection of the public and the remainder of the zoo's collection from infectious disease; and public perceptions.

A Farm in the Zoo

A working farm is not a petting zoo. A number of factors should be considered in the selection of species and operations for the farm, the most important of which are the goals of the exhibit and its concomitant interpretive program. The overall goal of the Minnesota Zoological Garden's (MZG) farm exhibit was to represent working Minnesota farms - past, present, and future. This led to the selection of species and operations typical of a small Minnesota family farm. Many breeds were chosen from the American Livestock Breeds Conservancy in keeping with the conservation role of zoological institutions. A critical component of species/breed selection is how exhibit animals will be acquired and replaced (see Biosecurity). The operations chosen largely dictate the type of facilities, the level of staff expertise, and the type and level of medical and management assistance required.

Dairy Cattle - Dairy operations create the greatest demands for facilities (milking parlor, milk storage, housing type, exercise area, examination stocks, feed storage, bedding), staff (skilled milkers; routine husbandry procedures such as castration, dehorning, vaccination), services (artificial insemination), nutrition (ration balancing for stage of lactation), and veterinary care for common conditions (pregnancy diagnosis, ketosis, hypocalcemia, metritis, mastitis, abomasal displacement, and lameness). Feeding for low to moderate milk production can decrease, but not eliminate common production conditions. Enlistment of the aid of a nutritionist from the local feed co-op is highly recommended to help maintain a balanced feeding program through all stages of lactation and to help evaluate feed quality. Establishment of a reliable feed and bedding

source can be a challenge, particularly when storage is limited. Bulls, if included, require separate housing with double fencing for security. A head gate and chute with access to both sides of the bull should be included in the bull housing area. Calves should be protected from contact with the public due to the risk of disease transmission such as *Cryptosporidium*.

Beef Cattle and Sheep - Beef and sheep operations are generally lower intensity than dairy operations. Appropriate pasture with solid fencing, a wind break, reliable clean water access, and a feed bunker are minimal housing requirements in most climates. A chute and stock system is necessary for veterinary procedures in beef cattle. Routine husbandry procedures (beef – as for dairy; sheep – tail dock, castrate, sheering) may be managed by trained staff, contract help (sheering), or veterinarians. Requirements for ration balancing and feed storage are minimal compared to dairy operations. Nutritional management is less complex and production related diseases are uncommon. Breeding may be done naturally or by artificial insemination (trained staff or contract service). Beef bulls may run with the herd if pasture fencing is adequate for public safety.

Goats - Goat operations may be dairy, non-dairy, or a combination. A decision to have a full dairy operation dictates the breeds to be included and increases the facility and staff training needs slightly. Routine husbandry procedures in goat kids (dehorn, castrate) require more complete analgesia than for calves and lambs, often requiring anesthesia, and should be performed by a veterinarian. Production goats have fewer production related diseases than dairy cows, although careful attention to feeding practices is important. Breeding is generally natural and requires separate housing for a male until breeding season.

Swine - Swine operations may either be free-ranging, confinement, or a combination. Use of farrowing crates is recommended for farrowed sows to protect the young piglets. Routine husbandry procedures (tail dock, clip eye teeth, castration) can be performed by trained staff or veterinarians. Breeding may be natural or by artificial insemination. Pregnancy diagnosis is best done with trans-abdominal ultrasound.

Poultry - Poultry, like swine, may be free-ranging or under confinement management. If poultry are confined, there needs to be adequate nesting boxes for the laying hens and roosting space for all birds. In cold weather, supplemental heat may be needed. Either automatic waterers or other watering devices with heaters may be used. An outside area is desirable so birds have access to sunshine and an area for scratching. Some type of food may be spread on the area to give birds enrichment. If birds are free ranging they need some type of shelter and possible confined space for overnight to guard against predators

Equine - Horse operations, like dairy, requires a high level of management. Horses may serve a function on the farm and demonstrate their role in past or current farms. The MZG uses their draft geldings to pull a tram that brings visitors to the farm for several hours a day. Minimal housing requirements include a well fenced pasture with several stalls for management of individual animals that require confinement for treatment or separation from other horses. A set of stocks is strongly recommended for treatment and routine procedures. Husbandry requires trained staff or contract skilled labor (hoof trims, shoeing) or veterinary staff (castration, dental care). Lameness, dental disease, wounds, and colic are common problems that may require a

veterinarian with equine experience. Nutritional management is critical and affiliation with a nutritionist through your local feed co-op is highly recommended. Breeding may be natural (all breeds) or by artificial insemination (some breeds). Due to the risk of injury, stallions are not generally allowed to run with the herd but are introduced to the mare only when she is in heat. Handling of a stallion requires highly experience staff.

Rabbits - Rabbits require an appropriate hutch. Males and females require separate housing. Nesting boxes and heaters for water will be needed in cold climates. These animals may be used for educational classes and demonstrations as well.

Dogs and Cats - Dogs and cats are regulated by USDA. A “farm dog” requires a kennel or similar space. Adequate housing, shade, and food and water need to be available. Will it be a working dog, a pet, or used for something else? Regular vaccinations and standard preventive medicine protocols are necessary. A friendly, tolerant breed would be best. Cats help control rodents on typical farms but also present a significant source of disease transmission between animals and between animals and people; inclusion should be carefully considered.

Other Considerations - Farms are inspected by the American Zoo and Aquarium Association (AZA) during accreditation inspections. There are several requirements for animal contact areas including the proximity of hand washing stations, food service in the area, and staff presence. The AZA’s Animal Disposition Policy for surplus domestics allows for disposition consistent with acceptable farm practices. The USDA Animal Welfare Act also has many areas applicable to farms including inspection of most species, staff presence, and public feeding. Public feeding enhances animal contact for the public, but increases the difficulty of maintaining a balanced diet. Lastly, a working farm requires much more veterinary time than a comparably sized and stocked exotic animal exhibit even when the majority of husbandry procedures are performed by trained staff or contract professionals.

Biosecurity

Biosecurity begins by establishing good working relationships with local public health and animal health boards. These local authorities can be invaluable for customizing protocols which must take into account local disease prevalences, zoonoses, voluntary or required state monitoring programs, etc. At a minimum, the following protocols for each species will need to be developed: preshipment testing (site of origin); quarantine testing (on zoo site); parasite testing (quarantine and ongoing); parasite control (quarantine and ongoing); serologic testing (quarantine and ongoing); routine vaccinations (quarantine and ongoing); husbandry procedures for production products (milk, eggs, offspring); treatment procedures for production diseases; neonatal care; processing of colostrum; prevention of drug residues, and human bite/injury. Copies of the MZG protocols are available upon request.

Zoonotic Disease - The general public is now more aware of the potential for “becoming ill” from an animal because of all the press reports of infectious disease outbreaks associated with traveling petting zoos and fairs. The 2005 Compendium of Measures to Prevent Disease Associated with Animals in Public Settings states that hand washing is the single most important prevention step for reducing the risk for disease transmission. Therefore farms need easily

accessible hand washing stations with abundant signage. The reports goes on to recommend education of exhibitors and visitors, among others, regarding the risk for disease transmission with animal contact. Therefore it is incumbent upon the veterinary staff to educate themselves, keeper staff, volunteers, and the general public in regards to preventing zoonotic disease. An often overlooked source of infection is contact with parturition fluids given that the birth process is extremely popular with the public.

Protection of Non-Farm Exhibits - Zoonotic diseases are easily prevented with proper hand washing techniques and education along with reasonable quarantine and testing programs. But zoos also need to protect the remainder of their collection from infectious disease originating in livestock. Collection protection begins with acquiring animals for a farm exhibit from a “clean” herd; not always an easy task. Farmers typically do not test their animals for many of the disease entities which are tested for as part of surveillance programs in zoological collections. Although state and federal programs mandate some testing programs for animals transported across state lines, including tuberculosis, brucellosis, pullorum, and scrapie, other disease testing programs are voluntary (paratuberculosis) or nonexistent.

Obtaining herd disease history and preventive medicine history from the farm of origin is essential to the biosecurity of the farm exhibit. Specific breed registries can help to locate farms for specific breeds to start your search. State Boards of Animal Health can be contacted to obtain the herd health status of a particular herd in regards to mandated and voluntary testing programs. Dairy Herd Improvement Association records can be obtained for a dairy farm as an indication of the mastitis history of the herd. It is extremely important to talk to the veterinarian providing care to the farm to obtain disease history information and, if possible, inspect the farm.

Once you are satisfied the farm of origin does not pose any undue disease risk, you can begin testing of the animal(s). It is far more valuable from a disease surveillance perspective if the animals come from a regularly monitored herd in which a substantial proportion of the herd is routinely tested. This is more typically the case in larger production herds and it is not difficult to obtain a Holstein cow from a Johne’s test level 4 herd or a pig from a large production facility that routinely tests for porcine reproductive and respiratory syndrome, mycoplasma, and brucellosis. However, less common domestic breed species are typically available from smaller facilities which usually don’t have as extensive a disease surveillance program.

After animals are decided upon, contact the farm’s veterinarian and discuss what preshipment testing will be performed on the animal(s). Expect to pay the veterinary clinic directly for the testing and examination of the animals. Some of the bloodwork and tests such as complete blood counts, chemistry panels, paratuberculosis cultures, fecal parasitology, and fecal pathogen cultures can be sent directly to various laboratories by the farm veterinarian. In some cases, samples can be obtained by the zoo’s veterinary clinic and processed. In some situations, animals may be isolated from other conspecifics until test results are obtained and animals shipped. Depending on the age of animals required, it is also possible to have neonates removed from their dams at birth and bottle-fed to greatly reduce the potential transmission of diseases such as paratuberculosis and caprine arthritis and encephalitis.

Tests are typically repeated when animals are received in to quarantine. Note, you will need a quarantine facility designed and specific for farm animals. Minimal quarantine lengths are 30 days, but 60 days are required for ruminant species to allow time for paratuberculosis fecal culture results. Start planning early to allow animals to clear quarantine if planning an opening for a new exhibit or if animals are needed for a specific purpose. Much of the above can be avoided once you are able to raise your own replacement animals, but once again, plan ahead - it takes 2 yr to raise a calf to replace a milking cow.

Biosecurity also mandates continued testing of on-site animals for infectious diseases including fecal screening for parasites, serology, and scheduled vaccinations.

As with any quarantine situation, separate quarantine keepers should ideally care for the farmstock while they are under quarantine. If this is not feasible, quarantined farmstock should be cared for after nonquarantine animals. Separate clothing, cleaning utensils and vehicles should be utilized when caring for the animals in quarantine. Animal wastes and bedding can be placed into dumpsters and disposed of off site. Alternatively, proper composting of organic waste will destroy most pathogens if proper mixing and temperatures are obtained in a compost pile. These parameters need to be monitored. A separate area should be set up on the compost pad for quarantine animal waste. When all testing has been completed and animals are released from quarantine, the quarantine animal waste can then be mixed with the rest of the compost material.

Because a small herd of cattle in combination with a few pigs produce fairly large volumes of waste, organic waste material from the farm is handled at a separate composting facility from that used for the rest of the zoo animals. This also decreases the potential for cross-contamination of domestic and nondomestic animal areas. For this reason farmkeepers and other zookeepers utilize separate vehicles as well.

Public Perceptions

Many zoo visitors lack an accurate understanding of domestic animals in regards to husbandry practices, food production, potential for injury or disease, etc. Education is vital to avoid negative perceptions. Facilities must be designed to diminish the possibility of public-animal disease and injury. Abundant hand washing signs as well as “Stay Off The Fence” or “Animals Will Bite” are necessary. Regardless, people will be surprised and angry when they or their child are injured.

Decisions about animal husbandry and turnover must be made early in the decision process. Food animals and animal products are, by intent, sold for consumption. The “message” of the connection between farm animals and the food chain should be developed and communicated to all personnel. This can be difficult for volunteers who often become attached to individual animals. You need a plan to deal with visitors, volunteers, and the press.

Modern farm animal husbandry practices involve procedures that the general public does not encounter in the care of their dogs, cats, and horses, including long term confinement and surgical procedures without general anesthesia. Will the public be allowed to view routine

husbandry or medical procedures? If so, what will be communicated to the public and how? This is not unlike the current fad of having the zoo's veterinary clinic on display. It has been noted that constant, informed communication is required to prevent adverse impressions. If these practices are not going to be on public display, additional behind the scenes facilities will be necessary for restraint and procedures.