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## G73-65 Locating a New Feedlot

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## Locating a New Feedlot

The selection of a site for a livestock feedlot directly affects the success of the feedlot.

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*E. A. Olson, Extension Agriculture Engineer, University Nebraska-Lincoln*

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The selection of a site for a livestock feedlot directly affects the success of the feedlot.

Factors to consider in choosing a feedlot location include: environmental considerations, streams, topography, water supply, land area, towns and zoning laws. Other items include a source of livestock and feed, transportation (roads), marketing facilities. Finally the operator must determine the size to build with provision for expansion.

### **Environmental Considerations**

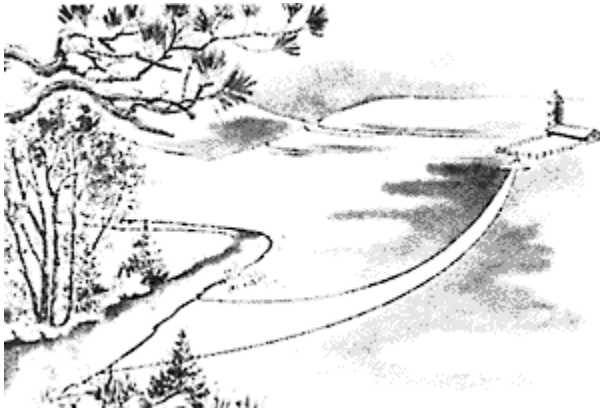
Existing federal and state water quality laws have called attention to the need for keeping feedlot runoff out of streams to prevent degradation of water quality. While air quality regulations for livestock operations do not now exist in most states, they likely will be adopted in the future. While some odor from a livestock operation is inevitable, regulations when adopted will probably not permit unusual or particularly pungent odors.

The possible of nuisance lawsuits should not be overlooked. Several lawsuits against feedlots due to alleged nuisance have been reported. While the feeder has generally been acquitted, the costs and time required for defense should not be taken lightly.

Before purchasing land for a new feedlot, consult with your state waste regulatory agency to determine potential needs for a waste control system. Many states require that waste control systems plans be prepared and approved by the regulatory agency before starting feedlot construction.

### **Locate Feedlots Away From Streams**

Locating a feedlot away from a stream greatly reduces water pollution potential. It is impossible to suggest a specific distance since lot size, land topography, soil and climate types will vary. However, space must be provided for the construction, maintenance and operation of the waste management control facility.



stream bank.

#### **Locate feedlots away from streams.**

On existing lots located adjacent to streams, it may be necessary to relocate or redesign some pens to provide an economical and practical solution for pollution control. However, practical solutions to solve existing problems can generally be developed with competent engineering assistance.

Existing feedlots were often located close to a stream because water and weather protection was readily available. However, with modern water handling and piping systems, new feedlots need not be on the

### **Provide Adequate Water Supply**

Cattle on feed require large quantities of drinking water every day. If a reliable water supply is not available, other areas should be considered.

Cattle require 16-20 gallons of water per head per day during hot weather, but the peak use rate on a hot afternoon could be 2.2 times as great. For 1,000 animals, 16,000 gallons per day are needed with a delivery of 25 gallons per minute. For 15,000 head, 240,000 gallons per day must be available. This will require a well with a continuous pumping capacity of 170 gallons per minute and a pump to deliver 370 gallons per minute. If a well with this minimum capacity is not available, additional wells strategically located or a storage tank will be required. Along with adequate water supply, adequate pipe lines of sufficient diameter will be needed to convey and distribute water to all feedlots.

### **Amount of Land Required**

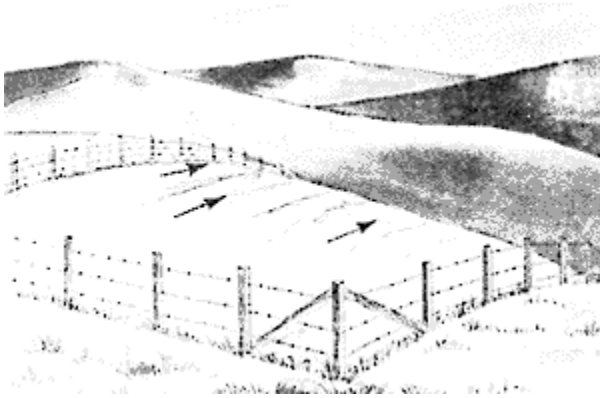
In selecting a new feedlot site, plan for about one acre per 100 head (400 square feet per head) or about 10 acres per 1,000 head for confined feedlot systems. Less land area may be needed in areas of low rainfall and in lots with good slopes for drainage. Adequate area for expansion is also desirable. Successful feedlots generally expand, so don't forget to allow for this possibility.

This suggested land area provides space for the pens, feed storage, animal receiving and loading facilities, animal and feeding alleys, fencing, watering facilities, windbreaks, feeding facilities, manure storage and waste management control systems. If debris (settling) basins are not located inside feed pen, space for these facilities below some lots and above others must be provided.

However, additional land will also be needed for field disposal of feedlot runoff from the holding pond and debris basin. This field disposal area, which should be at least one-half to twice the area of the feedlot, can be cropped with proper management.

Contact your local regulatory agency for guidance in your planning. This department generally has the sole responsibility of determining if you will need a runoff control system for your new feedlot. Before new land is purchased, request the regulatory agency to visit the area to determine if runoff control facilities will be required.

### **Topography and Drainage**

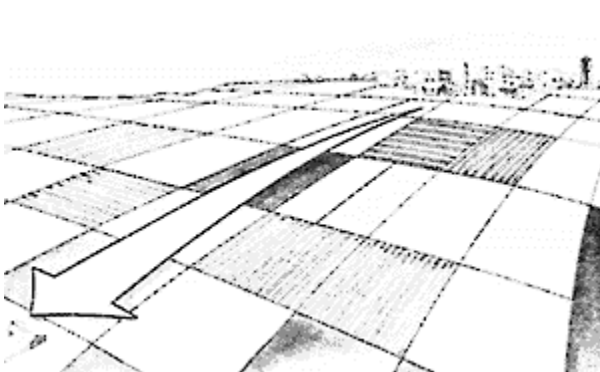


Most feeders prefer feedlots on surface slopes to the south or east away from prevailing winter winds. However, to help reduce the need for diverting surface runoff, lots should extend to the top of a hill. Additional expense will be incurred if large diversion terraces are needed to keep outside runoff from draining into and through feedlots. Also outside drainage through lots requires additional waste management system capacity and necessitates additional costs of handling runoff.

**Locate at or near the top of a slope.**

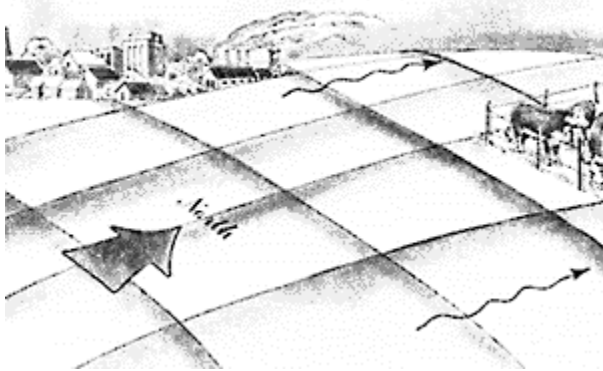
### **Locate Away From Towns**

The livestock producer can avoid potential problems and headaches if he locates his operation some distance away from town or cities, housing developments, or recreational areas in the direction of prevailing winds. This becomes more important when the size of the operation increases. The greater the number of animals, the greater the potential for odor, dust or waste nuisance problems. It is impossible to provide definite recommendations on distances, however, it has been reported that odors from large lots (10,000 to 15,000 head) travel from 8-10 miles.



More odors are produced in feedlots during the warm moist times because of increased anaerobic bacterial activity. Summer winds can carry these odors and dust a considerable distance. Select a location to insure that prevailing winds will carry odors away from populated areas of concern.

**Build away from towns and housing developments.  
Encourage county zoning for agriculture.**



A feedlot located east to northeast of urban areas will help reduce the dangers of summer odors being carried to urban areas. However, local conditions such as windbreaks and topography may affect wind direction.

**Locate east or northeast of town.**

## **Zoning Laws**

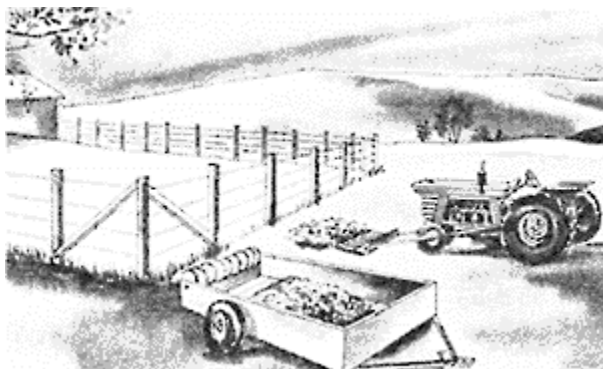
Does your county have zoning or a land use plan? If so, definite areas may be specified for livestock production. If not, it may be advisable to work with your county government in developing a land use plan and zoning regulations. In either case, *contact with county government should be maintained* to ensure that the livestock industry is considered in any decisions on land use or zoning.

There are zoning or land use plans that can benefit livestock producers. An example is the Agricultural Districts Law in New York State. These districts are established by petition of farmers living within the districts. Within an agricultural district: (1) farmers may apply for agricultural value assessment, (2) local governments are limited in regulating farming, (3) state agencies must encourage agriculture, (4) public agencies are restricted from non-farm development, and (5) public service districts are restricted from taxing for urban services. Zoning laws enacted by local governments may also restrict urban development in areas planned for agriculture.

Livestock producers should take an active lead in using existing regulations or in encouraging the enactment of legislation that would enable agricultural areas to be protected from urban scatteration.

## **Plan Your System Before Building**

Before making a definite decision on a new feedlot site, consult with your state regulatory (air and water pollution) agency to determine what environmental protection requirements must be met. When waste controls are required, get technical assistance through your local Soil Conservation Service District office or a qualified- experienced consulting engineer for the design of the waste management system.



**Plan your waste handling and runoff control system before you build feed bunks and lot fences.**

Greater economy, efficiency and effectiveness will result when your waste management system is planned before the feedlot pens are located. It is much easier to develop an efficient livestock production system when all factors are explored thoroughly before construction is started.

Coordinating feed truck and minimal traffic patterns with the waste management system can help insure a simpler and more efficient feedlot production system. While mistakes made on paper can be erased, facilities that have been built are costly to change.

## **Housed Feeding**

Some producers are considering housed beef feeding rather than open feedlots. At the present time, there are fewer advantages in housing beef than swine.

With housed feeding, manure may be collected in a storage pit or some other system and eventually removed for disposal on cropland. Producers using this system are handling manure in a variety of methods. While adequate research information is not now available to determine the best practical methods for handling waste from housed systems research is underway at several university research stations.

This material submitted to GPE-7 by the REGIONAL FEEDLOT WASTE MANAGEMENT PROJECT. A cooperative project between the cattle and livestock feeder associations and the extension services in Colorado, Kansas, Nebraska, New Mexico, Oklahoma, and Texas. M. D. Paine, Project Leader, Oklahoma State University, Stillwater, Oklahoma 74074.

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***F-2, Miscellaneous***

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