

## BEST MANAGEMENT PRACTICES

## MANAGING ALTERNATIVE LIVESTOCK FEED SOURCES IN VENTURA COUNTY

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When traditional feeds are in short supply or become cost prohibitive, livestock producers have to evaluate using non-traditional feed sources. Many livestock producers become innovative by utilizing fruit and vegetable culls as an alternative feed source. Ventura County is unique in that natural forage is always at a premium, particularly in a period of drought, and yet there is a consistent source of by products that can be culled from the fruits and vegetables produced locally for human consumption. These culls may consist of products with slight blemishes or bruises which make them unattractive for human consumption but acceptable as an alternate livestock feed.

Feeding fruit and vegetable culls has been a common practice in Ventura County for several years. This practice is a viable way to source livestock feed, but without proper control has the potential to produce unintended consequences, especially when these feedstuffs are fed near residential areas. In a county with such a high agricultural/urban interface as Ventura, management of this practice becomes essential.

The following serves as a guide for Best Management Practices (BMP's) for managing alternative livestock feed sources in Ventura County. Due to the lack of published information on managing fruit and vegetable culls as an alternative livestock feed, this document is subject to change as new technology and techniques emerge and improve.

### FLY CONTROL

Due to the nature of feeding in open spaces it becomes necessary to control flies. In the case of cattle, these animals have a tendency to pick out the most desirable food items first and then work down the ladder to the items which are less appealing. Many times this results in food items beginning to decompose before cattle consume them. Flies can travel up to 5 miles (8km), so even in remote areas of Ventura County, it is important to control and monitor this process

before it becomes a problem. The most effective way to control flies is to break the breeding cycle. Flies have life cycle of approximately 7-14 days, depending on the species and environmental conditions. In order to break the cycle, feeding and management of fruit and vegetable culls must occur **within 7 days** from the date of application. The following elements are important to consider in effectively managing alternative livestock feed sources, such as fruit and vegetable culls.

### Cull Selection and Quantity

Fruits and vegetables have different moisture contents. Moist decaying organic matter is ideal media in which common flies can reproduce. Control of fly populations deals with the availability of these moist decaying materials. Due to the higher moisture content of certain fruits and vegetables, some culls can have a greater potential for fly breeding and will require more management than others. The management required to control flies with certain fruits and vegetables may make the choice of those culls less cost effective. In order to reduce the amount of management required, avoid fruits and vegetables with high moisture contents. In Ventura County, strawberries and tomatoes are examples of culls with high moisture contents that require extensive management. Although widely available, these culls may not make the best choice for livestock feed given the amount of management required to control fly breeding.

Examine the fruit and vegetable culls before feeding. Some culls may arrive with decay and fly larvae. In order to avoid fly breeding, management of such culls will need to occur **earlier within the 7 day period**. Culls showing evidence of advanced stages of decomposition and or flies should be avoided.

Excess quantities of fruit and vegetable culls also carry greater potential for fly breeding. In order to mitigate this risk, livestock producers should apply only enough culls for their livestock to consume within **48 hours**. This quantity will vary depending on the type of livestock being fed, the number of livestock being fed and the type of fruit or vegetable cull selected.

## Cull Application Methods

Consider proximity to neighbors. Apply fruit and vegetable culls as far away from schools, hospitals and residential neighborhoods as possible. These sites are generally considered sensitive to agricultural practices.

In confined livestock areas, fruit and vegetable culls are commonly fed in a trough or similar above-ground feeding container. Feeding in a container can assist in the management of leftover culls, and should be considered whenever practical for the livestock operation.

In the case of rangeland cattle, where feeding in a trough or similar container may be impractical, culls can be applied to the ground. Rotate each application site. Repeated use of the same site will lead to nutrient loading in the soil and become a breeding ground for flies even after culls have been consumed or disposed.

Culls should be applied in a line, approximately two to three layers thick.

Stockpiling fruit and vegetable culls will cause the culls to rot, breed flies and create odor problems. If stockpiling is necessary, remove or manage leftover culls 48 hours from application.

Some culls require a fermentation process to begin before they are palatable to livestock. If fermentation is required, consider fermenting culls in a closed container before feeding. If this is impractical, an additional 48 hours may be added before management in order to allow for fermentation. In Ventura County, lemons are an example of a widely available fruit cull that requires fermentation before it is palatable to livestock.

## Feeding Livestock

Livestock producers should only apply enough culls for their livestock to consume within 48 hours. This amount will vary depending on the number and type of livestock being fed as well as

the type of fruit or vegetable cull applied. In order to prevent fly and insect problems, fruit and vegetable culls should be consumed within 48 hours of application. Culls that require fermentation may be applied 48 hours before feeding, allowing an additional 48 hours for consumption. Management of leftover culls must occur within 7 days from the date of application in order to avoid fly problems. For example, if culls are applied and are allowed 48 hours for the livestock to feed, leftover material must be managed within 5 days following the 48 hour feeding period. The following outlines the 7 day management plan for feeding livestock:

### Cull Feeding Timetable

#### NO FERMENTATION

Day 1: Culls applied

Day 3: Culls consumed

Day 7: Management completed

#### FERMENTATION

Day 1: Culls applied

Day 5: Culls consumed

Day 7: Management completed

Timetables may need be accelerated due to factors such as heat, moisture and/or cull selection, in order to prevent fly breeding. Wet weather followed by a warming period and/or extreme dry and hot weather can accelerate the decomposition process, rendering culls with a higher moisture content an ideal breeding ground for flies. Fruit and vegetable culls that contain advanced stages of decomposition and/or fly larvae should be avoided.

### Leftover Culls

Management of leftover culls may occur as soon as livestock have finished feeding, but in order to avoid fly breeding, management must occur within 7 days of the application. Flies have life cycles of approximately seven to fourteen days, depending on the species, from egg to adult fly. The most effective way to control the fly population is to break that cycle. Flies require moisture to incubate the larvae. Any method that can successfully dry the organic matter will interrupt the life cycle. In order to ensure desiccation of leftover material, the following methods or combinations of methods may be used, such as:

1. Crush culls and spread in a dry field, such as an orchard row or fallow field, no more than one to two layers deep
2. Disk material into the soil and repeat as needed
3. Cover material with black plastic sheeting, so as to elevate the material's temperature above 120 degrees F<sup>1</sup>
4. Compost<sup>2</sup> material so as to allow temperatures to rise above 120 degrees F
5. Spread diatomaceous earth (food-grade quality); enough to completely cover material

If desiccation measures are impractical, due to limitations in space for spreading, etc., or if measures become ineffective, such as repeated spreading and disking in the same area, removal and disposal of leftover culls becomes necessary. Use approved municipal solid wastes disposal sites. Culls should not be dumped near streambeds or residential areas. Improper disposal can cause sanitation and pollution problems and is illegal in Ventura County.

## ODOR CONTROL

Another important aspect in managing alternative feed sources such as fruit and vegetable culls is odor control. As organic matter decomposes compounds having foul odors are released. Some fruit and vegetable culls will have greater odor potential than others due to their high sugar content which causes them to break down more rapidly. Here again, proper cull selection and management is necessary to minimize odor production. In addition to the desiccation methods mentioned above, odors can be controlled by cutting off its supply of air, allowing the culls to compost in an anaerobic environment. This method can be accomplished by using a pit silage facility or silage bags. Although effective, this method requires more equipment and manpower

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<sup>1</sup> At 120 degrees F, fly larvae begins to die. ( [www.clemson.edu/extension/livestock/camm/.../sch10b\\_03.pdf](http://www.clemson.edu/extension/livestock/camm/.../sch10b_03.pdf)) At 160 degrees F, all fly larvae is dead.

<sup>2</sup> "Compost" means a biologically stable material derived from the composting process.

"Composting" means the biological decomposition of organic matter which inhibits pathogens, viable weed seeds, and odors. "Composting" may be accomplished by mixing and piling in a way as to promote aerobic or anaerobic decay, or both. (CALIFORNIA FOOD AND AGRICULTURAL CODE DIVISION 7, CHAPTER 5, ARTICLE 2, 14525-14526) Composting is a process which requires a 3:1 carbon to nitrogen ratio, as well as specific amounts of air, moisture levels and temperatures.

than the above-mentioned desiccation measures and may be impractical for some livestock producers.

## DUST CONTROL

During the process of feeding fruit and vegetable culls the livestock producer may have an above average amount of truck traffic in and out of the feeding area. This can become an issue in the dry season and especially during a drought. The following methods are effective in controlling dust due to increased traffic activity:

1. Use paved roads whenever possible
2. Water down areas where dust has become a problem. This practice will have to be repeated periodically, as conditions require
3. Vary the locations of haul roads on unpaved surfaces. This method can be detrimental to existing forage and potentially destroy valuable rangeland, which may render it impractical for some livestock producers

## INEDIBLE SUBSTANCES

In Ventura County, many crops are grown in a manner that involves a certain amount of inedible substances, such as plastics, tarps, stakes, ties, etc. If fruit and vegetable culls are taken directly from a field, such substances should be separated and properly disposed of before feeding to livestock. Similarly, if fruit and vegetable culls are taken from packed cardboard cartons, such cartons should be removed and properly disposed of before feeding to livestock.

Growing media, such as soil, peat moss, etc. and soil amendments such as mulch and compost are generally considered inedible substances. Although these materials can assist in the management of leftover culls, inedible substances are not considered an alternative livestock feed source.

The Best Management Practices Guideline has been developed by the Ventura County Cattlemen's Association in conjunction with the Ventura County Agricultural Commissioner's Office. The intent of this document is to develop a set of procedures that will enable livestock producers to utilize a potentially valuable livestock feed source while minimizing any negative impacts the process may entail. Ventura County protects certain agricultural operations against claims that they constitute a nuisance, if such operations are "conducted in a manner consistent with proper and accepted customs and standards as established and followed by similar agricultural operations in the same locality" (Ventura County Ordinance No.4151, Sections 8114-2.1.1 and 8183-4.1). *Best Management Practices for Managing Alternative Livestock Feed Sources* assist in controlling potential nuisances, such as flies, odors, dust and refuse. However, improper application of these methods can result in a lack of control of these nuisances. Livestock producers are responsible for controlling such nuisances. Livestock producers are encouraged to communicate with neighboring properties/residents whenever feasible to avoid potential conflicts and complaints.

For questions, information and additional resources please contact:

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