

Crop Profile for Dairy in Kansas

Prepared 1999

General Production Information



- Kansas ranked 27th in number of milk cows and milk production in the United States.
- Kansas contributed 0.9% to the total U.S. cow inventory and milk production.
- Milk cow inventory includes dry cows, excluding heifers not yet fresh, totaled 86,000 head compared to 82,000 in 1998.
- Milk cows and heifers that have calved totaled 88,000 head up 5% from 1998.
- Heifers 500 pounds and over kept for milk cow replacement totaled 45,000 head up 5,000 from 1998.
- Milk production totaling 1,395 million pounds, up 6.1% from 1998.
- Milk production per cow was 16,221 pounds up 1.2% from 1998.
- Dairy farm value increased by \$600,000 compared to 1998.
- Milk cow operations (1,400) was unchanged from both years.

Production Regions:

- In 1999, milk cows were mainly concentrated in the southwestern region (28,800 cow) followed

by the northeastern and the south central regions, 14,500 and 11,600 heads, respectively. The above regions combined accounted for about 64% and 65% of total milk cow inventory and milk production, respectively. The west central region had the lowest number of milk cows and milk production in the state.

- Southwestern region accounted for 35% of the state milk cow inventory and milk production.
- Numbers of milk cows and total milk production in counties in the southwestern region were not published separately. Nonetheless, in the northeastern region, Nemaha County leads the region with 5,300 milk cows and 84.920 million pounds of milk followed by Sedgwick County in the south central region with 4,600 cows and 74.520 million pounds of milk.

Cultural Practices

The dairy operation can be divided into six components: milking parlor; cow housing; replacement heifer housing; special need facilities such as hay barn, silage bunker, commodity shed, and protein bin; manure management system, and feed center.

Cow Housing:

Generally, for the first two months of age calves should be housed in dry, well ventilated, draft-free environment with minimal changes in temperatures. They are either housed in individual bedded floor pens, elevated stalls or portable individual houses. Older calves are kept in open sheds, freestalls or in counter-slope housing.

Most of the dairy operations in southwestern Kansas have built drylot facilities versus freestalls, depending on the weather, to house dairy cows. The dry lot facilities can be constructed where the moisture deficit is greater than 20 inches annually. These facilities can provide 500 to 700 square feet per lactating cow, depending on the evaporation rate, with 40 square feet of shade per cow. The freestall usually is constructed to minimize the effect of weather changes and to improve cleanliness and cow comfort. They are 2-, 3-, 4-, or 6 row freestall barns that are located within walking distance to the milking center.

Milking Center:

Milking parlors are available in various types and sizes; side-open parlor, rotary parlors, herringbone parlors, parallel parlors, and parabone parlors. The herringbone, parallel, and rotary parlors are the three predominant types available on large dairies today.

Most of the milking parlors should accommodate the cleaning and maintenance of the parlor in addition to milking all the cows every 8, 6.5, 5 hours when milking 2, 3, 4 times per days, respectively.

Holding pens should be designed for 15 square feet per cow and should hold at least one complete group of cows that will be milked at the same time. Many producers increase the pens by 25 percent to allow

for the second group of cows to move into the holding pens while the first group is still being milked. The exit lane width depends on the number of stalls on one side of the milking parlor.

The operator pits are typically 8 feet wide between curbs. The cow platform is 38 to 40 inches above the floor of the operation pit. The operation pit and cow platform should have a one percent sloop to the rear of the milking parlor.

Management practices:

Dairy cows experience heat stress when the temperature humidity index exceeds 72. Many dairies install cooling system to reduce heat stress in lactating dairy cows. Shades, fans and sprinklers are used for cooling cows at milk parlor holding pen, feeding, and housing areas. The spray and fan systems should be installed in the holding pen, over feeding areas in some freestall barns, and under shades on drylot dairies.

A low-volume sprinkler system is installed in the holding pen to increase evaporative cooling from the cows. In addition, large fans are used to mechanically ventilate the pens on hot, still summer days. As cows pass under water nozzles, top and sides of the cows are cooled as they exit the parlor. In addition, clean, cool water is provided at cross covers between feeding and resting areas and for cows leaving the milking parlor to increase water intake during times of heat stress.

Orientation of the freestalls in the Midwest is east to west to reduce heat load in the building. Generally, they should be well constructed to provide good, natural ventilation. Supplemental cooling can be added by installing fans and a sprinkler system controlled by a timer, to reduce water usage. Also, sprinklers are installed on the feed line and fans are placed on the feed line and over the freestalls.

A proper manure handling and storage system is necessary in dairy operation. Dairies generate 2 to 3 pounds of manure and wastewater per pound of milk produced. Most dairies are using a flush system to transport manure from alleys, pens or housing area to the storage area. The manure and effluent are generally stored in a solids storage basin and liquid storage lagoon.

Insect Pests

Controlling flies in the milking area and milking storage room require insecticides that are themselves potential milk contaminants. Therefore, rigorous sanitation, including proper manure management, prevents fly problems from becoming extreme, and should be the foundation for all dairy insect pest management efforts. In addition to manure management, proper construction, screening and caulking would exclude pests from milking areas. Besides fly contaminant, dairy cows are subjected to parasitism by biting flies, lice, ticks, and other pests that can reduce milk production. Insecticides used in dairies and on dairy cows must be used with extreme care. There are few insecticides registered by the EPA for direct use on lactating dairy cows. However, products used on beef animals may be used on nonlactating

dairy cows but with some restrictions as to age of the animals treated or time between treatment and freshening.

The major pests that cause problems for dairy cows in Kansas:

Cattle Grubs (*Hypoderma bovis*, *H. lineatum*)

are more numerous on yearlings and two-year olds than on mature animals.

The only chemical currently approved for use to control grubs in lactating dairy cows is eprinomectin (Ivomec Eprinex). However, several insecticides used on beef cattle for grub control can be used on non-lactating dairy cows and heifers by following label directions.

Lice

The three blood sucking species that are common in Kansas include the shortnosed louse (*Haematopinus eurysternus*) that is most abundant on mature cattle; the longnosed cattle louse (*Linognathus vituli*) that thrives best on young animals and dairy breeds, and the little blue louse (*Solenopotes capillatus*) that clusters on the animal's head and neck and frequently is harder to control. The only biting (chewing) species of lice common on cattle is the cattle biting louse (*Bovicola bovis*) that feeds on skin cells. Lice live on host animals and are spread from one animal to another through contact. Lice are commonly found on the heads and necks of day-old calves, having transferred from the cows as the calves nursed. Heavy infestation occurs in mid-winter only. In late winter and early spring, infestations decline rapidly with spring warm-up and shedding of hair. Louse-infested cows produce less milk and blood loss from sucking may cause anemia and calf abortion. Animals have died from severe louse infestations.

Most insecticides provide little control of louse eggs. Thus, a second treatment two to three weeks after the first treatment is required to kill the newly hatched lice. The only Pour-ons that may be used on lactating dairy cows for control of lice are Ivomec Eprinex and the pyrethroids, Permethrin and cyfluthrin.

Mange and Scabies

Mange is a skin disease caused by mites that feed on living skin tissue. A particular serious type of mange caused by a certain species of mites is called scabies. Spread of these skin diseases among cattle is through animal contact, via bedding, or transportation. Mites may be transferred from one species of animal host to another but scabies do not become established from such cross-species transfers.

- Chorioptic mange that is caused by *Chorioptes bovin* mites is not a serious disease that needs animal quarantine. At present, only two acaricides, amitraz (Taktic) and pyrethroids (permethrin), are registered for dairy cows.
- Psoroptic scabies that is caused by *Psoroptes ovis* mites is serious enough that cows are quarantined. Only amitraz (Taktic) is used as a spray or spray drip on producing dairy cows.

Horn flies (*Haematobia irritans*)

are found throughout Kansas during the warm season. The blood sucking horn flies reproduce on fresh cow manure from April through late fall. Flies are found on the back of cattle out of reach of the animal's head or tail. During cool weather, they congregate about the base of the horn to rest. They are about half the size of the ordinary house fly. Each fly punctures the cow's skin 20 to 40 times a day. Horn fly infestations cause severe nervousness and reduction in animal weight. Insecticide application methods include hand dusting, dust bags, backrubbers, sprays and mist sprays, pour-ons, insecticidal ear tags, feed additives, and boluses. Walk-through fly traps may be useful on dairy farms.

Face Flies (*Musca autumnalis*)

feed on animal secretions such as tears, saliva, nasal mucus, and blood oozing from wounds. Face flies cause little direct economic loss in milk production. However, they can spread bacterial pinkeye to young stock. Females lay eggs in fresh manure where larvae develop. Short-lived, non-accumulating insecticides can be applied to animal's faces. Also, a low pressure and mist spray in the morning as cow exit the milking parlor provides the best control for face fly and other flies that spend time on the animals.

Small face dusters or dust "bullets", or hand dusting may be used to control face fly. Some ear tags, feed additives or boluses are also effective in some situation for face fly control.

Gnats

The biting and bloodsucking gnats are black flies and *Culicoides* gnats; eye gnats are the non-biting gnats. The black flies breed in clear streams, while *Culicoides* gnats are found in pasture seeps, manure-contaminated streams, and improperly managed waste lagoons. They mostly bite ears, around the eyes, and on the udder. The eye gnats are attracted to body secretions, including milk, and may spread mastitis, and carry pinkeye bacteria between animals. Gnats can be controlled by directly spraying the body or head using the same methods used for horn flies and face flies.

Stable Flies (*Stomoxys calcitrans*)

cause reduction in milk production. Stable flies feed on legs and bellies of the animals by biting and sucking blood. Insecticides must be sprayed onto these areas. The automatic barndoor sprayer is a good method to spray cow legs.

House Fly (*Musca domestica*)

populations are low until July, reach peaks in August, and then decline with dry, cool, fall conditions. They do not bite and suck blood, or reduce milk production. They contaminate milk and milk products by feeding on milk, milk products, sweet and sour and oily feeds as well as manure. They are a nuisance to dairy cows and can transmit mastitis.

Non-chemical Control of Stable Flies and House Flies:

- **Sanitation.** Frequent manure disposal is the basis of all other control methods for stable flies and house flies. Special attention should be given to calf pens. They should be on a well-drained site.

Sand, gravel, or coarsely corncobs used as bedding greatly reduces the number of flies produced. Calf pens should be placed as far as possible from milking parlor.

- **Biological control.** Periodic releases of parasite wasps may be an effective supplement to sanitation but cannot eliminate flies.
- **Electrocutor insect traps** are placed near entryway of milking parlors and where there is a dark background.
- **Sticky traps** are non-insecticide traps hung from the ceiling to trap the few house flies that are found in the milking room.
- **Odor-baited traps** are another type of non-insecticide traps placed near calf pens and around building perimeters.

Chemical Control of Stable Flies and House Flies:

- **Insecticide bites.** Baited jug traps are used to aid in control of house flies. Jugs are suspended from a rafter or ceiling above loafing areas or calf pens at 15 to 20 foot intervals.
- **Building treatments.** Residual insecticides are sprayed on surfaces away from feed, water, milking equipment, milking parlor, or milk room. Walls and fences should be sprayed with medium to coarse spray, under low pressure. Such applications leave residues that kill flies for from one to five weeks before breakdown. High temperatures, sunlight, and concrete surfaces cause more breakdown, and rain and water from cleaning wash the material off.
 1. **Space spray and fogs.** Short-lived insecticides may be applied with foggers, mist blowers, or hydraulic sprayer handguns at a time of the day when flies are inactive but when temperature is more than 70 °F. Insecticides are applied at areas where flies are resting.
 2. **In the milk house.** Before using cold fogs or mists of pyrethrin in the house, all equipment and milk containers should be tightly covered. Milking areas are not sprayed immediately before or during milking.
- **Spraying manure** rarely should be done on a dairy farm. Manure should be cleaned frequently from cow lots, hauled to fields, and scattered thinly, or can be piled for storage away from the milk house. The pile should be oriented with the slope of the ground, packed, and shaped to prevent rain-trapping hollows.

Pesticide Usage, 1999:

Kansas producers used several pesticides on dairy cows and facilities according to a survey conducted in March, 2000 by the Kansas Agricultural Statistics (KAS). Data on following pages (Tables 1-5 and Figures 1-2) are extracted from the Kansas Agricultural Chemical Usage, 1999 Cattle Pesticide Summary publication (MF-2467).

The most commonly used active ingredient on dairy cow was ivermectin. Over 28,000 cows were treated with 20 pounds ivermectin applied as Pour-ons. Permethrin was the second most frequently used insecticide with 13,000 cows treated with 170 pounds. Most (84%) of the permethrin was applied in

Pour-ons.

Diazinon-treated ear tags were the most commonly used tags on dairy cows. Over 3,000 heads were tagged to control confinement and pasture flies.

The main insects reported as causing problems to dairy cows were confinement and pasture flies. Manure management program was the non-chemical control method most often used on dairies.

Insecticides were also applied in or around dairy facilities. The most frequently used active ingredients used on dairy facilities were permethrin and cyfluthrin.

Table 1. Total Pesticide Usage on Dairy Cows by Application Methods

Class & Pesticide (a.i.)^a	Target pest	Method	Head treated (1,000)	Quantity used (lb)
Avermectin				
Ivermectin	Grubs, Lice, Pasture Flies	Pour-On	28.3	20
Pyrethroid				
Cyfluthrin	Flies ^b , Grubs, Lice	Pour-On	10.9	20
Permethrin	Flies, Grubs, Lice	Pour-On Spray	11.2	130
			1.8	40
	Flies, Horse Flies			

^aAlthough coumaphos, dichlorvos, doramectin, eprinomectin, famphur, fenthion, malathion, methoxychlor, moxidectin, phosmet, piperonyl butoxide pyrethrins, tetrachlorvinphos, and trichlorfon were used, insufficient data are available to report.

^bConfinement and pasture flies were reported.

Table 2. Chemically Treated Ear Tag Usage on Dairy Cows

Class	Pesticide (a.i) ^a	Target pest	Head treated (1,000)	Quantity used (lb)
Benzodioxole	Piperonyl Butoxide (synergist)	Pasture Flies	2.8	20
Organophosphate	Diazinon	Flies ^b	3.2	50

^aAlthough cyfluthrin , fenthion , fenvalerate, lambda-cyhalothrin, permethrin, and pirimiphos methyl were used, insufficient data are available to report.

^bConfinement and pasture flies were reported.

Table 3. Percent of Treated Dairy Cows by Application Methods

Application method	Head treated (%)
Pour-On	96.6
Spray	3.4

Table 4. Percent of Dairy Cows Treated with the Most Frequently Used Pesticides

Class	Pesticide (a. i.)	Head treated (%)	Quantity used (lb)
Avermectin	Ivermectin	53.1	20
Pyrethroid	Permethrin	24.4	170
	Cyfluthrin	20.5	20

Table 5. Total Quantity of Pesticides Used on Facilities and Dairy Cows

		Quantity on Facilities	Quantity on cow
Class	Pesticide (a. i.) ^a	(Ib)	
Avermectin	Ivermectin	0	20
Benzodioxole	Piperonyl Butoxide	60	0
Organophosphate	Diazinon	50	0
Pyrethroid	Cyfluthrin	80	20
	Permethrin	80	170
	Pyrethrin	20	0

^aAlthough coumaphos, dichlorvos, dipropyl isocinchomerate (synergist), doramectin, eprinomectin, famphur, fenthion, lambda-cyhalothrin, malathion, methomyl, methoxychlor, moxidectin, N-octyl bicycloheptene dicarboximide, pirimiphos methyl, tetrachlorvinphos, and trichlorfon were used, insufficient data are available to report.

Fig. 2. Percent of Insect Pests Reported Causing Economic Loss

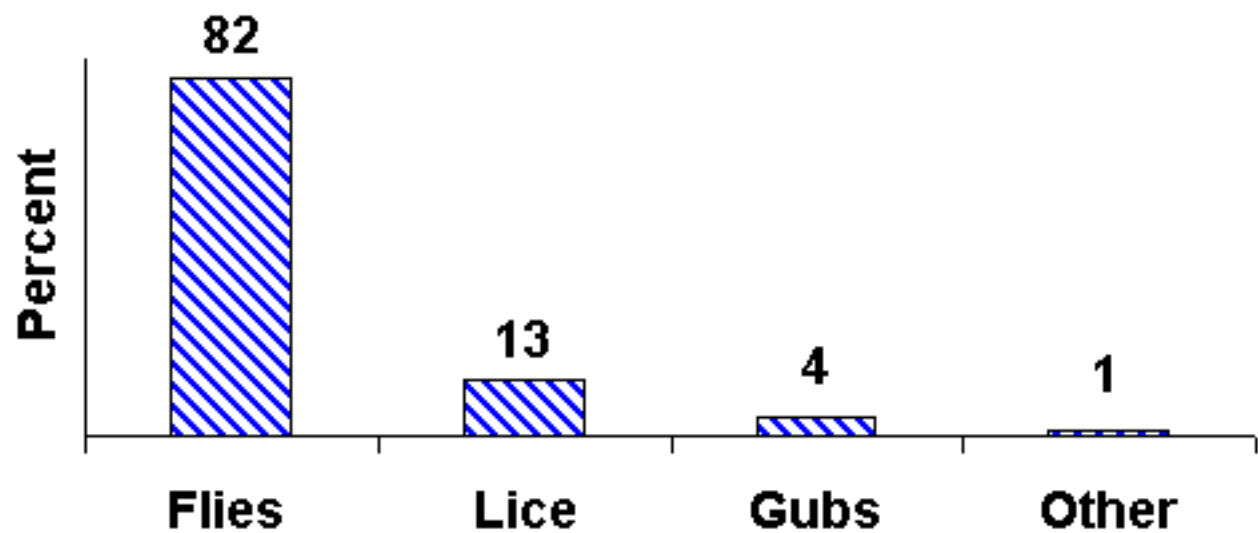
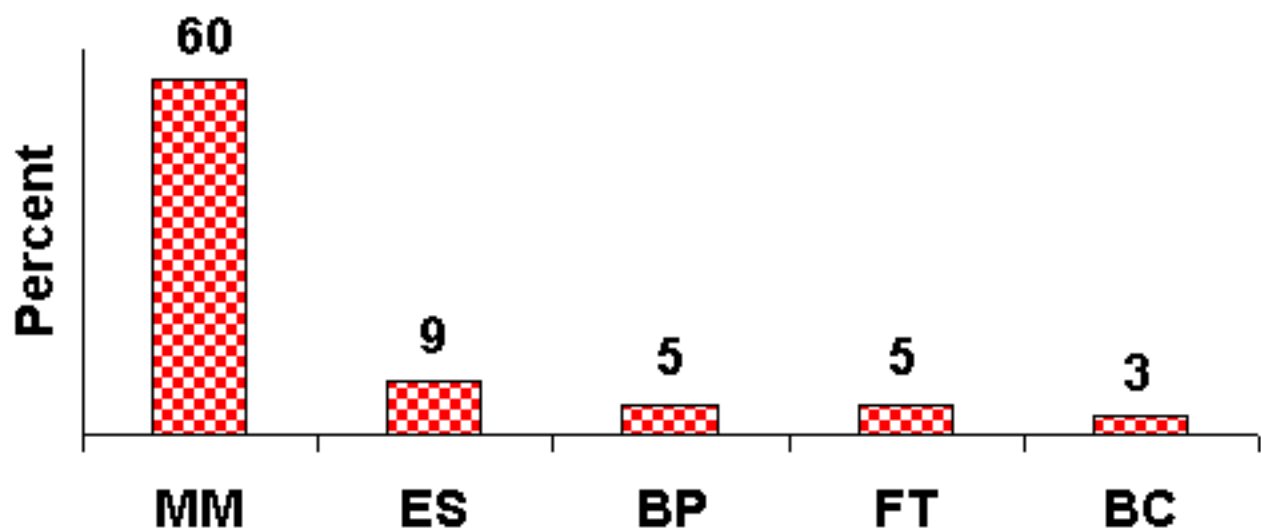


Fig. 1. Percent of Producers Used a Particular Non-Chemical Pest Control Method



Contacts

Kansas State University:

Sorkel M. Kadir, Crop Profile Coordinator, Ph.D
Agronomy Department
(785) 532-5420
skadir@bear.agron.ksu.edu

Donald C. Cress, Extension Pesticide Coordinator , Professor
Department of Entomology
(785) 532-5891
dcress@oznet.ksu.edu

Donald E. Mock, Extension Specialist, Medical & Veterinary Entomology
Department of Entomology
(785) 532-5891
dmock@oznet.ksu.edu

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