

Crop Profile for Beef Cattle (Feedlot) in Kansas

Prepared July,2000

General Production Information



- **Kansas** ranks 1st nationwide in commercial cattle marketings, as of January 1,2000, closely followed by Texas and Nebraska.
- **Kansas** is the third-leading state in number of cattle on feed on January, 2000, after Texas and Nebraska.
- **Kansas** ranked 3rd in beef processing and red meat production in 1999.
- **Number of feedlots, on January 1, 2000:**
 - **Over 1,000 head:** 296.
 - **Less than 1,000 head:** 1,391.
- **Total number of cattle on feed on January 1, 2000 in feedlots with 1,000 + capacity:** 2.29 million head

accounting for 20% of U.S. inventory and 24% of the historic 7 states (AZ, CA, CO, IA, KS, NE, TX). Of the total number, 1.350 million were steers and steer calves, 930,000 were heifer and heifer calves, and 10,000 were cows and bulls.

- **Price average, as of April 3,2000:**
 - **Calf :** \$ 106.00 per cwt.
 - **Steers and heifers:** \$71.70 per cwt.
 - **Cow:** \$38.80 per cwt.
- **Placement during December, 1999:** 400,000 head, up 25 percent from December, 1998. The total number accounted for 24% of U.S. Inventory.
- **Percent of December placements by weight:**
 - **< 600:** 24%
 - **600-699:** 34%
 - **700-799:** 30%
 - **> 800:** 13%
- **Marketing during December, 1999:** 480,000 head, up 9 percent from a year ago.
- **Other disappearance includes death losses, movement from feedlots to pastures and shipments to other feedlots:** 10,000 head, down 50 percent from a year ago. The total number accounted for 11% of U.S. inventory.



Figure 1. Five Counties with Most Cattle on Feed on January 1, 1999.

Figure 1 shows the concentration of cattle on feed in feedlots with capacity greater than 1,000 head in Kansas. In 1999, Scott County in the west central region placed first with 210,000 head followed by Haskell, Finney, Gray, and Ford Counties, from the southwestern region, with 206,500, 174,700, 126,800, and 124,000 head, respectively.

Cultural Practices

The Kansas beef cattle industry includes cow/calf ranches and stocker and backgrounding operations where calves are grown on grass, wheat pasture, or in drylot; feedlots finishing cattle for slaughter, and packing plants that process fed cattle. Unlike the pastured cattle, cattle on feed are mostly concentrated within the southwestern part of the state. Seventy-five percent of beef feedlots are localized in southwest Kansas along with five of the major beef packing plants. Most of the feedlots with greater than 1,000-head capacity are located in that area. The rest of the state has the lowest number of cattle on feed, according to 1999 data compiled by the Kansas Department of Agriculture, Division of Statistics.

Feedlot operations:

Cattle newly arriving into the feedlots can be either calves or yearlings. Most are steers and most of the remainder are heifers; relatively small numbers of culled cows are placed in feedlots. Each set of incoming cattle is penned separately from others for the duration of the period they are fed concentrated feeds. Mineral mix, fresh clean water, and medium-to poor-quality hay are provided upon arrival. Typically, treatments for insects and internal parasites are administered immediately upon arrival at the feedlot. Corn, grain sorghum, and whole-plant corn silage are the main feeds utilized, but wheat max also be fed in years when wheat prices are low.

Equipment for feedlots:

The fence line feedbunk is the typical feeding device in cattle feedlots in the Great Plains Region. Feedbunk shape, size, construction, location, and orientation can have an economic impact on feedlot operation. Feedbunks are located where runoff water from the feedlot or adjacent areas drains away from them. An eight-percent slope away from the feedbunk is commonly used on both the lot side and road side of the feedbunk. Orientation of feedbunk is another factor to be considered when locating bunks. The likelihood and direction of drifting snow and wind blown feed losses, and the rate of drying

after a wet period are some of the factors that are considered in bunk orientation. Animal size, feed ration, and feeding duration affect the feeding space and bunk capacity required. Concrete is used for feedbunk construction to resist the corrosive effects of salts and minerals in the feeds. The inside corners of the bottom of the feedbunk are rounded to aid in cleaning and reduce feed aggregating in the corners and becoming stale or sour and to help minimize rodent and fly problems. The neck rail on the feedbunk fence provides easy access to feed and keeps cattle out of the bunk. Materials used for feedlot fencing include used sucker rod, pipe, cattle panels, steel cable, continuous fence panels, high tensile steel, electrified fence, and wood. Earth mounds four to six feet high are constructed in the pens for cattle to rest on and get away from mud during wet seasons. Windbreaks protect animals from winter cold drifts. Windbreaks should be located along the north and west sides of the pens.

Insect Pests

Insects, ticks and mites cause direct and indirect losses to the beef industry. Blood loss, irritation, annoyance, insect contamination of meat are direct losses. In addition, insects transmit many bovine diseases such as bluetongue, pinkeye, epizootic bovine abortion, and anaplasmosis. The USDA estimated that insects and mites cause \$2.2 billion annual loss to the cattle industry in this country (Mock, 1997). Entomologist, Don Mock, at Kansas State University estimated that insects and mites cause the Kansas beef industry \$130 to \$150 million loss annually.

Note: In reading the following information of chemical control, note that specific products may allow for spray mix concentration different from those provided.

The directions provided here represent typical rates of application. A few products are used for simultaneous control of both endoparasites and ectoparasites. These are known as "endectocides" and are noted as such on the following pages.

Insecticide and miticide classes in the Application Method sections are indicated in parentheses as:

1. **Organophosphate**
2. **Pyrethroid**
3. **Juvenile Hormone Analog**
4. **Avermectin**
5. **Chlorinated Hydrocarbon**
6. **Triazapentadienes**
7. **Macrocyclic lactone**
8. **Benzodioxole**
9. **other**

Following are major pests that cause problems and the control methods recommended for feedlot cattle:

Flies:

Unless flies are controlled during the summer, the numbers reach astonishing levels in the feedlots. The major breeding grounds of flies in the feedlots are moist, untrampled sites where manure is mixed with wasted straw, hay, or grain. Two species of flies occur in Kansas feedlots, house flies that feed on free-standing liquids or solid that they can dissolve with saliva, and the stable flies that attack the legs and bite and suck animal blood. The latter can disturb the cattle to the point of reducing weight gain and feed conservation efficiency. Both can easily fly several miles. Sanitation and good manure management programs are the keys to fly control that should be adopted in confined livestock facilities. Additionally, sanitation may need to be supplemented with insecticide sprays, baits, and/or biological control agents.

Stable flies (*Stomoxys calcitrans*) are blood-sucking flies that attack and pierce the skin of the legs or the knees of cattle while feeding during daylight hours. Stable flies rest in the shed on fence posts, wooden fences, feedbunks, on buildings, or in the lower part of trees or shrubs. It has been estimated that the economic loss due to stable flies is 0.2 to 0.5 pound per day when four or more flies are present per leg of feedlot cattle, and feed efficiency is reduced by 11 to 13 percent as a result of stable fly attack. Stable flies are abundant during the spring (from late May through June) then decline during July or August. However, high stable fly numbers may occur for 16 weeks in cool, wet summers. Stable fly larvae or pupae overwinter in the manure. The total life cycle of stable fly vary from 14 to 40 days.

House Fly (*Musca domestica*) populations are low until July, reach peaks in August, and then decline with dry, cool, fall conditions. House flies can complete their life cycle in 8-14 days, slightly shorter time than stable flies. They cannot bite and suck blood, rather they feed on feedstuffs, manure, garbage and other organic matter to dissolve nutrients, which they ingest by sponging and swallowing. They bother the cattle greatly, and are nuisance to feedlot workers. House flies can transmit several diseases from animal to animal and from manure to feed. When not on the animal, they rest on manure, contaminated soil surfaces, fences, buildings, trees, and shrubs.

Biological fly control:

As with chemical control, biological control must be accompanied by good manure management, elimination of wet spots, and general sanitation for a successful fly control program.

Periodic releases of useful parasites (species of gnat-size wasps) into an area, after a good manure management system helps reduce the number of flies emerging from fly breeding sites that cannot be eliminated. Timing the first parasite releases in the spring is critical to a successful management program. Wasps that are used in the fly control programs kill flies to provide a place for their larvae to develop. Fly parasites cannot attack the adult stable flies or the house flies, instead they work in the manure killing the stable or the house fly pupae before they reach the adult fly stage.

Spalangia and *Muscidifurax* are the two major groups of pupal parasites that naturally occur in Kansas. The genus *Spalangia nigroaenea* is well adapted to the feedlot environment of Kansas. It is commonly found in both stable fly and house fly pupa and it appears to be the appropriate parasite species for stable fly control in Kansas feedlots.

Problems with commercially available parasited house fly pupae:

- Only 50 to 60 % of parasites emerge from pupa.
- Less than 80% of the emerging parasites are species adapted to Kansas cattle feedlots.

Note: Each insecticide or miticide trade name in this profile is either registered name (®) or trade mark (™).

Chemical fly control:

Short-Lived insecticides:

After the manure and sanitation programs, the use of short-lived insecticides that breakdown rapidly would be effective cost to the feedlot operator. Insecticides can be applied with foggers, mist blowers, or hydraulic sprayer handguns. The most effective method of insecticide application in large operations is the mist blower because it can be used effectively under breezy conditions. Fly resting sites are treated at a time of day when flies are inactive but when temperature is 70° F or higher. Treatment may be required every three to seven days depending on the efficiency of sanitation programs. Insecticides families are rotated once or twice each fly season to retard insecticide resistance in fly populations.

(1) Dichlorvos

- Trade name: Vapona.
- **Use rate:** 1 gal 43.2%/100 gal water.
- **Comments:** no pre-slaughter waiting period.

(1) Naled

- **Trade name:** Dibrom.
- **Use rate:** 3 to 5 qt 36%/50 gal water, apply 0.1 to 0.25 Ib technical Naled/ acre; 1 qt Dibrom 58% EC/40 gal water, apply 5 gal of the mixture/acre.
- **Comments:** no pre-slaughter waiting period.

Some permethrin products (Ectiban 5.7% EC, GardStar 40% EC, Permethrin II 10% EIL) also are registered for mist applications to cattle feedlots. These pyrethroids are the only alternative to organophosphates for use in a rotation.

Residual Sprays:

This method utilizes insecticides that do not break down rapidly and do leave residues on the surface, which kill flies for from 1 to 5 weeks. These insecticides should be applied to the fly resting site surfaces to the point of runoff.

(1) Chlorpyrifos

- Trade name: Double Shift MEC.
- **Use rate:** 3 fl.oz. Durvet Double Shift MEC/gal water, mixture can cover 750 to 1,000 sq. ft. of surface.
- **Number of applications:** repeated as needed.
- **Comments:** not sprayed or spray drift is allowed on animals, feed or water.

(2) Cyfluthrin

- Trade name: Countdown.
- **Use rate:** mix two 9.5 gm packets of Countdown 20% WP or 16 ml 24.3% EC/gal water, mixture can cover 1,000 sq.ft. of surface.

(1) Diazinon

- Trade names: Diazinon; Dryzon.
- **Use rate:** 2 lb of Diazinon 50 W or 50 WP, or Dryzon WP/25 gal water, one gallon covers 350 to 750 sq.ft. of surface.
- **Number of applications:** repeated as needed.
- **Comments:** not sprayed or spray drift is allowed on animals, feed or water. Animals are kept away from treated areas for at least 4 hr.

(1) Dimethoate

- Trade name: Cygon 2-E.
- **Use rate:** 1 gal Cygon 2-E/25 gal water, one gallon covers 500 to 1,000 sq.ft. of surface.
- **Number of applications:** repeated as needed.
- **Comments:** animals are removed from buildings before treatments.

(2) Lambda-cyhalothrin

- Trade name: Grenade ER.
- **Use rate:** 6 to 12 ml/gal water.
- **Comments:** animals are kept away from treated areas until surfaces are dry. Spray is not allowed to contact animals, feed, or water.

(5) Methoxychlor

- Trade name: Marlate.
- **Use rate:** 4 lb 50% WP/10 gal water, one gal mixture covers 500 sq.ft. of surface.
- **Number of applications:** repeated as needed.

(2) Permethrin

- **Trade names:** Atroban; Ectiban; Expar; Gardstar; Hard Hitter; Permethrin; Pounce.
- **Use rate:** for 0.1% residual spray, mix 1 qt Ectiban or Hard Hitter, 5.7% EC/12.5 gal water; 6 oz Ectiban or Hard hitter, or Pounce 25% WP/11 gal water; 1 qt Permethrin II 10% EIL or Permethrin-10/25 gal water; 1 pint Pounce 3.2 EC/50 gal water. For 0.125%, mix 6.67 oz Atroban or Expar 25% WP/10 gal water. For 0.14%, mix 1 qt Insectaban 5.7% EC/10 gal water. For 0.25%, mix 1 pint Atroban or Expar 11% EC/10 gal water, or 6.67 oz Atroban or Expar 25% WP/5 gal water. All mixtures treats 750 to 1,000 sq.ft. of surface.
- **Number of applications:** no more often than once every two weeks.

(2) Permethrin Synergized Pour-On

- Trade names: Atroban; Back Side Plus; Expar; Permethrin.
- **Use rate:** undiluted of 1% permethrin plus Permethrin CDS Pour-On may be used in a mist spray applied to structural surfaces. One gallon treats 7,300 sq. ft. of surface.

(1) Tetrachlorvinphos/(1) Dichlorvos

- **Trade name:** Ravap.
- **Use rate:** 1 gal (23% + 5.7%) EC/25 gal water, one gallon mixture covers 500 to 1,000 sq. ft. of surface.
- **Number of applications:** repeated as needed.

(1) Trichlorfon

- **Trade names:** Dylox; Dipterex.
- **Use rate:** 5 lb 80 SP/40 gal water, one gallon covers 500 sq.ft. of surface.
- **Number of applications:** repeated as needed.
- **Comments:** animals are removed before spraying either inside barns or an outside pen surface.

Spraying Manure:

Manure spraying should not be done frequently to avoid the destruction of naturally occurring beneficial mites and insects in the manure, and to prevent insecticide resistance in house and stable flies. However, spraying is needed in rainy weather, when manure management and other types of insecticide applications are disrupted.

(1) Dichlorvos

- **Trade names:** DDVP; Vapona.
- **Use rate:** 1 gal 43.2%/50 gal water, 1 or 2 qt mixture covers 100 sq.ft. of surface.

(1) Tetrachlorvinphos

- **Trade name:** Rabon.
- **Use rate:** 4 lb 50% WP/25 gal water, one gallon mixture/100 sq.ft. of manure pile surface.

(1) Tetrachlorvinphos/(1) Dichlorvos

- **Trade name:** Ravap.
- **Use rate:** 1 gal (23% + 5.7%) EC/25 gal water, one gallon mixture/100 sq.ft. of manure pile surface.

Direct Animal Spray:

This method is insufficient to control flies on animals in feedlots. However, insecticide sprays used to control horn flies have label claims for control or aids in control of stable flies. Pyrethroid insecticides generally provide better control of stable flies than organophosphate insecticides.

Oral Larvicides, Boluses:

This method kills larvae of the house flies in fresh manure. It has been reported to be effective in manure for about three weeks. However, since stable flies rarely breed in fresh manure, oral larvicides have little effect on stable flies. Oral-Larvicide use may be helpful in conjunction with strict sanitation program.

(9) Diflubenzuron 9.7% bolus

- **Trade name:** Vigilante.
- **Comments:** control horn flies and face flies, but not stable flies.

(1) Tetrachlorvinphos

- **Trade name:** Rabon Oral Larvicide.
- **Use rate:** Rabon 7.76% Oral Larvicide Premix blended with complete rations or with concentrates to supply 70 mg Rabon/animal cwt./day.

- **Comments:** not used in liquid feed supplements. No pre-slaughter waiting period.

Fly Baits (House Flies):

This method is useful in supplementing other fly-control methods. Commercial baits usually include sugar or other fly-feeding attractants. Baits are used to control house flies not stable flies. The effectiveness of this method to control house flies depends on putting baits where flies naturally congregate for feeding.

(9) Methomyl 1%

- **Trade names:** Apache; Improved Golden Marlin; Golden Muscamyl; Fatal Attraction; Fly Bait Plus; Fly Belt; Flytek; Fly Patrol; Tailspin.
- **Comments:** all, but Fly Patrol, contain non-food house fly aggregation attractants called (z)-9-tricosene, Muscamone, or Tricolure.

Cattle Scabies

Cattle Scabies have been occasional problem in feedlot cattle more than in pastured cattle. There are several parasite mites found in cattle but only three are considered serious enough to be classified as scabies: psoroptic or common cattle scabies, sarcoptic scabies, and chorioptic scabies. The most prevalent in the central plains and intermountain states is the psoroptic scabies that is caused by *Psoroptes ovis* mite that spread quickly and easily among cattle of all ages, classes, and conditions. Mites attack part of the body thickly covered with hair. They pierce skin causing the serum to exude. As a lesion increase in size, dry scab forms in the middle surrounded by moist crust and reddened skin. The first lesions usually occur on the withers, along the back, or around the tail head. Infestations cause weight loss or death of calves or cattle exposed to harsh weather. Scabies mites reproduce rapidly and cause the most sever skin lesions during the fall, winter and early spring. In the summer, direct sunlight and exposure to drying wind destroy mites and lesions often clear up as cattle shed of long hair coats and expose skin to hot summer temperatures.

Chemical Control:

Scabies-infested cattle that move from state to state are required to be treated under federal regulations. The conventional method of treatment are dipping or using a spray-dip machine. Ivermectin (Ivomec) is an injectable systemic pesticide, which now is also approved for cattle scabies control.

(7) Moxidectin

- **Trade name and formulation:** Cydectin Pour-On for Cattle 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves to be processed for veal.

Moxidectin is an endectocide.

(4) Ivermectin

- **Trade name and formulation:** Ivomec Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 lb animal weight along topline from withers to tailhead.
- **Comments:** 48-day pre-slaughter waiting intervals. Ivermectin is an endectocide.
- **Note:** although the label on Ivomec 1% Injection claims control of *Psoroptes* mites that cause the type of scabies of primary concern on cattle in Kansas, the Ivomec Pour-On label claims control only of *Sarcoptes* mites which have never occurred in Kansas.

(4) Doramectin 0.5% Pour-On

- **Trade name and formulation:** Dectomax Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 lb body weight along backline from withers to tailhead.
- **Comments:** not used on calves to be processed for veal. Forty-five-day pre-slaughter waiting period. Doramectin is an endectocide.
- **Note:** the label claims control of *Chorioptes* mites (which cause mange, considered mild) and *Sarcoptes* mites (which have not been reported in Kansas), but does not list *Psoroptes* mites, the cause of the form of cattle scabies of most concern in Kansas).

(4) Eprinomectin

- **Trade name and formulation:** Ivomec Eprinex Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 lb body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves under 8 weeks of age. Eprinomectin is an endectocide.
- **Note:** the label claims control of *Chorioptes* mites (which cause mange, considered mild) and *Sarcoptes* mites (which have not been reported in Kansas), but the label does not claim control of *Psoroptes* mites which are the kind that cause the form of cattle scabies of primary concern in Kansas.

(6) Amitraz

- **Trade name:** Taktic
- **Use rate:** 1 qt 12.3% EC/50 gal water, apply through spray dipping machine within 6 hr after mixing.
- **Number of applications:** two treatments 7 to 10 days apart.
- **Comments:** no pre-slaughter waiting period.

(1) Coumaphos Dip

- **Trade name:** Co-Ral.
- **Use rate:** 10 lb 25% WP/100 gal water, or 1 gal 42% Flowable/165 gal water.
- **Number of applications:** two treatments 10 to 14 days apart.
- **Comments:** no pre-slaughter waiting period.

(4) Doramectin

- **Trade name:** Dectomax.
- **Use rate:** 1 cc/110 pound animal weight, administered subcutaneous or by intramuscular injection.
- **Comments:** cattle are not treated within 35 days of slaughter. Doramectin is an endectocide.

(4) Ivermectin 1% injection

- **Trade name:** Ivomec.
- **Use rate:** 1 cc/110 lb animal weight, administered by subcutaneously.
- **Number of applications:** one treatment, followed by 14 days of isolation of the animal.
- **Comments:** 48-day pre-slaughter waiting period. Ivermectin is an endectocide.

(4) Ivermectin 1.72 gm/bolus

- **Trade name:** Ivomec SR Bolus.
- **Comments:** used only on calves weighing between 275 and 660 lb. A 180-day pre-slaughter waiting period is required. Ivermectin is an endectocide.

(2) Permethrin EC

- **Trade names:** Atroban; Expar; Ectiban; GardStar; Insectaban; Insectrin.
- **Use rate:** 1 qt Ectiban, Insectaban, Insectrin 5.7% EC or 1 pint Atroban or Expar 11% EC/25 gal water. Or 1 pint GardStar 40% EC or Atroban 42.5% EC/100 gal water.
- **Comments:** no pre-slaughter waiting period.

(1) Phosmet Dip

- **Trade name:** GX-118.
- **Use rate:** 1 gal 11.6%/60 gal water, add 100 lb super-phosphate/1,000 gal of solution.
- **Number of applications:** two treatments, 10 to 14 days apart.
- **Comments:** 21-day pre-slaughter waiting period.

Cattle Grubs

Cattle Grubs (*Hypoderma bovis*, *H. lineatum*) are the larvae of heel flies. Adult heel flies resemble Honeybees in size and color. The common cattle grubs (*H. lineatum*) are found most frequently in Kansas. Adults lay eggs on the hairs of the legs of cattle. Eggs hatch in three to six days and the tiny larvae bore through the skin, then migrate through connective tissues between the muscles. Calves and yearlings are more susceptible to cattle grubs than older cattle. Larvae of the common cattle grub spend most of their developmental time in the submucosa of the esophagus. Upon reaching the back, larvae cut breathing holes in the skin and remain under the skin for 35 to 90 days before becoming mature grubs. Fully grown grubs squeeze through the holes, drop to the ground, and pupate in soil or other debris for about four to five weeks before adult heel flies emerge from the puparia. Treatment of cattle for grubs should be at least six weeks before grubs are expected to appear in the back, i.e. from June to October. Normally, only one treatment per year is applied to control cattle grubs.

Application methods of insecticides:

Sprays: High-pressure spray is used to apply insecticides until skin is thoroughly wet. Unless otherwise stated, the normal rate of application of insecticides is approximately 1 gal per cow or 0.75 gal per calf of the mixture.

(1) Coumaphos

- **Trade name:** Co-Ral.
- **Use rate:** 8 or 12 lb 25% WP or 6 gal 5.8% Livestock Insecticide Spray/100 gal water, or 3 gal 11.6% ELI / 100 gal water.
- **Comments:** no pre-slaughter waiting period.

(1) Phosmet

- **Trade name:** GX-118.
- **Use rate:** 1 gal 11.6% emulsifiable/49 gal water.
- **Comments:** 21-day pre-slaughter waiting intervals.

Dips are not currently used in Kansas, but the following dip treatments are permitted:

(1) Phosmet

- Trade name: GX-118.
- **Use rate:** 1 gal 11.6% emulsifiable / 60 gal water. To control the pH and ensure vat stability, add 100 lb triple superphosphate /1,000 gal vat solution.
- **Comments:** 21-day pre-slaughter waiting intervals.

Pour-on's and Spot-on's:

(7) Moxidectin

- **Trade name and formulation:** Cydectin Pour-On for Cattle 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves to be processed for veal. Moxidectin is an endectocide.

(4) Ivermectin

- **Trade name and formulation:** Ivomec Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib animal weight along topline from withers to tailhead.
- **Comments:** 48-day pre-slaughter waiting intervals. Ivermectin is an endectocide.

(4) Eprinomectin

- **Trade name and formulation:** Ivomec Eprinex Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves under 8 weeks of age. Eprinomectin is an endectocide.

(4) Doramectin 0.5% Pour-On

- **Trade name and formulation:** Dectomax Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** not used on calves to be processed for veal. Forty-five- day pre-slaughter waiting period. Doramectin is an endectocide.

(1) Famphur 13.2%

- **Trade name:** Warbex.
- **Use rate:** RTU, apply ½ fluid ounces/100 Ib weight
- **Comments:** only 4 oz is used per animal larger than 800 Ib. Thirty-five -day pre-slaughter waiting intervals.

(1) Fenthion 20%

- **Trade name:** Spotton.
- **Use rate:** RTU, apply 8 cc/300 to 600 Ib animal, or 12 cc/600 to 900 Ib animal.
- **Comments:** 45-day pre-slaughter waiting intervals.

(1) Fenthion 3%

- **Trade name:** Tiguvon.
- **Use rate:** RTU, apply ½ fluid oz / 100 Ib animal weight.
- **Comments:** 35-day pre-slaughter waiting intervals.

(4) Ivermectin 5 mg/ml

- **Trade name:** Ivomec Pour-on.
- **Use rate:** RTU, apply 1 ml / 22 Ib animal weight.
- **Comments:** 48-day pre-slaughter waiting intervals. Ivermectin is an endectocide.

(1) Phosmet 4%

- **Trade name:** GX-118.
- **Use rate:** one part 11.6%: two parts water, apply 1 oz/100 Ib animal weight, but not more than 8 oz/animal.
- **Comments:** 21-day pre-slaughter waiting intervals.

Injection:

(4) Doramectin 1%

- **Trade name:** Dectomax.
- **Use rate:** 1 cc/110 Ib animal weight.
- **Comments:** 35-day pre-slaughter waiting intervals. Doramectin is an endectocide.

(4) Ivermectin 1% injection

- **Trade name:** Ivomec.
- **Use rate:** 1 cc 1%/110 animal weight.
- **Comments:** 35-day pre-slaughter waiting intervals. Ivermectin is an endectocide.

Bolus:

(4) Ivermectin 1.72 gm/bolus

- **Trade name:** Ivomec SR Bolus.
- **Comments:** only used on calves between 275 and 660 Ib. Treated calves should not be slaughtered within 180 days after bolus treatment. Ivermectin is an endectocide.

Cattle Lice

Cattle Lice are small but they can cause economical losses to every cattle operation. They can cause calves and feeders to lose weight. Cattle damage fences and bruise or scrape themselves as they rub to relieve the itching caused by thousands of lice on their bodies. Blood loss from sucking lice is sometimes severe enough to cause anemia. Lice lay eggs on animal hair, and the young resemble the adults. Lice are even found on the heads and necks of day-old calves. Cattle can harbor lice infestations the year around. It is important to control lice early in the winter before infestations have caused serious damage. The three blood sucking species of lice that are common in Kansas include the short-nosed louse (*Haematopinus eurysternus*) found in and on the ears, along the dewlap and brisket of mature cattle; the long-nosed cattle louse (*Linognathus vituli*) found on young animals and dairy breeds, and the little blue louse (*Solenopotes capillatus*) that is harder to control. The only biting (chewing) species of lice common on cattle is the cattle biting louse (*Bovicola bovis*) that feed on skin cells. Because most of the insecticides have little effect on louse eggs, it is important to treat the animals two to three weeks after the first treatment to kill the newly hatched lice before they can mature and lay eggs. In practice, most cattle in Kansas are treated for cattle grubs and lice at the same time -- one or two treatments in the autumn.

Application methods of insecticides:

Sprays:

(6) Amitraz

- **Trade name:** Tactic.
- **Use rate:** 1 qt 12.5% EC/100 gal water, use 2 gal/fully grown animal.
- **Comments:** no pre-slaughter waiting interval.

(1) Coumaphos

- **Trade name:** Co-Ral.
- **Use rate:** 4 qt 5.8% Livestock Insecticide Spray ; 1 to 2 lb 25% WP, or 1 to 2 qt 11.6% EIL, or 1 pint 42% F/100 gal water.
- **Comments:** Co-Ral products are not used on animals under 3 months of age. No pre-slaughter waiting interval.

(5) Methoxychlor

- **Use rate:** 8 lb 50% WP or 2 gal 2EC (25%)/100 gal water.
- **Comments:** no pre-slaughter waiting interval.

(2) Permethrin

- **Trade names:** Atroban; Ectiban; Expar; Insectaban; Insectrin; Permethrin; others.
- **Use rate:** 1 qt Ectiban 5.7% EC, or 1 pint Permethrin II 10% E, or 2 lb Permethrin 25% WP/100 gal water; 1 pint Atroban 11% EC or 1 qt Insectaban 5.7% EC/25 gal water.
- **Comments:** no pre-slaughter waiting interval.

(2) Permethrin EC

- **Trade names:** Atroban; GardStar.
- **Use rate:** 1 pint Gardstar 40% EC or Atroban 42.5% EC/100 gal water.
- **Number of applications:** not applied more often than at 2-week intervals.
- **Comments:** no pre-slaughter waiting interval.

(2) Permethrin Synergized Pour-On 1% and 7.4%

- **Trade names:** Atroban; Back Side Plus; Expar; Permethrin.
- **Use rate:** undiluted, applied as low-pressure sprays.
- **Number of applications:** not applied more often than once every 2 weeks.
- **Comments:** no pre-slaughter waiting interval.

(1) Phosmet

- **Trade names:** Prolate; GX-118; Del-Phos; Lintox-HD.
- **Use rate:** 1 gal Prolate, Del-Phos, or Lintox-HD 11.6%/150 gal water; or 1 gal GX-118 11.6%/49 gal water.
- **Comments:** not used on animals under 3 months of age. The GX-118 mixtures require a 32-day pre-slaughter waiting interval, while Prolate, Del-Phos, or Lintox-HD mixtures require only 3-day pre-slaughter waiting intervals.

(1) Tetrachlorvinphos

- **Trade name:** Rabon.
- **Use rate:** 4 lb 50 WP/75 gal water.
- **Comments:** no pre-slaughter waiting interval.

(1) Tetrachlorvinphos/(1) Dichlorvos

- **Trade name:** Ravap.
- **Use rate:** 1 gal 28.7% EC/75 gal water.
- **Comments:** no pre-slaughter waiting interval.

Pour-on's for Lice:

(7) Moxidectin

- **Trade name and formulation:** Cydectin Pour-On for Cattle 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves to be processed for veal. Moxidectin is an endectocide.

(4) Doramectin 0.5% Pour-On

- **Trade name and formulation:** Dectomax Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 Ib body weight along backline from withers to tailhead.
- **Comments:** not used on calves to be processed for veal. Forty-five- day pre-slaughter waiting period. Doramectin is an endectocide.

(1) Fenthion

- **Trade names:** Lysoff; Lice-Chek.
- **Use rate:** 1 qt 7.6%/8 parts water, add 1 oz of mixture/100 Ib body weight.
- **Comments:** not used on animals under 3 months of age. A 21-day or 35-day pre-slaughter waiting intervals after one or two treatments, respectively.

(2) Permethrin Pour-On

- **Trade names:** Back Side; DeLice; Durasect; Expar; Ectiban; Hard-Hitter; Permethrin all in 1%; Boss 5%; Permethrin CDS 7.4% and Permethrin CD 10%; Brute 10%.
- **Use rate:** for 1% formulation, apply ½ ml/100 Ib animal weight and not more than 5 fl.oz./ animal along back and down face, except for Durasect, apply in two strips along each side of midline from shoulders to tailhead. Boss 5%, 3 ml/100 Ib body weight; Permethrin CDS 7.4% , 2 ml/100 Ib body weight; Brute 10 % or Permethrin CD 10%, 1.5 ml/100 Ib body weight.
- **Number of applications:** not more often than once every 2 weeks.
- **Comments:** no pre-slaughter waiting interval.

Grubicidal Pour-on's, Injections: the following insecticides with grubicidal action also are registered for control of cattle lice (See section on Cattle Grubs for rates.): Doramectin (Dectomax)*, famphur (Warbex), fenthion (Tiguvon, Spotton), phosmet (GX-118), ivermectin (Ivomec and Ivomec Pour-On),

eprinomectin (Ivomec Eprimex), and moxidectin (Cydectin). Ivomec SR Bolus is registered for control of two species of sucking lice, excluding the short-nosed cattle louse that is the greatest problem on beef cattle.

Dectomax, Cydectin, Ivomec, and Ivomec Eprinex Pour-On formulations control all cattle lice. Injectable formulations of Dectomax and Ivomec control sucking lice but not chewing lice.

(4) Eprinomectin

- **Trade name and formulation:** Ivomec Eprinex Pour-On 5 mg/ml.
- **Use rate:** RTU, apply 1 ml/22 lb body weight along backline from withers to tailhead.
- **Comments:** no pre-slaughter waiting period. Not used on calves under 8 weeks of age.

Dust Bags, Back Rubbers: Only help prevent lice infestations from becoming severe and do not provide complete control of lice. Most of the insecticides used in dust bags and back rubbers for horn fly (*Haematobia irritans*) control are registered for cattle lice.

Spinose Ear Tick

Spinose Ear Ticks are soft-bodied species, that occur sparsely across southern and far western Kansas, but are found more frequently in cattle from southwestern states. The larval and nymphal stages of the spinose ear tick attach deep within the ear canal of cattle causing intense pain as they puncture the skin and suck blood. Intensive infestations cause a condition known as "ear canker".

Chemical control:

Two pyrethroid insecticidal ear tags per animal for several weeks will bring infestation under control and keep it at a low level. The following insecticides may be used in sprays to treat the head, ears, or shoulder areas of cattle:

(6) Amitraz

- **Trade name:** Taktic.
- **Use rate:** 1 pint 12.5% EC/50 gal water.
- **Comments:** no pre-slaughter waiting interval.

(2) Permethrin

- **Trade names:** Ectiban; Insectaban; Permectrin.

- **Use rate:** 2 oz Permethrin II 10% EIL/1 gal diesel fuel or clean water, apply ½ oz into each ear; 1 qt Ectiban or Insectaban 5.7% EC/2½ gal water, apply 1 oz into each ear; 1/3 Ib Permethrin 25% WP/12 gal water, apply ½ oz into ear.
- **Number of applications:** no more often than once every 3 weeks for permethrin 25% mixture, or once every 2 weeks for the other mixtures.
- **Comments:** no pre-slaughter waiting interval.

Pesticide Usage, 1999

In 1999, Kansas feedlots and procedures with more than one type of cattle operation (i.e. feedlot and cow/calf), used several pesticides on cattle and facilities, according to a survey conducted in March 2000 by the Kansas Agricultural Statistics (KAS). Data on following pages (Tables 1-8 and figures 2-3) are extracted from the Kansas Agricultural Chemical Usage, 1999 Cattle Pesticide Summary publication (MF-2467).

The most commonly used active ingredient for feedlot cattle was ivermectin. Over 2,272,000 cattle were treated with 440 pounds ivermectin, with 240 pounds of the total amount was injected. Doramectin and permethrin were the next two most frequently used active ingredients on feedlot cattle. Over 925,000 and 349,000 cattle were treated with 110 and 550 pounds of doramectin and permethrin, respectively. Most of the doramectin was injected, while most of the permethrin was applied as Pour-on's.

Pesticides were also applied in or around feedlot facilities. Facilities were mostly treated with dichlorvos followed by tetrachlorvinphos. Diazinon-treated ear tags were the only treated ear tags used. Over 7,000 cattle were tagged to control confinement and pasture flies.

The main pests that were reported as causing problems to feedlot cattle were flies followed by lice then grubs. Manure management and biological controls practices were the two most used non-chemical methods reported for feedlot cattle.

The most commonly used active ingredient on operation with both cow/calf and feedlot was ivermectin. Over 498,000 cattle were treated with 150 pounds ivermectin, with 130 pounds of the total was applied as pour-on's. Doramectin and permethrin were the next two frequently used active ingredients. Over 148,000 and 103,000 cattle were treated with 40 and 170 pounds of doramectin and permethrin, respectively. Most of the pesticides were applied as pour-on's. Diazinon-treated ear tags were the most commonly used ear tags. Over 73,000 cattle were tagged to control ear ticks, pasture flies, and lice. Pesticides were also applied in or around cattle facilities. Malathion and tetrachlorvinphos were the two most frequently used active ingredients.

Table 1. Total Pesticide Usage on Feedlot Cattle by Application Methods

Class & Pesticide (a.i.)^a	Target pests	Method	Head treated (1,000)	Quantity used (lb)
Avermectin				
Doramectin	Grubs, Lice, Scabies	Pour-On	219.5	30
	Grubs, Lice, Confinement Flies	Injection	705.9	80
Ivermectin	Grubs, Lice, Pasture Flies	Injection	1,575.3	240
	Grubs, Lice, Pasture Flies	Pour-On	697.1	200
Macrocylic lactone				
Moxidectin	Grubs, Lice, Pasture Flies	Pour-On	102.5	30
Organophosphate				
Fenthion	Grubs, Lice, Pasture Flies	Pour-On	22.9	230
Pyrethroid				
Cyfluthrin	Flies ^b , Grubs, Lice	Pour-On	255.2	150
Permethrin	Flies, Lice	Pour-On	335.1	530
	Flies, Lice	Spray	14.6	20

^aAlthough coumaphos, dichlorvos, ivermectin as bolus, lambda-cyhalothrin, methoprene, and tetrachlorvinphos were used, insufficient data are available to report.

^bConfinement and pasture flies were reported.

Table 2. Total Pesticide Usage on Operation with a Combination of Both Cow/Calf and Feedlot Cattle by Application Methods

Class & Pesticide (a.i.)^a	Target pests	Method	Head treated (1,000)	Quantity used (lb)
Avermectin				
Doramectin	Grubs, Lice, Pasture Flies	Injection	59.9	10
	Grubs, Lice, Pasture Flies	Pour-On	88.5	30

Eprinomectin	Grubs, Lice, Pasture Flies	Pour-On	42.6	10
Ivermectin	Grubs, Lice, Pasture Flies	Injection	183.0	20
	Grubs, Lice, Pasture Flies	Pour-On	315.1	130
Benzodioxole				
Piperonyl Butoxide	Grubs, Lice, Pasture Flies,	Pour-On	7.4	30
Juvenile hormone analog				
Methoprene	Flies, Lice, Ticks	Feed/Mineral	27.6	230
Macrocyclic lactone				
Moxidectin	Grubs, Lice, Pasture Flies	Pour-On	130.0	60
Organophosphate				
Coumaphos	Flies ^b , Grubs, Lice Flies, Grubs, Lice Lice, Pasture Flies, Ticks	Dust	34.2	150
		Pour-On	13.5	160
		Spray	13.4	710
Famphur	Grubs, Lice, Pasture Flies	Pour-On	12.8	550
Fenthion	Grubs, Lice, Pasture Flies	Pour-On	114.7	870
Pyrethroid				
Cyfluthrin	Flies, Grubs, Lice	Pour-On	27.8	10
Lambda-cyhalothrin	Flies, Grubs, Lice	Pour-On	25.1	20
Permethrin	Grubs, Lice, Pasture Flies Grubs, Lice, Pasture Flies, Flies, Grubs, Lice	Pour-On	88.3	120
		Rubbing Device	3.4	10
		Spray	11.7	40

^aAlthough crotoxyphos, dichlorvos fenvalerate, malathion, methoxychlor, phosmet , tetrachlorvinphos, and trichlorfon were used, insufficient data are available to report.

^bConfinement and pasture flies were reported.

Table 3. Percent of Feedlot Cattle Treated by Application Methods

Application method	Head treated (%)
Injection	62
Pour-On	38
Spray	<1

Table 4. Percent of Feedlot Cattle Treated with Four Most Frequently Used Pesticides

Class	Pesticide (a.i.)	Head treated (%)	Quantity used (lb)
Avermectin	Ivermectin	52	440
	Doramectin	21	110
Pyrethroid	Permethrin	8	550

Table 5. Total Quantity of Pesticides Used on Beef Cattle and Facilities of Feedlots

Class	Pesticide (a.i.)^a	Quantity on facilities	Quantity on cattle
		(lb)	
Avermectin	Doramectin	0	110
	Ivermectin	0	440
Carbamate	Methomyl	30	0
Macrocyclic lactone	Moxidectin	0	30
Organophosphate	Diazinon	10	90
	Dichlorvos	1,960	0
	Fenthion	0	230
	Tetrachlorvinphos	480	0
Pyrethroid	Cyfluthrin	30	150

Lambda-cyhalothrin	50	0
Permethrin	320	550

^aAlthough coumaphos, ethion, fenvalerate, malathion, methoprene, piperonyl butoxide, and pirimiphos methyl were used, insufficient data are available to report.

Table 6. Total Quantity of Pesticides Used on Operation with a Combination of Both Cow/Calf and Feedlot Beef Cattle

		Quantity on Facilities	Quantity on cattle
Class	Pesticide (a.i.)	(lb)	
Avermectin	Doramectin	0	40
	Eprinomectin	0	10
	Ivermectin	0	150
Benzodioxole	Piperonyl Butoxide	0	310
Carbamate	Methomyl	10	0
Juvenile hormone analog	Methoprene	0	230
Macrocyclic lactone	Moxidectin	0	60
Organophosphate	Chlorpyrifos	130	0
	Coumaphos	90	1,020
	Crotoxyphos	40	0
	Diazinon	0	880
	Dichlorvos	60	0
	Famphur	0	550
	Fenthion	0	1,210
	Malathion	270	0
	Pirimiphos Methyl	0	200
	Tetrachlorvinphos	170	0

Pyrethroid	Cyfluthrin	90	90
	Fenvalerate	40	0
	Lambda-cyhalothrin	0	40
	Permethrin	40	210

Table 7. Chemically Treated Ear Tag Usage on Feedlot Beef Cattle

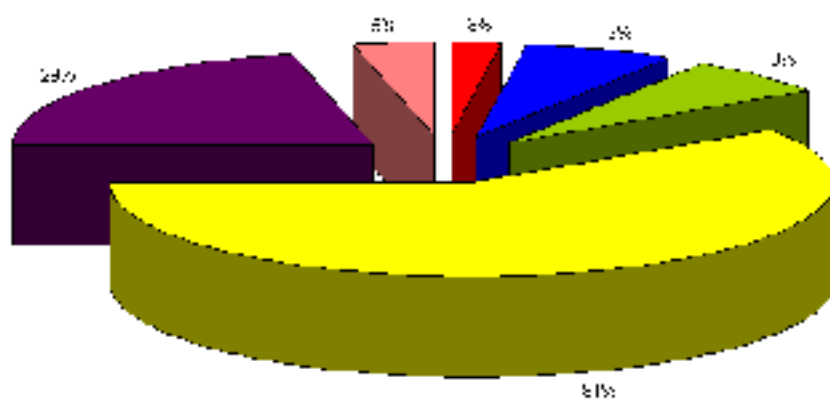
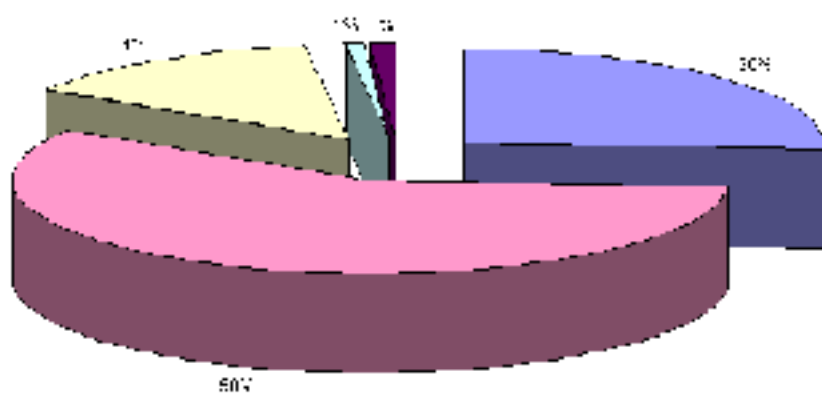
Class	Pesticide (a.i) ^a	Target pests	Head treated (1,000)	Quantity used (lb)
Organophosphate	Diazinon	Flies ^b	7.4	90

^aAlthough cyfluthrin, ethion, fenvalerate, lambda-cyhalothrin, permethrin, pirimiphos methyl, and piperonyl butoxide (synergist) were used, insufficient data are available to report.

^bConfinement and Pasture Flies were reported.

Table 8. Chemically Treated Ear Tag Usage by Operators with a Combination of Both Cow/Calf and Feedlot Beef Cattle

Class	Pesticide (a.i)	Target pests	Head treated (1,000)	Quantity used (lb)
Benzodioxole	Piperonyl Butoxide (synergist)	Lice, Pasture Flies	44.0	280
Organophosphate	Chlorpyrifos	Pasture Flies	5.2	20
	Diazinon	Ear Ticks, Lice, Pasture Flies	73.8	880
	Fenthion	Lice, Pasture Flies	39.2	340
	Pirimiphos Methyl	Ear Ticks, Pasture Flies	47.7	200
Pyrethroid	Cyfluthrin	Lice, Pasture Flies	14.2	80
	Lambda-cyhalothrin	Pasture Flies	7.7	20
	Permethrin	Pasture Flies	16.6	40



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