

Feed Additives for Beef Cattle

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Many feed additives are available that can improve rate of gain and feed efficiency or prevent certain diseases. Products that improve feed efficiency are particularly important since feed costs are a major expense in animal production. Proper use of these products can improve beef cattle profits.

Feed additives may be both nutritive and non-nutritive and work by either direct or indirect methods on the animal's system. Many of the products influence different systems and, therefore, the effects of one can be additive to another.

Since some feed additives must be withdrawn from the diet before slaughter, the cattle feeder has crucial responsibilities.

- Use the feeds for the purpose intended.
- Follow directions shown on the feed label.
- Heed warning statements on the label.
- Store medicated feeds properly.
- Observe withdrawal time, if any.
- Do not mix additives unless combinations are specifically approved on the labels.

Withdrawal times may change due to new research data and regulatory changes. However, the withdrawal time will be shown on the product or feed label.

The use of medicated feed additives is controlled by the Food and Drug Administration (FDA). Other feed additives such as larvacides are controlled by the Environmental Protection Agency (EPA) since they

are not absorbed and have no direct physiological impact on the animal.

The list of approved feed additives changes frequently. For the most recent list of approved additives, refer to the *Feed Additive Compendium* published by Miller Publishing Company, Minnetonka, Minnesota. Also, information on approved feed additives may be found at the *FARAD (Food Animal Residue Avoidance Databank)* Web site or *FDA Green Book* online.

Several medicated feed additive combinations are available for beef cattle and summarized in the legal drug combinations table on page 2.

It is vitally important to avoid illegal drug combinations. The approved FDA medication combinations for confined cattle apply not only to an individual feed but also to different feeds used in individual pens. For example, a feed containing terramycin and a feed containing Tylan cannot be placed in separate bunks in the same pen. Switching medicated feeds in a particular bunk also can lead to illegal drug combinations. Before switching a medicated feed in a particular bunk, the bunk should be properly cleaned or a non-medicated feed should be used to "flush" the bunk before the new medicated feed is added. Also, using different drugs in morning and afternoon feedings is not allowed. Licensed veterinarians may, under some circumstances, prescribe the use of antibiotics outside the limits shown on the label (extra-label use); however, there are no provisions for using medicated *feed additives* outside the limits of the label.

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Legal Drug Combinations

	Bovatec	Cattlyst	CTC*	Deccox	MGA	Neomycin	Optaflexx	OTC**	Rumensin	Tylan
Bovatec			X		X		X	X		X
Cattlyst			X							
CTC*	X	X		X						
Deccox			X						X	
MGA	X						X	X	X	X
Neomycin								X		
Optaflexx	X				X				X	X
OTC**	X				X	X				
Rumensin				X	X		X			X
Tylan	X				X		X		X	
Zilmax					X				X	X

* CTC – chlortetracycline

** OTC – oxytetracycline

The following list of medicated feeds is grouped according to the following purposes.

1. Improved growth and feeding efficiency
2. Coccidiosis prevention
3. Scour treatment
4. Shipping fever treatment
5. Anaplasmosis prevention
6. Liver abscess prevention
7. Heat suppression
8. Internal/external parasite control
9. Bloat prevention

Medicated Feed Additives

Purpose: Improved Growth Rate and Feed Efficiency

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
lasalocid	Bovatec	Alpharma	Control of coccidiosis in cattle up to 800 lbs	1 mg/2.2 lbs body wt/day	None
			Improved feed efficiency in cattle fed in confinement for slaughter	10-30 g/ton (100-360 mg/hd/day)	None
			Improved feed efficiency and increased rate of weight gain (cattle confined for slaughter)	25-30 g/ton (250-360 mg/hd/day)	None
			Increased rate of gain in pasture cattle (slaughter, stocker, feeder cattle and dairy and beef replacement heifers)	60-300 mg/hd/day Benefits over 300 mg have not been proven	None
laidlomycin propionate	Cattlyst	Alpharma	Improved feed efficiency and increased rate of gain in cattle fed in confinement for slaughter	5 g/ton (30-75 mg/hd/day)	None
			Improved feed efficiency in cattle fed in confinement for slaughter	5-10 g/ton (30-150 mg/hd/day)	None
bambermycins	Gainpro	Intervet	Feedlot: for increased rate of weight gain and improved feed efficiency	1-4 g/ton (10-20 mg/hd/day)	None
			Pasture cattle (slaughter, stocker, feeder cattle and replacement heifers): for increased rate of weight gain	2-40 g/ton (10-20 mg/hd/day)	None

Continued

Purpose: Improved Growth Rate and Feed Efficiency (cont.)

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
monensin	Rumensin	Elanco	Confined or feedlot: improved feed efficiency	5-30 g/ton (50-360 mg/hd/day)	None
			Confined or semi-confined cattle: for the prevention and control of coccidiosis	10-30 g/ton (100-360 mg/hd/day)	None
			Increased rate of gain in pasture cattle (slaughter, stocker, feeder, dairy and beef replacements and mature reproducing cows)	25-400 g/ton (50-200 mg/hd/day in not less than 1 lb feed) First 5 days, no more than 100 mg/hd/day	None
virginiamycin	V-Max	Phibro	Cattle fed in confinement for slaughter: improved feed efficiency and rate of weight gain	16-22.5 g/ton of feed to provide 100-340 mg/hd/day	None
chlortetracycline*	Aureomycin, ChlorMax, Pennchlor, CLTC	Alpharma, Phibro, Pennfield Oil	For an increased rate of weight gain and improved feed efficiency. (A withdrawal has not been established in pre-ruminating calves.) Do not use in calves to be processed for veal.	Calves under 250 lbs, 0.1 mg/lb body wt/day Calves 250-400 lbs, 25-70 mg/hd/day	0-2
			Growing cattle over 400 lbs for an increased rate of weight gain, improved feed efficiency and reduction of liver condemnation due to liver abscesses	70 mg/hd/day	0-2
bacitracin zinc	Albac 50	Alpharma	Feedlot cattle: increased rate of weight gain and improved feed efficiency	35-70 mg/hd/day	None
oxytetracycline	Terramycin, Pennox	Phibro, Durvet, Pennfield	To increase rate of gain and improve feed efficiency	Calves less than 250 lbs: 0.05-0.1 mg/lb body wt/day Calves weighing between 250 and 400 lbs: 25 mg/hd/day Growing cattle over 400 lbs: 75 mg/hd/day	None 0 to 5
melengestrol acetate	MGA	Pharmacia and Upjohn Co.	For increased rate of weight gain, improved feed efficiency and suppression of estrus (heat)	0.25-0.50 mg/hd/day	None
ractopamine	Optaflexx	Elanco	Increase carcass leanness and body weight gain	9.8-24.6 g/ton during last 28 to 42 days to provide 90-430 mg/hd/day	None
zilpaterol	Zilmax	Intervet	For increased weight gain, improved feed efficiency and increased carcass leanness.	6.8 g/ton to provide 60 to 90 mg/hd/day during the last 20 to 40 days on feed	3 days

*Air dry (90% DM Basis)

Purpose: Prevent/Treat Coccidiosis

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
lasalocid	Bovatec	Alpharma	Control of coccidiosis in cattle up to 800 lbs	1 mg/2.2 lbs body wt/day	None
monensin	Rumensin	Elanco	Confined or semi-confined cattle: for the prevention and control of coccidiosis	10-30 g/ton (100-360 mg/hd/day)	None
amprolium	Corid	Merial	As an aid in the prevention of coccidiosis in calves	227 mg/100 lbs body wt/day for 21 days (prevention)	1
			As an aid in the treatment of coccidiosis in calves	454 mg/100 lbs body wt/day for 5 days (treatment)	1
decoquinate	Deccox		For the prevention of coccidiosis in ruminating and nonruminating calves, including veal calves, and cattle. Approved for use in milk replacers.	22.7 mg/100 lbs body wt/day for 28 days	None

*Air dry (90% DM Basis)

Purpose: Prevent/Treat Scours

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
chlortetracycline*	Aureomycin, ChlorMax, Pennchlor, CLTC	Alpharma, Phibro, Pennfield Oil	Treatment of bacterial enteritis caused by <i>Escherichia coli</i> and bacterial pneumonia caused by <i>Pasteurella multocida</i> organisms susceptible to chlortetracycline	10 mg/lb body wt/day (treat for no more than 5 days)	0-10
neomycin sulfate	Neomycin	Aspen, Agrilabs, Durvet	Use for treatment and control of <i>colico bacillosis</i> (bacterial enteritis) caused by <i>Escherichia coli</i> susceptible to neomycin	10 mg neomycin sulfate/lb body wt/day for maximum of 14 days	1
oxytetracycline	Terramycin, Pennox	Phibro, Durvet, Pennfield	As an aid in the prevention of bacterial diarrhea, also known as scours	0.1-0.5 mg/lb body wt/day	0-5
			As an aid in the treatment of bacterial diarrhea and shipping fever complex	10 mg/lb body wt/day for 7 to 14 days	0-5

*Air dry (90% DM Basis)

Purpose: Prevent/Treat Shipping Fever Complex (Respiratory Disease)

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
chlortetracycline*	Aureomycin, ChlorMax, Pennchlor, CLTC	Alpharma, Phibro, Pennfield Oil	Control of bacterial pneumonia associated with shipping fever complex caused by <i>Pasteurella</i> spp. susceptible to chlortetracycline	350 mg/hd/day	0-2
chlortetracycline and sulfamethazine	Aureo S 700	Alpharma	Feed for 28 days as an aid in maintenance of weight gains in the presence of respiratory disease such as shipping fever	350 mg/hd/day of both chlortetracycline and sulfamethazine	7
oxytetracycline	Terramycin, Pennox	Phibro, Durvet, Pennfield	As an aid in the treatment of bacterial diarrhea and shipping fever complex	10 mg/lb body wt/day for 7 to 14 days	0-5
			For the prevention and treatment of the early stages of shipping fever complex	0.5-2.0 g/hd/day	0-5

*Air dry (90% DM Basis)

Purpose: Prevent/Treat Anaplasmosis

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
chlortetracycline*	Aureomycin, ChlorMax, Pennchlor, CLTC	Alpharma, Phibro, Pennfield Oil	Control of active infection of anaplasmosis caused by <i>Anaplasma marginale</i> susceptible to chlortetracycline	Cattle under 700 lbs, 350 mg/hd/day; cattle over 700 lbs, 0.5 mg/lb body wt/day	0-2

*Air dry (90% DM Basis)

Purpose: Prevent Liver Abscesses in Feedlot Cattle

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
chlortetracycline*	Aureomycin, ChlorMax, Pennchlor, CLTC	Alpharma, Phibro, Pennfield Oil	Growing cattle over 400 lbs, for an increased rate of weight gain, improved feed efficiency and reduction of liver condemnation due to liver abscesses	70 mg/hd/day	0-2
bacitracin methylene disalicylate	Fortracin, BMD	Alpharma	Feedlot beef: reduction in number of condemnations due to liver abscesses	70 mg/hd/day continuously or 250 mg/hd/day for 5 days	None
oxytetracycline	Terramycin, Pennox	Phibro, Durvet, Pennfield	As an aid in reducing incidence and severity of liver abscesses	Beef cattle over 400 lbs: 75 mg/hd/day	None
virginiamycin	V-Max	Phibro	Cattle fed in confinement for slaughter: reduction of incidence of liver abscesses	13.5-16 g/ton feed to provide 85-240 mg/hd/day	
tylosin*	Tylan	Elanco	Reduction of incidence of liver abscesses	8-10 g/ton (60-90 mg/hd/day)	None

*Air dry (90% DM Basis)

Purpose: Heat Suppression in Feedlot Heifers and Breeding Heifers

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
melengestrol acetate	MGA, Heifermax	Pharmacia and Upjohn Co., Ivy Laboratories	For increased rate of weight gain, improved feed efficiency and suppression of estrus (heat)	0.25-0.50 mg/hd/day	None
			Suppression of estrus in heifers intended for breeding	0.5 mg/hd/day for no more than 24 days	None

*Air dry (90% DM Basis)

Purpose: Internal (Dewormer)/External Parasite (Larvacide) Control

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
fenbendazole	Safe-Guard	Intervet	Dewormer	2.27 mg/lb body wt in 1 day	13
morantel tartrate	Rumatel	Phibro	Dewormer	0.44 g/100 lbs body wt in single dose	14
methoprene	Altosid	Wellmark	Horn fly control in manure when fed continuously free-choice during the fly season	22.7-45.4 mg/100 lbs body wt/month	None
tetraclorvinphos	Rabon	KMG-Bernuth	Prevents development of flies (face, horn, house and stable) in the manure of treated cattle	70 mg/100 lbs body wt/day	None

*Air dry (90% DM Basis)

Purpose: Bloat Prevention

Drug Name	Common Name	Sponsor	Indications	Use Level*	Withdrawal Time (Days)
poloxalene	Bloat Guard	Phibro	Prevents legume- (alfalfa, clover) and wheat-pasture bloat	1.0-2.0 g/100 lbs body wt/day	None

*Air dry (90% DM Basis)

References

Burris, R., and J. Johns. *Feed Additives for Beef Cattle*. University of Kentucky Cooperative Extension Service.

Herrman, T., and G.L. Stokka. *Medicated Feed Additives for Beef Cattle and Calves*, MF-2043. Department of Grain Science and Industry, Kansas State University Agricultural Experiment Station and Cooperative Extension Service.

FARAD (Food Animal Residue Avoidance Databank). North Carolina State University, University of California-Davis and University of Florida.

FDA Green Book online database, www.fda.gov/search/databases.html.

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