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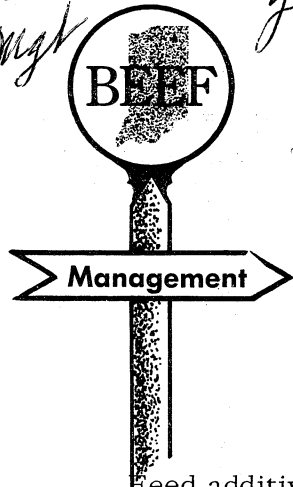
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## Agricultural Chemicals for Beef Cattle, *Agul.*

Dean R. Zimmerman, Animal Sciences Department

Feed additives, animal health products, and pesticides play a vital role in the profitable production of beef cattle. Chemicals are used for various reasons such as the stimulation of gains, control of bacterial diseases, insect and parasite control.

When recommended chemicals are used properly, they furnish effective and economical results. At the same time, beef is produced that is free of illegal chemical residues.

Many of the same chemicals that are beneficial at certain levels may cause problems when used at other levels. Low levels may not give the desired response, and high levels may result in reduced performance due to a toxicity. High levels (or recommended levels used improperly) may result in illegal chemical residues in tissues. For these and other reasons, it is important that cattlemen observe all necessary precautions when using chemicals.

### Feed Additives

There are 20 chemicals or chemical formulations that can be legally administered in the feed to cattle. These feed additives are classed as drugs by the Food and Drug Administration (FDA). Their uses are regulated, and the imposed regulations are for the protection of the farmer, the animal and the consumer.

It is the responsibility of the producer to use feed additives within the limits of the

law. The right additive should be selected and fed at accepted levels. If more than one additive is to be used, the combination must be acceptable to FDA and appropriate feeding restrictions must be followed.

Table 3 lists the feed additives, the levels at which they can be used, and the purposes for their use. Feeding precautions and withdrawal periods are listed where appropriate. A withdrawal period is a time span just prior to slaughter, during which the additive must not be used.

Regulations regarding combinations of additives that can be fed simultaneously are too numerous to include here. This information can be obtained from feed and drug suppliers.

### Drugs Not Administered in the Feed

Numerous drugs are administered by means other than in the feed. As with feed additives, it is very important to read and follow the directions on the label. The withdrawal periods for these drugs are listed in Table 1.

### Insecticides

A number of chemicals are available that effectively control insect pests on beef cattle. Specific recommendations are to be found in Purdue Entomology Publications E-12, E-13, and E-14.

Table 1. Drugs which are not fed and withdrawal periods

Drug	Withdrawal Period (days)
Chlortetracycline (orally for calves)	1
Chlortetracycline plus neomycin (orally for calves)	1
Chlortetracycline plus sulfamethazine (orally for calves)	5
Diethylstilbestrol plus testosterone (implant)	21 <sup>a/</sup>
Dihydrostreptomycin plus chlorhexidine dihydrochloride (orally for calves)	3
Erythromycin	2
Hexachlorophene plus phenothiazine (orally)	14
Penicillin	5
Progesterone or testosterone propionate plus estradiol benzoate (implant)	60 <sup>a/</sup>
Sulfabromonethazine (Suflabrom)	10
Sulfamethazine (bolus)	15
Oxytetracycline (injection)	5
Thiabendazole	30
Tylosin (injection)	8

<sup>a/</sup> Not to be implanted within this period before slaughter.

Table 2. Insecticides and withdrawal periods

Insecticide	Withdrawal Period (days)
Carbarly (Sevin)	7
DDT	30
Lindane	30 (spray & dust) 60 (dip)
Ronnel (Korlan)	14 (1% oil) 21 (dust) 42 (back rubber) 56 (spray, dip)
Ronnel (Trolene)	21, 28, 60 (refer to feed additive table)
Ruelene	28
Toxaphene	28
Trichlorfon (Dipterex)	14 (1% solution) 21 (8% solution)

To obtain effective results and to prevent illegal chemical residues in beef animals, insecticides must be used properly. A recommended insecticide should be chosen, and the prescribed dosage should be applied as directed. Withdrawal periods must be followed, when they are required.

The insecticides presently requiring withdrawal periods are listed in Table 2 with

the appropriate length of withdrawal. The periods for ronnel, lindane and trichlorfon vary with mode of application and dosage.

Always read and follow the directions given in the label found on insecticide containers.

Table 3. Feed additives for beef cattle

Additives	Use Levels	Claims Or Purposes
Bacitracin, zinc	35-70 mg./head/day <sup>a/</sup>	gain and feed efficiency (F/G)
Chlortetracycline (Aureomycin)	25-70 mg./head/day (calves) 70 mg./head/day 70 mg. (to 700 lb. bwt.) <sup>b/</sup> 100 mg. (to 1000 lb. bwt.) and 150 mg. (to 1500 lb. bwt.)/head/day 350 mg./head/day 350 mg. (to 700 lb. bwt.) 500 mg. (700-1000 lb.) and 750 mg. (1000-1500 lb.)/head/day; 0.5 mg./lb. bwt./day (over 1500 lb.) 5 mg./lb. bwt./day (for 60 days)	gain and F/G gain and F/G; prevent liver abscess gain and F/G; prevent liver abscess, bacterial diarrhea and foot rot  prevent or aid in reduction of loss due to bacterial pneumonia and shipping fever prevent anaplasmosis  aid in elimination of carrier state of anaplasmosis
WARNING: FOR FEED PROVIDING 350-750 mg./HEAD/DAY DISCONTINUE USE 48 HOURS BEFORE SLAUGHTER; FOR THOSE PROVIDING 5.0 mg./lb. bwt./DAY DISCONTINUE USE 10 DAYS BEFORE SLAUGHTER		
Dried Rumen Bacteria	5 lb./T in milk replacer (calves) 1 lb./T (complete feed fed at 5 lb./head/day) 5 lb./T (concentrate fed at 1 lb./head/day)	establish early rumen function bacterial rumen stimulator
Dynafac	0.2 gm./head/day (calves) <sup>c/</sup> 0.3-0.4 gm./head/day or 0.0044% in complete ration	gain and F/G, bloom, minimize bloat and founder
Ethoxyquin	0.0125% active material (total from all sources in complete feed not to exceed 0.015%)	prevent rancidity, preserve vitamin A and E, carotene and xanthophyll

Table 3 (continued).

Ethylene Diamine Dihydriodide	50 mg./head/day 400-500 mg./head/day (for 2-3 wk.)	prevent foot rot and lumpy jaw treat foot rot and lumpy jaw and respiratory infections
WARNING: WHEN FED 400-500 mg./HEAD/DAY TREAT ANIMALS WITH CAUTION UNTIL TOLERANCE IS DETERMINED		
Erythromycin	37 mg./head/day	gain and F/G
Medroxyprogesterone acetate (Repromix)	180-250 mg./head/day (for 18-30 days)	synchronize estrus and ovulation
Methylrosaniline chloride, sodium phthalylsulfacetamide and sodium propionate (Ferro-Lac)	0.125-0.25% 0.5% (for 5 days) then 0.25% (for 5-7 days)	prevent iron deficiency and enteritis treat iron deficiency and enteritis
Neomycin	35 gm./T 70-140 gm./T 100-200 mg./gal. of milk replacer 200-400 mg./gal. of milk replacer	prevent bacterial enteritis prevent and treat bacterial enteritis prevent bacterial enteritis prevent and treat bacterial enteritis
Oxytetracycline (Terramycin)	10-25 gm./T (calves, 0-12 wk.) 0.1-0.5 mg./lb. bwt./day 0.5-5.0 mg./lb. bwt./day 75 gm./ head/day  0.1-0.5 mg./lb. bwt./day 0.5-5.0 mg./lb. bwt./day 0.5-2.0 gm./head/day	gain and F/G prevent bacterial diarrhea treat bacterial diarrhea gain and F/G, reduce incidence and severity of bloat, reduce liver abscesses prevent bacterial enteritis treat bacterial enteritis prevent and treat shipping fever
Penicillin (from procaine penicillin)	75 mg./head/day	reduce incidence and severity of bloat

Table 3 (continued).

Phenothiazine	20 gm./100 lb. bwt. (not to exceed 60 gm. for 1 day) 2 gm./head/day	remove stomach-, hair-, hook-, and nodular worms (therapeutic) control above listed parasites (prophylactic)
WARNING: FOR THERAPEUTIC PREPARATIONS - OCCASIONAL SENSITIVITY HAS BEEN REPORTED IN CATTLE. DO NOT TREAT ANIMALS DURING THE LAST FOUR WEEKS OF PREGNANCY.		
Phenothiazine (fly control grade)	0.25 gm./100 lb. bwt.	prevent horn and face fly breeding and stomach-, hook-, and nodular worm infestation
WARNING: OCCASIONAL SENSITIVITY HAS BEEN REPORTED.		
Phthalylsulfacetamide (TSC-80)	0.1 lb./50 lb. bwt. for 3-5 days (calves)	treat bacterial diarrhea or infectious scours of bacterial origin
Ronnel (Trolene)	0.35 gm./100 lb. bwt./day (for 14 days) 0.82 gm./100 lb. bwt./day (for 7 days) 6.24 gm./100 lb. bwt./mo. (at least 75 days in mineral concentrate)	control grubs control grubs and reduce lice control grubs and horn flies
WARNING: WITHDRAW 28 DAYS (0.35 gm. LEVEL), 60 DAYS (0.82 gm. LEVEL) AND 21 DAYS (6.24 gm. IN MINERAL) PRIOR TO SLAUGHTER. DO NOT USE OTHER CHOLINESTERASE INHIBITING DRUGS SIMULTANEOUSLY.		
Sodium Propionate	0.15-0.5%	prevent heating and molding in feed
Stilbestrol	10 mg./head/day	for fattening beef cattle
WARNING: WITHDRAW 48 HOURS BEFORE SLAUGHTER. DO NOT FEED TO BREEDING ANIMALS		
Thiabendazole (Thibenzole)	3 gm./100 lb. bwt. 5 gm./100 lb. bwt.	treat intestinal roundworms treat severe roundworm infestation and Cooperia infestations.
WARNING: DO NOT TREAT WITHIN 30 DAYS OF SLAUGHTER.		

Table 3 (continued).

Thyroprotein (Protamone)	0.5-1.5 gm./100 lb. bwt.	increase milk and butterfat production; improve gain, fertility and libido
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a/ mg. = milligrams

b/ bwt. = bodyweight

c/ gm. = grams

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