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D. R. Zimmerman

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Cooperative Extension Service PURDUE UNIVERSITY Lafayette, Indiana

Agricultural Chemicals for Swine *Agril.*

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D. R. Zimmerman, Animal Sciences Department

To use chemicals properly and legally, swine producers must know the recommendations and regulations controlling their uses. Ignorance of laws is no excuse for illegal use. Many chemical uses are regulated because they present potential hazards to farmers, animals and consumers.

Improperly used, chemicals may cause economic losses by being either ineffective or even harmful to swine. Improper use may also result in illegal chemical residues in pork. It is important not to use the wrong chemical, or an insufficient or excessive amount of the right chemical. The use of some chemicals must be stopped for a period of time (withdrawal period) prior to slaughter to prevent illegal residues in pork.

The one and only way to use chemicals properly and legally is to start with recommended chemicals and to use them according to directions on the labels.

Agricultural chemicals include pesticides, animal health products or drugs, and feed additives. The following information on these chemicals is offered as an aid for decision making, but it should not be considered a substitute for the directions on the labels of chemical formulations.

As a result of new research, changes are continuously being made in recommendations and regulations. Swine producers must, therefore, keep abreast of new information as it is made available.

Pesticides

Current recommendations for pesticide use on and around swine can be found in publications prepared by Purdue's Entomology Department. The following publications are available at all County Extension offices: publication E-15 "Hog Lice and Mange" and publication E-12 "Fly Control on Beef Farms."

Withdrawal periods must be observed to prevent illegal pesticide residues in pork. A withdrawal period is the waiting period between the date of last application of a chemical and the slaughter of hogs. Of the pesticides used on swine, those requiring withdrawal periods are listed in Table 1. The periods for lindane and ronnel vary with method of application.

Drugs Not Administered in the Feed

Some drugs are administered by means other than the feed. As with all chemicals, it is important to read and follow the directions on labels. Table 2 lists drugs that require a withdrawal period prior to slaughter.

Feed Additive Drugs

Table 3 lists the feed additives used in swine feeds, the levels at which each can be used and the purpose for their use. Feeding precautions and withdrawal periods are listed where appropriate. Both the man who manufactures, and the man who feeds medicated feeds must know the regulations controlling feed additive use.

Table 1. Pesticides which require withdrawal periods

<u>Pesticides</u>	<u>Withdrawal Period (days)</u>
Carbaryl (Sevin)	7
DDT	30
Lindane - spray or dust	30
Lindane - dip	60
Ronnel (Korlan) - spray	42
Ronnel (Korlan) - granules in bedding	14
Toxaphene	28

Table 2. Drugs administered by injection or in drinking water and their withdrawal periods

<u>Drug</u>	<u>Withdrawal Period (days)</u>
Erythromycin - injection	2
Organic Arsenicals (sodium arsanilate, arsanilic acid and 3-Nitro) - drinking water	5
Oxytetracycline - injection ^{a/}	5
Sulfaethoxypyridazine	10
Tylosin - injection ^{a/}	4
Tylosin - drinking water	2

^{a/} To avoid economic loss and excessive trim it is required that a period of at least 3 weeks elapse before slaughter.

Regulations, regarding combinations of additives that can be fed simultaneously, are too numerous to include in Table 3. This information can be obtained from the Feed Additive Compendium, a yearly publication which is published by the Miller Publishing Company, P.O. Box 67, Minneapolis, Minnesota. Information on specific combinations can be obtained from the drug supplier.

Three of the additives listed below are considered relatively hazardous by the Food and Drug Administration (FDA). These additives are classed as "new drugs". Before they can be used to make a medicated feed, a formal application to FDA must be approved. The three "new drugs" are Mycostatin, Taomyxin and Tylan (when used to prevent dysentery and to maintain gains and feed efficiency in the presence of atrophic rhinitis).

Table 3. Feed additives for swine

Additives	Use Levels	Claims or Purposes
Arsanilic Acid or Sodium Arsanilate	0.005 - 0.01% 0.025 - 0.04% (for 5 - 6 days)	gain and feed efficiency (F/G) control swine dysentery
WARNING: DISCONTINUE USE 5 DAYS BEFORE SLAUGHTER.		
Bacitracin, or bacitracin methylene disalicylate, or zinc bacitracin	10 - 50 gm./T ^{a/} 50 - 100 gm./T 100 gm./T	gain and F/G prevent bacterial enteritis treat bacterial enteritis
Bacitracin, magnesium	10 - 50 gm./T	gain and F/G
Cadmium Anthranilate	0.044% (sole ration for 72 hr.)	remove large roundworms
WARNING: DO NOT SLAUGHTER FOR AT LEAST 30 DAYS FOLLOWING TREATMENT.		
Chlortetracycline (Aureomycin)	10 - 50 gm./T 50 - 100 gm./T 100 - 200 gm./T 200 gm./T 400 gm./T (at least for 14 days)	gain and F/G prevent bacterial enteritis; maintain gains in presence of atrophic rhinitis and reduce incidence of cervical abscesses treat bacterial enteritis reduce spread of leptospirosis reduce shedding of leptospirae, abortion rate and mortality in newborn pigs
Chlortetracycline, sulfamethazine and penicillin (Aureo SP 250)	100 gm./T (chlortetracycline), 100 gm./T (sulfamethazine) and 50 gm./T (penicillin)	reduce incidence of cervical abscesses; prevent and treat bacterial enteritis; gain and F/G in swine weighing up to 75 lb.; maintain gains in presence of atrophic rhinitis
WARNING: WITHDRAW 7 DAYS BEFORE SLAUGHTER.		

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<u>Additives</u>	<u>Use Levels</u>	<u>Claims or Purposes</u>
Neomycin	35 gm./T 70 - 140 gm./T	prevent bacterial enteritis prevent and treat bacterial enteritis
Nitrofurazone (nfz - Mix)	0.056% (for at least 5 - 7 days)	treat enteritis due to Salmonella choleraesuis
Nitrofurazone and furazolidone (bifuran)	0.0448% nitrofurazone and 0.0066% furazolidon (for at least 5 - 7 days)	treat enteritis due to Salmonella choleraesuis
3-Nitro-4-Hydroxyphenylarsonic Acid (3-Nitro)	0.0025 - 0.0075%	gain and F/G
WARNING: DISCONTINUE USE 5 DAYS BEFORE SLAUGHTER.		
Nystatin (Mycostatin)	20 gm./T	gain and F/G
Oxytetracycline (Terramycin)	25 - 50 gm./T (10 - 30 lb. bwt.) ^{b/} and 7.5 - 10.0 gm./T (30 - 200 lb. bwt.) 50 gm./T 100 gm./T 50 - 150 gm./T 500 gm./T (for 7 - 14 days approx. 1 month before farrowing)	gain and F/G prevent bacterial enteritis treat bacterial enteritis maintain gain and feed consumption in presence of atrophic rhinitis reduce abortion and shedding of leptospirae; give heavier, healthier newborn pigs; maintain gain and feed consumption in presence of leptospirosis
Oxytetracycline and Oleandomycin (Taomyxin)	8 gm./T (oxytetracycline) and 2 gm./T (oleandomycin)	gain and F/G
Penicillin (from procaine penicillin)	10 - 50 gm./T	gain and F/G

<u>Additives</u>	<u>Use Levels</u>	<u>Claims or Purposes</u>
Penicillin and Streptomycin	Not less than 1.5 gm./T (penicillin) and 7.5 gm./T (streptomycin)-maximum 50 gm./T combination	gain and F/G
	Not less than 7.5 gm./T (penicillin) and 37.5 gm./T (streptomycin)-maximum 90 gm./T combination	prevent bacterial enteritis
	Not less than 15 gm./T (penicillin) and 75 gm./T (streptomycin)-maximum 270 gm./T combination (for no more than 14 days)	treat bacterial enteritis
Phenothiazine	5 gm. to 25 lb. bwt.; 8 gm., 26-50 lb; 10 gm., 51-100 lb.; 10 gm./100 lb. bwt. over 100 lb., not to exceed 30 gm. (treat for 1 day only) WARNING: PHENOTHIAZINE SHOULD BE USED CAUTIOUSLY. ANEMIC, SICK, WEEK OR EMACIATED ANIMALS SHOULD NOT BE TREATED EXCEPT UPON ADVICE OF A VETERINARIAN. DO NOT FEED TO ANIMALS DURING THE LAST 4 WEEKS OF PREGNANCY.	remove nodular worms
Phthalylsulfacetamide (TSC-80)	0.1 lb./50 lb. bwt. (for 3 - 5 days) WARNING: DISCONTINUE USE IF TOXIC SYMPTOMS ARE NOTED.	treat bacterial enteritis
Piperazine	0.6% (for 1 day) or 0.1 - 0.4% (for 1 - 2 days)	control large roundworm and nodular worms
Sodium Propionate	0.15 - 0.5%	prevent heating and molding in feed
Sulfaquinoxaline	0.025 - 0.05% (for 2 - 5 days)	control bacterial enteritis
Thiabendazole (Thibenzole)	0.05 - 0.1% (for 2 weeks) followed by 0.005 - 0.02% (for 8 - 14 weeks) WARNING: DISCONTINUE USE 30 DAYS BEFORE SLAUGHTER.	aid in prevention of large roundworms infestation
Thyroprotein (Protamone)	100 - 200 gm./T (lactation) 40 - 100 gm./T (birth to market) 100 - 200 gm./T (birth to market)	increase milk; heavier weaning weights and decrease baby pig mortality gain and market finish improved fertility and libido

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<u>Additives</u>	<u>Use Levels</u>	<u>Claims or Purposes</u>
Tylosin (Tylan)	100 gm./T for at least 3 wk., then 40 gm./T until market 20 - 100 gm./T (up to 40 lb.), 20 - 40 gm./T (41 - 100 lb.) and 10 - 20 gm./T (101 lb. to market) 100 gm./T	prevent swine dysentery gain and F/G maintain gain and F/G in presence of atrophic rhinitis

- a/ gm. = grams
b/ bwt. = bodyweight

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