Sulfaguanidine As Control Against Cecal Coccidiosis

E. A. Bashkowksi

Sulfaguanidine acts by destroying coccidial forms which are found in the ceca. It does not aid in repairing the damage to the tissues caused by the disease. A certain number of coccidia must be present in the ceca in order to produce such a resistance. Experimentally, it has been shown that the effectiveness of sulfaguanidine upon the coccidial forms in the intestine is proportional to the amount of the drug present in the ceca. When the drug is given in too large amounts the scotol on the coccidia present is so great that nearly all of the parasites may be destroyed. This leaves no opportunity for the chick to produce such a resistance. Experiments on chickens resistant or immune to the coccidiosis control show that the effectiveness of sulfaguanidine up or por gen application ranged from 9.5 to 10.0
guaranteed destruction of one or more of these necessities. It can not form the sugars, starches, proteins, and the other substances which are indispensable for its growth and for flowering and fruiting. Sulfaguanidine is a preventive rather than a curative drug in the control of cecal coccidiosis in chickens.

Insecticides May Cause Unseen Internal Injuries To Plants

E. T. Bartholomew

An insecticide may be efficient and not cause visible injury to a plant—but that it is not a guarantee it does not, or will not, cause internal plant injury. Water escapes in the form of vapor from green leafy plants almost entirely through the leaves. Plant leaf surfaces are covered with a waxy layer that is almost impermeable to water. This layer, on one side or on both sides of the leaf, them and thus, excessively reduce the loss of water.

Oil sprays also reduce the loss of the water by making the waxy layer itself more impermeable to water vapor, or the oil may enter the pores and form a covering over the walls of some of the cells below each pore. Oil sprays are especially noticeable in the portions of the plant that are shaded, because the oil remains on or in the tissue coloring matter in the leaf. Equally important, an adequate supply of oxygen is just as necessary for the life of the green plant as it is for the life of human beings or other animals. If the plant does not have access to adequate supplies of any one or more of these necessities, it can not form the sugars, starches, proteins, and the other substances which are indispensable for its growth and for flowering and fruiting.

Dryness Protects Farm Stored Grain From Insect Attack

A. E. Michelbacher

Many of the more important pests are the granary weevil, rice weevil, smaller grain borers, Armyworms, grain moth, codling moth beetle and the saw-toothed grain beetle. The first four mentioned are capable of attacking and destroying stored grain. The others generally feed upon lesser grains, particularly the finer particles.

Where the environment is favorable, these insects cause serious damage and in some instances the grain may be completely destroyed. Most of the moth species that feed on stored grains are widespread throughout California. Irrgl in some cases the food is protected it is subject to heavy infestation.

Development of Stored Grain Pests

The development of stored grain pests is largely dependent on those insects that are stored for human consumption or for use in the stock and the moisture content of the food on which they feed. The

Spinach Harvest Increased By The Use Of Nitrogen

A. O. Lorenz

Yield and quality of the California spinach crop can be improved by nitrogen fertilization. A series of eight fertilizer experiments, centering around nitrogen, were made in the Imperial Valley with the improved spinach areas of California during the summer of 1946.

Treatments Tested

The experiments involved studies on both the rate and source of nitrogen fertilization, and particularly their effects on yield, quality, and nutrient absorption. Each test included the following treatments: 1) No nitrogen. 2) 10 pounds of nitrogen per acre from sulphate of ammonia. 3) 100 pounds of nitrate of soda. 4) 200 pounds from sulphate of ammonia.

Results

In every test, the quality of the spinach was greatly improved by the use of nitrogen fertilization. The plants were darker green in color, sweeter, and less aromatic in flavor. In some of the experiments, spinach grown without nitrogen was unmarketable and the crop was a total failure.

Examples

With but one possible exception, the yield was increased by applying nitrogen, the increase varying between one and two tons and in some cases, by five tons per acre.

In a test located at Davis, the unfertilized plots yielded 39.9 tons per acre while those fertilized with 100 pounds of nitrogen per acre from sulphate of ammonia averaged 89.5 tons per acre.

In another test located in southern California, the increase in nitrogen application ranged from 1 to 8 tons per acre.

In most cases, 300 pounds of sulphate of ammonia per acre produced ten yields but on some of the poorer

A 19-year-old orange tree injured by spraying with kerosene. Emulsions of the lighter fractions of kerosene sometimes prove disastrous because they are apt to run down the trunks of the trees and fill the bark, just below the surface of the soil.

From Insect Attack

A grower can best make a survey to determine the extent of the disease in his tree rows at the early stage of infection. An insecticide prevents the plant from receiving an adequate supply of carbon dioxide—by effecting the leaf pores—the amount of food that it can manufacture will be reduced. Food manufacture begins in the plant when the little bodies containing the green coloring matter bring about, with the aid of sunlight, the combination of carbon dioxide and water to form sugars. The more complex foods are formed later, with sugars as the starting point.

Insecticides may slow down or prevent the action of certain enzymes which change the complex food into simpler forms such as can be used for further growth of the plant, or stored. This condition brings about excessive accumulations of foods in the places where they are formed and stops further food manufacture.

Effects on Growth

Decrease in water loss appears to be responsible also for stunting growth activity. It may cause an increase in the prevalence and severity of granulation in citrus fruits. Many of the lessons lost to rabbits, become harder and lose at least most of their color. If food and water supplies are deficient, the cells can not normally increase in size, even though they do divide.

Such conditions cause a dwarfing or stunting of the plant. It is possible that dwarfing effects may go entirely unnoticed where whole fields are

In some instances tend to destroy or retard the formation of the green food storage in seeds, roots, and tubers.

Insecticides may slow down or prevent the action of certain enzymes which change the complex food into simpler forms such as can be used for further growth of the plant, or stored. This condition brings about excessive accumulations of foods in the places where they are formed and stops further food manufacture.

Effects on Growth

Decrease in water loss appears to be responsible also for stunting growth activity. It may cause an increase in the prevalence and severity of granulation in citrus fruits. Many of the lessons lost to rabbits, become harder and lose at least most of their color. If food and water supplies are deficient, the cells can not normally increase in size, even though they do divide.

Such conditions cause a dwarfing or stunting of the plant. It is possible that dwarfing effects may go entirely unnoticed where whole fields are

Control Measures For Armillaria Root Rot In Citrus

Donald E. Ellis

In citrus, aerial root rot becomes well established in the roots before any visible effect appears in the tops. There may be a gradual deterioration of the root system—resulting in the damage and dropping of many leaves. There may be a sudden wilting and collapse. In either case, death is usually followed within ten months.

A white, felt, face-shaped growth of fungus mycelium under the root bark constitutes the most reliable sign of an armillaria root rot. Armillaria mellea, a gathering of stems which form gills, is the most harmful of all the fungi that form mycelium under the root bark. After the development of stored grain, it is considered important to destroy the fungus mycelium under the root bark. Armillaria mellea is the most harmful of all the fungi that form mycelium under the root bark.
Vitamin C Loss By Condensed Tomato Products In Storage
Shown By Laboratory Research

A brief report of a study concerning the loss of Vitamin C from concentrated tomato products was recently made by L. R. Jeppson, Associate Professor of Entomology, and A. R. Millican, Associate Professor of Agricultural Economics, University of California, Davis.

Canned tomatoes and tomato products assume first importance as sources of Vitamin C where fresh fruits and vegetables are not available.

The very high water content—44 percent—is the chief reason why all means added bulk and expense in storing these products. Vitamin C concentrations were placed on the market and prepared for use by the armed forces because of the high qualities, color and flavor were not considered, and a change of observation that the condensed products lost vitamin C very rapidly led to specific investigations.

Studies were made of solid pack, juices, and pastes of tomatoes, stored at about 50 Deg. F. and 95 F., and 120 F. for periods of eight to 10 months. Solid Pack and Juice

The commercial, unconcentrated, solid pack tomato products have the highest loss, the loss in the very last ten only 10 percent of the original Vitamin C still present after one year, and after eight months storage varying from six to one month.

Experimental juice and concentrated juice were stored in glass at about 70 F. and 90 F. for periods varying from three to 10 months and stored at or near tropical storage conditions.

Samples of solid pack and juice store at room temperature lost an average of 30 percent, of their original Vitamin C content in six months storage.

The experiments indicated greater losses of Vitamin C in the concentrated products in the un-concentrated solid pack.

Paste

Five brands of commercial tomato pastes stored at room temperature lost an average of 30 percent, ranging from 30 to 39 percent, of the Vitamin C content after eight months storage.

Two brands on which storage was continued for another six months lost 40 percent and 44 percent, respectively.

One brand of paste which had been exposed to copper tubing in the processing was operated for a year to a point which the other reached in three months.

Tomato paste, either commercial or home canned, lost Vitamin C rapidly depending upon variety of nuts, moisture and conditions of storage.

When almonds are harvested, the nuts are covered with a green hull which is slowly dried and then removed by being heated.

Recently some of the growers have been making use of the type of drier which is used for storing rice and other grains in sacks, for drying almonds.

In the first driers built, some troubles were experienced with tunnel flow in sections of tunnels or ducts about 2 feet deep, 3 feet wide and 20 to 40 feet long. They are closed at one end, and are fitted to a fan at the other, with a ton complete air circuit.

Some tiny water in spaces in the section between the sections in the tunnel, and in the two feet deep section through the nuts. The air may be either heated or unheated, depending upon the problem.

The following tabulation has been compiled from data in the field and laboratory from the practical experience of almond growers.

Proximate Contents and Specific Activities of Almonds

<table>
<thead>
<tr>
<th>Nut</th>
<th>Percent of Weight</th>
<th>Total Specific Activities of Nuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almonds</td>
<td>14 percent</td>
<td>1,000 kg.</td>
</tr>
</tbody>
</table>

If natural gas or butane fuel is to be used, it is necessary to maintain the cubic feet per hour to the inlet of the blower and should be able to supply 10,000 Btu per cubic foot according to 1/4 to 1/3 of this amount. For oil used in the indirect system the

New Chemicals for Control of Citrus Mites Studied

During the past five years the Citrus Experimental Station has conducted field experiments with over 24 different chemicals having insecticidal activity on the citrus bud mite. Retentive field experiments have been made with some of these materials.

Spray emulsions, with one quart of water containing one ounce of the chemical, have been used; the results of two quart in 100 gallons of water have been given bud control on citrus bud mite with 5 per cent DDT oil spray at. In tests with 20 ounces of the beer of lemon trees or fruit has been evident from the tests and two quart concentrations.

Whether it may be feasible to concentrate, transport, dilute and then store is a question to be studied.

Development becomes less as the temperature decreases, which activity and damage occur when the temperature falls below 50 to 60 F. As the moisture content of the food drops below 13 per cent, the environment becomes less and less suitable for the food mites.

In laboratory tests K-1875 residual toxicity applied to the foliage of citrus trees, the mites were killed upon grapefruit 60 days after treatment.

In three field-laboratory tests, K-1875 was applied to lemons in November. Dec., January, respectively, as solvent-emulsions or wettable powders containing one pound of K-1875 in 100 gallons of water. Under the conditions of these tests K-1875 deposits were tested to the red mite for over 30 days.

In field conditions, formulations of K-1875 in kerosene, aromatic solvents, and wettable powders as well as dusts have all resulted in effective control of the red mite.

Regular spray applications of a four per cent solution of K-1875 in kerosene used at three gallons in 100 gallons of water and 50 per cent K-1875 powder applied at two pounds in 100 gallons of water and 50 per cent K-1875 powder or dust comparable to similar applications of light medium oil spray emulsions.

Dust formulations containing three to five per cent K-1875 have almost been more effective in controlling red mites than in forming dusts at the rate of one per cent sprayed dust, they have proven more effective in red spider control.

Twice with several formulations of K-1875 applied by means of fog generators have not satisfactorily reduced the mites.

Effect of the six spotted mite is complicated by its habit of making deep burrows under the surface. These depressions or "pockets" which increase the difficulty to make contact with the mites.

Regular spray applications of K-1875 at five per cent in 100 gallons of water have been experimentally at about 300 gallons per acre as spray dust. Applied in an airl blast such as is accomplished with the master fan spray-duster, they have proven more effective in red spider control.

New chemicals for the reduction of these depressions or "pockets" which increase the difficulty to make contact with the mites.

Most of the wheat and barley harvested in California has a moisture content of 12 per cent or less. Grain having a moisture content of 12.5 per cent or more is not safe for storage. When the grain has a moisture content of 12.5 per cent or more the risk of the grain being damaged by insect infestation is much greater.

Grain having a moisture content of less than 13.5 per cent can be safely stored. Any grain is kept dry, it is subject to serious insect infestation, and therefore almost certain to occur because granary insects are so widely and the author of the following notes that it is placed in proper storage. It should be remembered that dry grain is not a suitable food for grain infesting insects.

Storage Units

The dry grain should be placed in clean, dry, airtight boxes. The floors of the bins should be covered with a layer of clean, dry, airtight boxes. The floors of the bins should be covered with a layer of clean, dry, airtight boxes. The floors of the bins should be covered with a layer of clean, dry, airtight boxes. The floors of the bins should be covered with a layer of clean, dry, airtight boxes. The floors of the bins should be covered with a layer of clean, dry, airtight boxes.

In the construction of storage units, it is necessary that the bins be of such material that it will facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning. Good sanitary practices to prevent disease, and to facilitate ease in cleaning.