# Ag and Food Interprets...

- **Problems arise in changing to elemental guarantees for fertilizer**
- **Research and inspection—two phases of attack against foreign insects**
- **Insect damage to southern forests increases despite chemical control**
- **Several new antioxidants for feed and food await FDA approval**
- **Congress enlisting research aid in doing away with crop surpluses**

## Elemental Guarantees

### AAFCO takes the lead in promoting a change from oxide to elemental guarantees for phosphorus and potassium in fertilizers

Fertilizer labels traditionally have shown phosphorus and potassium guarantees in terms of oxides, $P_2O_5$ and $K_2O$ respectively. However agronomic research workers and others have thought and talked for at least 30 years about changing to the elemental basis, P and K, and the Association of American Fertilizer Control Officials agreed recently to take the initiative in promoting this change. AAFCO is perhaps the most logical group for the job because its members would be concerned directly with making the necessary legislative changes.

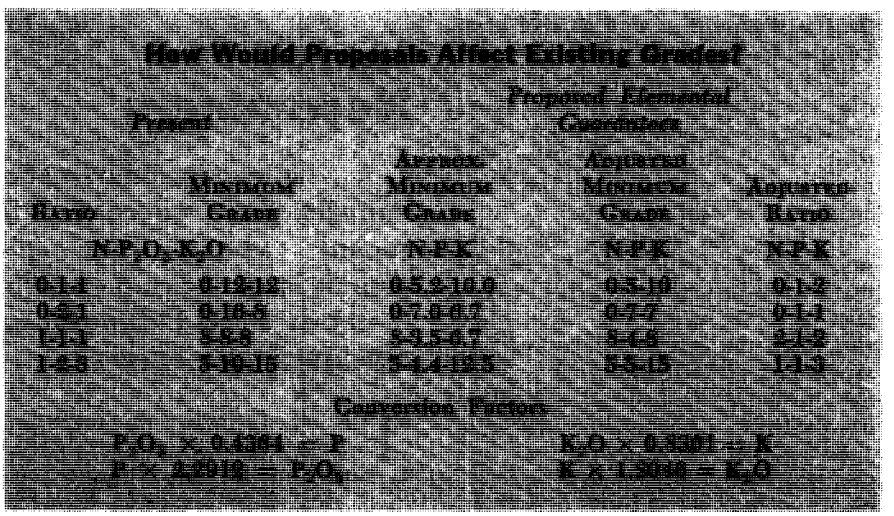
The proposed change is more than mathematical. For instance, if the phosphorus and potassium guarantees in an 8-8-8 fertilizer were changed from the oxide to the elemental basis (no change in the fertilizer itself), the guarantee would read 8-3.5-6.7. This could be rounded off to 8-4-8 to keep both the guarantee and the ratio (2-1-2) in whole numbers, and the product itself would then have to be changed accordingly. Also, where a 1-1-1 ratio had been recommended before the change, a 2-1-2 would be recommended after the change, both fertilizers, however, being approximately the same.

Such a change, then, would go much deeper than merely changing the labels on fertilizer containers. It would mean revision of state laws, a mass of fertilizer literature, and the thinking of thousands of people who deal one way or another with fertilizer. Few doubt that many of the resulting problems would be very difficult. The question seems to be whether or not the benefits of the change would make those problems worth solving.

The basic advantage of a change from oxide to elemental guarantees, say its proponents, is that it would improve markedly the consistency and simplicity of both written and spoken communication about fertilizers. Fertilizer guarantees for nitrogen and the minor elements appear generally in terms of the element. Soil tests, tissue tests, and feed analyses generally show phosphorus, potassium, and other elements in terms of the element. In all of plant and animal nutrition, in fact, only phosphorus and potassium in fertilizers are still treated in other than the elemental form.

The classic example of the resulting confusion is phosphorus, which is referred to both in the literature and conversation as phosphorus, phosphate, $P_2O_5$, and phosphoric acid, all or any combination of which may or may not be synonymous. Those who favor the change to elemental believe that by removing such confusion, it would make fertilizers and fertilization easier to put across to all concerned and would thus increase both their use and the intelligence with which they are used.

AAFCO'S committee on special guarantees plans to distribute information on fertilizer ratios, grades, and labels, both present and proposed, to fertilizer officials



Opponents of the change agree generally that it would simplify teaching (in colleges, etc.), but they doubt that it would add anything to the continuing effort to get more fertilizer used and to get it used correctly. The confusion the change would cause among farmers, particularly in the older fertilizer-using areas, they believe, would outweigh any advantage gained by simpler nomenclature.

### *The Biggest Cost*

The mechanics of changing fertilizer labels and minimum grades would cost money. But probably the biggest cost would arise from the fact that fertilizer producers and distributors would have to pass the changes and their meanings to the consumer, whose reaction and its effect on sales are problematical. What would actually happen is predictable perhaps only within very broad limits, but a thorough educational program would seem unavoidable.

Printed promotional material would have to be changed. Salesmen, technical field men, and extension people would have to spend a great deal of time passing the word directly to the consumer. But while all this would entail expense, some who favor the change believe it might be an excellent basis upon which to build a combination education-promotion program.

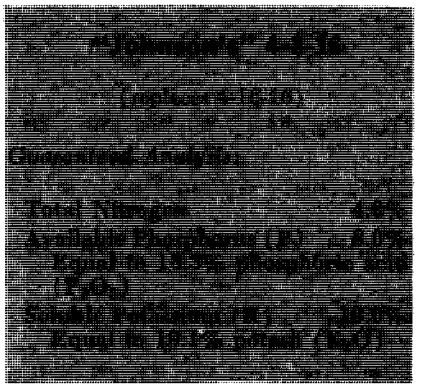
A U. S. congressman said once in a speech something to the effect that a 5-10-5 fertilizer contains 20% plant food and 80% filler. Such a statement gives some idea of the educational effort that might be needed to promote the necessary changes in state fertilizer laws.

It means, too, that those who believe incorrectly that the inert material in fertilizer is "filler" would gather from a label incorporating the change that the percentage of such filler had been increased.

Add to this the facts that some legislatures meet only every two years and that all agricultural groups (with their attendant political power) do not favor the change, and you have another very real problem.

To make the suggested change as smoothly as possible would require that all changes in state fertilizer laws take effect at about the same time, and that the necessary educational measures be timed accordingly. With that in mind, the AAFCO committee has suggested 1960 as the target date.

So far, AAFCO's committee on special guarantees has secured endorsements for the change from the Experiment Station Committee on Organization and Policy of the North Central Region, the Soil Science Society of America, the American Society of Agronomy, and the four national soil research committees. The committee is moving also to get endorsements from the Experiment Station Policy Committees for the other regions, the National Association of Secretaries, Directors and/or Commissioners of Agriculture, and possibly the Extension Service Directors. By AAFCO's next annual meeting in October, the committee on special guarantees hopes it will have been able to gather enough additional information upon which to base recommendations for further action.



Of the several fertilizer labels designed to implement the proposed change from oxide to elemental guarantees for phosphorus and potassium, AAFCO's committee on special guarantees believes this one to be the most acceptable. It would be used for perhaps several years or until all states had changed legally to the elemental guarantees, at which time the two lines beginning with "Equal to....." would be dropped

# Insect Newcomers

## Interception of insect imports more successful in recent years, but research is preparing control methods should dangerous outsiders gain entry

THE WIDESPREAD PUBLICITY accorded reappearance of the Medfly in the United States (AG AND FOOD, June, page 481) brings in focus the problems of keeping such pests out of this country. Two other pest imports have become a serious problem in this country within the past three years: the Khapra beetle, a most effective grain destroyer, has been found since 1953 in the California-Arizona-New Mexico area; and the spotted alfalfa aphid, a serious menace since 1954, is expected to cause some southwestern states to lose as much as half of their entire alfalfa crop this year. Recently it showed up in Georgia, Florida, and Illinois.

The problem of keeping new, potentially dangerous pests off our shores is multifaceted—not only must incoming cargos and people arriving through our entry ports be surveyed, but migrations of pests across our southern borders is a real possibility, and therefore insect conditions within our Central American neighbors' territory must be carefully watched.

### *On the Lookout for Citrus Blackfly*

One of the most potentially dangerous pests that USDA men keep on the lookout for is the citrus blackfly, a Mexican resident for years. It effectively ruins citrus groves by attacking the leaves of the trees. Each year, several dozen separate incoming blackfly-contaminated shipments are intercepted—any one of which could start an infestation if conditions were right.

The problem is magnified when migratory-type infestations are studied. The Mexican fruit fly has periodically invaded the lower Rio Grande valley of Texas for some time, one year appearing on this side of the border and the next year limiting its infestation to the Mexican side. There is not much that can be done to avoid this type of climatic migration. As if to emphasize the point, the Mexican fruit fly turned up in an isolated infestation in southern California, but USDA and California authorities were ready with an eradication program set up since 1954.

On the other hand, the problem of the Durra stem borer illustrates the way effective measures are taken in the quarantine program. If this pest were to gain a foothold in this country its possible effect could be likened to that of the European corn borer which destroyed $350 million worth of corn in 1949. The Durra stem borer currently infests the Italian area of southern Europe, and shipments of broomcorn from that area into this country are carefully controlled. Not only are all shipments carefully fumigated with methyl bromide upon arrival, but

shipments are allowed only during winter months and at ports north of Baltimore. The thought behind the latter restriction is that should a pest survive fumigation it would starve or freeze to death during the winter before it could infest a new crop. Several years ago, a shipment of infested broomcorn was not fully fumigated, but fortunately the pest did not spread.

Inspectors try to keep an eye out for more than 25,000 different species not in this country, and while they prefer not to pinpoint any particular ones, they are especially wary of the citrus blackfly and the various fruit flies. One reason for their hesitancy is the fact that the behavior of a specific insect in a particular climatic environment cannot always be predicted. The Japanese beetle, for example, was not considered much of a pest in its native Japan, but here it is a very serious problem, eating just about any crop. USDA's control program coupled with rainfall conditions unfavorable to the pest has kept it from spreading westward, although an area of very high infestation has been reported on the Illinois-Indiana border. Dieldrin soil treatment has proven effective against this pest.

The entire situation around the citrus blackfly shows the intricacies of pest control. USDA people worked on methods to eradicate any infestation of citrus blackfly—using both insecticides and natural enemies—but the project had to be cut back in favor of increased work on the Mexican fruit fly problem. The latter pest travels, often as much as 20 miles, while the blackfly stays pretty much in one place.

Emphasis on blackfly research again increased when infestations were found in the Rio Grande Valley's citrus orchards last year. The spray most commonly used for control has been a formulation of cube or derris powder containing 6% rotenone. Both parathion and malathion are very successful. DDT however poses an interesting side effect problem. It kills the vedalia beetles, which are the control of cottony-cushion scale. So if DDT is used against the blackfly, the scale often becomes equally serious.

In general, biological controls (parasites and other natural enemies) are used wherever they prove useful. However, research people prefer chemical insecticides wherever they can be used because of their ability to do a more thorough job.

## Some Recent Unwelcome Arrivals

| Name and First Reported Infestation | Attacks | Chemical Control |
|---|---|---|
| European chafer (1940) | Pasture, alfalfa, small grains | DDT, chlordane, heptachlor, aldrin, dieldrin |
| European corn borer (1917) | Corn | DDT, ryania, parathion |
| Imported fire ant (1920) | Truck crops and wild life; bite painful to humans, often fatal to new-born farm animals | Chlordane, aldrin, dieldrin |
| Japanese beetle (before 1916) | More than 200 farm, field, and fruit crops | DDT, methoxychlor, dieldrin |
| Khapra beetle (1953) | Stored grain | Methyl bromide fumigation; malathion |
| Mexican fruit fly (1927) | Citrus and other fruit | Malathion; ethylene dibromide fumigation; |
| Mediterranean fruit fly (1929 and again in 1956) | Citrus and other fruit | Malathion; methyl bromide and ethylene dibromide fumigation; dieldrin |
| Oriental fruit moth (1916) | Peaches and other fruit | DDT, EPN, parathion, malathion |
| Pink bollworm (1917) | Cotton | DDT |
| Southwestern corn borer (1913) | Corn | None available |
| Spotted alfalfa aphid (1954) | Alfalfa | Malathion, parathion |
| Vegetable weevil (1922) | Tobacco, vegetables, flowers | DDT, rotenone, aldrin, parathion |
| White-fringed beetle (1936) | Corn, cotton, potatoes, and tobacco | DDT, chlordane, aldrin, dieldrin, heptachlor |

## Here Are Some We're Afraid Of

| Pest | Present Location | Research Going On | What it Attacks | Chemical Insecticides |
|---|---|---|---|---|
| Citrus blackfly | Mexico | coop. program with Mexico | citrus tree leaves | rotenone, parathion, malathion, DDT |
| Durra stem borer | Europe | no known research | corn, broomcorn, and other sorghums | methyl bromide fumigation |
| Melon fly | Hawaii | USDA research-Hawaii | melons, tomatoes, pumpkins, etc. | parathion, malathion |
| Olive fly | Mediterranean | no known research | olives | none specifically tested |
| Oriental fruit fly | Hawaii | USDA research-Hawaii | citrus and many other fruits | parathion, malathion |
| Spiney bollworm | Egypt and Iraq | some research here and in Iraq | green cotton bolls | endrin |

Several avacado weevils from Mexico and Central America plus 25,000 other pests

Several concentrated research programs are being conducted today both by the U. S. and neighboring governments. The most notable of these is in connection with the fruit fly problem, with concentrated efforts under way in both Hawaii and Mexico as well as at the Agricultural Research Center (Beltsville, Md.).

In terms of dollars, more USDA research money goes into the fruit insect program outside the continental U. S. than to its sister program here. In general, there is little joint U. S.-foreign government research or extermination work going on, Mexico being the notable exception. However most friendly nations cooperate with USDA quarantine inspectors, and American technical men and dollars are loaned to them under Point 4 and related programs. In this country, aside from USDA and California research, little work is being done by industry or state authorities to prepare for possible infestations.

### *Public Education a Problem*

The biggest problem quarantine inspectors face is to make the public aware of the existence of plant quarantine measures. With foreign air travel up 50% each year, the problem is continuously increasing. In recent years as little as 10% of incoming baggage was being inspected, but with increased funds voted after the Medfly outbreak, Customs and USDA people hope for full inspection to be achieved, and tighter controls over cargo granted.

Over 3000 separate, *positive* identifications were made in the most recent year for which data are available. To show the severity of the potential danger if the combined programs are not successful, officials point to the 50 major pests that entered this country between 1900 and World War II. This group's members include such pests as the pink bollworm, in this country since 1917. Its spread has long been halted, but it continues to plague the area it infests. When farmers let their guard down momentarily in 1952, cotton damage in 29 southern Texas counties amounted to $30 million.

Theoretically control programs are designed to eliminate every significant pest in this country, and generally the outlook is good. USDA officials state that the number of new pests successfully entering in most recent years is much lower than in the past, but greater public emphasis is placed on each. The goal is to prevent any new pest imports completely, as well as to eliminate pests already established.

## Forest Insects

**Damage to southern pine and hardwood saw-timber will exceed 1.5 billion board feet this year in spite of increased chemical control measures**

Western foresters, up to their necks in insects, are trying desperately to stop annual losses of well over 5 billion board feet of timber (Ag and Food, May 1955, page 375). Southern foresters, too, are fighting insect attacks.

Last year Ips engraver beetles reached epidemic proportions in North Carolina and other southern states. The southern pine beetle, considered to be the most destructive forest insect in the South, was epidemic during 1953–54 in Virginia, North Carolina, Tennessee, Mississippi, Alabama, and Texas. Parts of Tennessee, North Carolina, and Alabama were hit hard during 1954–55, and the beetle continues to take a heavy toll of pines throughout the Southeast.

Pine sawflies cause considerable tree damage locally in the eastern and southern United States. Equally damaging, although less conspicuous, are other pests such as pine tip moths, pales weevils, and many species of hardwood borers; these pests are destroying timber values equal to or exceeding those destroyed by the more spectacular epidemics.

Specific insects plaguing southern pine forests fall into four broad categories—bark feeders, bud and shoot feeders, needle chewers, and root feeders. The southern pine, Ips engraver, and black turpentine beetles burrow beneath the bark and "girdle" the tree. Pales weevils feed from outside the bark and "girdle" seedlings like miniature beavers.

Nantucket pine tip moth has damaging larvae which feed within the buds and twigs of trees, arresting growth and distorting seedlings and saplings. All three varieties of the pine sawfly are needle chewers which cause growth loss up to $2.75 per acre; fall defoliation results in mortality. Loblolly pine sawfly causes growth loss to commercial timber. White grubs, larvae of the common May or June beetle, feed on roots of pine seedlings. It seems likely that grubs cause some of the mortality laid to drought or vegetative competition.

Annual damage by insects to all timber in the South runs to more than 360 million cubic feet; damage to saw-timber alone will hit 1.5 billion board feet this year. Bark beetles lead any specific group. They will cause one third of the loss, while defoliators will take a 10% toll.

Most insects attacking southern pines can be controlled with chemicals, although control is not always economical. "Cut-spray" treatment of the southern pine beetle, for example, may cost from 60 cents to $2.50 or more per tree, depending on size and accessibility of the trees and concentration of the outbreak. The cost of spraying for black turpentine beetle, by comparison, may vary from 10 to 30 cents per stump or butt.

Markets for forest pest insecticides are growing rapidly in south Georgia, north Florida, and other southern states where insects have reached epidemic proportions. Within the past year or two a number of pesticide formulators have reported increased demand for sprays to combat the black turpentine, Ips engraver, and the southern pine beetles. (Kill is obtained with the gamma isomer of BHC dissolved in diesel oil or water.)

On the basis of current losses in the Southeast, the estimated market for field strength sprays is 1 million gallons annually. BHC appears to be the most effective all-round control; it would probably take 75 to 90% of the market, with the remaining portion going mostly to DDT.

For soil treatment, the potential market may run as high as 1 million pounds of field strength spray or granules, consisting mostly of dieldrin, chlordan, or heptachlor. Although the actual market now is probably not over $50,000, the potential value of sprays and granules lies somewhere between $250,000 and $500,000 per year. Formulators have hardly scratched the surface of markets in the Southeast; forest losses in the Southwest almost double the potential sales of chemicals.

### *Foresters More Active*

A few years ago it was difficult to arouse interest in forest insects, even among foresters, says one USDA worker. But demands for information now are greater than can be immediately supplied from his station.

Southern foresters, he indicates, are perhaps more active than foresters elsewhere in spraying small infestations. In other parts of the country, chemicals have been used in larger quantities, but mostly by aerial appli-

cation when large-scale epidemics (such as those of the spruce budworm) have occurred.

Unfortunately, the South got a late start in its research programs. Much progress is now being made, although most of the present work is focussed on stop-gap, direct-control measures. The need for more basic research is urgent. Expenditures for direct control total almost $200,000 annually, with more thon $150,000 being concentrated on bark beetles.

Education is being emphasized, although it still lags research. USDA Forest Service entomologists are helping, but their educational work is done at the expense of research time. In the past year or so, agricultural extension service entomologists have become markedly more active in education in the Southeast; insecticide companies, too, are pitching in to help.

Everywhere in the South there are indications of more cooperation on the part of land owners.

Arkansas foresters met in February and created the Arkansas Forest Pest Action Committee, members to be appointed by the State Forester. Guidelines for combating outbreaks of forest pests were adopted at the meeting. The committee and all interested foresters will meet at least annually to map out plans for forest pest detection and aerial surveys.

The first detailed, cooperative aerial pest detection survey in the deep south took place over forests in east Texas this July. Industry, the Texas Forest Service, and the U. S. Forest Service cooperated in this program planned by the Texas Forest Pest Committee. The same basic flight plan will be used annually, or more often should conditions warrant frequent surveys.

Some 200 foresters and timber owners were trained in identification and control of forest insects and diseases at meetings held throughout Arkansas in early May. Similar training sessions were held in east Texas in June and in Louisiana during July. The first annual meeting of the Southern Forest Insect Work Conference is to take place in September at the University of Georgia.

With this degree of interest in insect control, southern foresters have an even chance of holding their own against future outbreaks. Peak losses due to bark beetles have been reached, according to the experts, although over-all losses are likely to remain at the present level. It is encouraging to note that no forest insects except possibly the red spider mite, have developed resistance to chemical control. (The mite may be developing resistance to organic phosphates being used in nurseries.) Under present control programs, which are not entirely chemical, the chances of developing chemical resistance are slim.

# Food and Feed Antioxidants

**Antioxidants, well-established in food processing and growing strongly, now finding considerable market in animal feeds. Several new products await only FDA approval**

IN THEIR EFFORTS to minimize food rancidity caused by oxidation, chemists have explored both synthetic and natural antioxidants, turning up several that are in use today. An estimated 80% of all federally inspected lard now contains one or more antioxidant additives. Other foods containing oxidizable fats, whose shelf life is distinctly improved by using antioxidants, include pastries, crackers, potato chips, nuts, peanut butter, and many other food products as well as animal and poultry feeds.

Among the most widely used antioxidants today are two phenolic compounds, BHA, butylated hydroxyanisole (made by Universal Oil Products and Tennessee Eastman) and BHT, butylated hydroxytoluene (made by Tennessee Eastman, Shell Chemical, Koppers, and American Cyanamid).

These products retard the oxidizing process by reaction with free radicals of the oxidizing fat. Very low concentrations are highly effective. As little as 0.01% of BHA in lard can extend its shelf life as much as two years.

BHA is tasteless in quantities used, is readily soluble in fats and oils, and has excellent carry-through (retaining its antioxidant properties after mixing, cooking, or baking). Virtually odorless at room temperature, it has the disadvantage of developing a noticeable phenolic odor at high temperatures, as in deep-fat frying.

BHT does not have as high antioxidant potency at low concentrations as BHA, but has good carry-through, good oil solubility, and very little odor at high temperatures. It has a major advantage in being the lowest-priced food-grade antioxidant ($1.24 a pound in 100-lb. drums, compared with about $4.75 for BHA and $4.40 for propyl gallate).

Some of the early starters in this field, such as lecithin and gum guaiac, are still used, but only to a limited extent. Another, nordihydroguaiaretic acid, has been employed to increase the shelf life of lard. But with poor oil solubility and low heat stability its price of $35 a pound limits its use.

Propyl gallate at ordinary concentrations has the greatest antioxidant power of any of the food grade products. However, oil solubility and carry-through are poor and it forms a blue color in the presence of iron.

The lion's share of all antioxidants used in foods today is taken by BHA (about 55% of the total), followed by BHT with 25%, and propyl gallate with 20%.

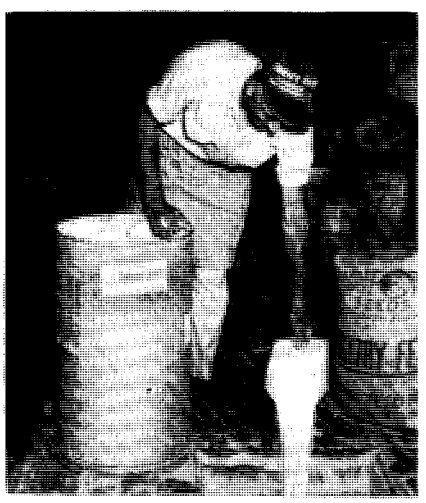
Partially because the Food and Drug Administration allows a maximum of 0.01% of any one antioxidant in a fat or oil and partially because no one product is ideal, many mixtures are used. One widely used formulation recommended by the American Meat Institute contains BHA, propyl gallate, citric acid, and propylene glycol (a ton of lard can be protected with $1.50 worth of this).

### *In Animal Feeds*

Antioxidants, particularly BHA and BHT, are finding increasing use in livestock feeds. Not only are fats stabilized, thus maintaining palatability, but some antioxidants protect vitamins A and E, especially in poultry feeds.

Until recently, *N,N'*-diphenyl-*p*-phenylenediamine (DPPD) was used in poultry feeds for control of encephalomalacia, or crazy chick disease, a result of vitamin E deficiency. When DPPD was found in eggs and chicken livers, this application was discontinued last April. Its place was taken by BHT, which was found comparable

BPT is replacing DPPD as a feed antioxidant



with DPPD in controlling encephalomalacia. This potential market is suggested by the fact that about 2 million pounds of DPPD went into chicken feeds last year.

Monsanto has developed 6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline, trademarked Santoquin, for retarding oxidative breakdown of carotene (precursor of vitamin A) and xanthophylls (providers of skin pigmentation), which are contained in the alfalfa added to poultry feeds. More widespread use of Santoquin, however, will depend on toxicological tests now in progress.

### Government Attitude

During the past five years, dozens of new antioxidants have been proposed for use in foods or feeds but have yet to be approved. The Food and Drug Administration requires rigorous toxicological testing before accepting a new material as safe for human or animal consumption. Says one government official: "FDA is continuing to maintain a conservative position and discourages the use of any antioxidant or other chemical additive in food and feed until its safety is adequately established." According to one industry spokesman: "If there is any change in the government's attitude toward antioxidants in foods, it will probably be in the direction of more rigorous controls."

Meanwhile, companies continue to carry out extensive research programs on new antioxidants. Universal Oil Products has been testing some of the higher dialkyl *N,N'-p*-phenylenediamines for possible use in preventing the oxidation of carotene in alfalfa and also in retarding rancidity in lard and fats. Crown Zellerbach has been exploring the properties of norconidendrin, extracted from sulfite waste liquor derived from the pulping of western hemlock. Oregon Forest Products Laboratory has studied dihydroquercetin obtained from Douglas fir bark.

British researchers have been testing various new hydroxyflavones, which in some cases are reportedly superior to conventional antioxidants. In England, however, the use of antioxidant additives in foods is still prohibited by law, although a British Ministry of Food committee has gone on record as favoring the controlled use of propyl, octyl, or dodecyl gallate or BHA.

In the future, antioxidants may move into numerous new fields. For example, they might one day serve to prevent the oxidative deterioration of roasted ground coffee, a problem now being minimized by vacuum packing. If FDA gives its approval, antioxidants may one day be used to retard the deterioration of milk, butter, ice cream, pork, bacon, fish, and other food products.

In 1956, the total use of antioxidants in foods and feeds is expected to reach about 3 million pounds, of which about 2 million will be used in chicken feeds. Within the next decade, this figure many increase 100% or more.


Congress this year took another look at that perennial problem—what to do about crop surpluses. Midway through the session Sen. Homer E. Capehart (R.-Ind.) and 33 other Senators introduced a bill calling for a huge government research program designed to find new industrial uses for surplus crops. A similar bill was introduced in the House. Unfortunately, while committees were deliberating on the measures, time ran out, and Congress adjourned without taking any action on the bills.

However, Congress did take positive action that may lead to an industrial solution to the surplus crop problem. Buried in the Soil Bank Act, signed into law by the President at the end of May, is a section establishing a Commission on Increased Industrial Use of Agricultural Products. The five-man, bipartisan commission is to be appointed by the President with the consent of the Senate. In making the appointments, the law requires the President to give due consideration to the interests of various segments of agriculture.

Members of the commission, approved by the Senate late in July, are:

George H. Coppers, president, National Biscuit Co.

Karl D. Butler, farmer, Ithica, N. Y.

J. Leroy Welsh, chairman of regents, University of Nebraska.

Frank J. Welch, dean, college of agriculture, University of Kentucky.

Charles R. Sayre, president, Delta & Pine Land Co., Scott, Miss.

Under the law the commission must report to Congress not later than June 15, 1957, what must be done to "bring about the greatest practical use for industrial purposes of agricultural products not needed for human or animal consumption." Industrial uses earmarked for attention in the law are the manufacture of rubber, industrial alcohol, motor fuels, and plastics, but activities of the commission are not limited to these fields.

To carry on its work, the commission has authority to hire whatever chemists, engineers, agriculturists, and other consultants it may need. In addition, the commission has the power to obtain from other government agencies pertinent data, including material classified for security reasons.

So far the commission has held no meetings. It is probable that the group will concentrate on developing an expanded government research program designed to find new industrial markets for surplus crops or their derivatives. But some observers are wondering if pressure will be applied to the commission to revive some of the chemurgic proposals so popular in the 1930's. Among these are the mandatory use of a specified percentage of fermentation ethyl alcohol in all gasoline. Still another possibility is that the commission may recommend a dual pricing policy for surplus crops —a standard price for normal use, and a much lower price to be applied if the material is to be used in an industrial process.

As for the government "crash" research program on the industrial utilization of farm surpluses advocated by Sen. Capehart and others, this piece of legislation may not be as dead as it looks. In view of the number of cosponsors of the legislation in both Houses of Congress, it is extremely likely that the bill will be reintroduced when the new Congress convenes next January.

At the past session of Congress, delay in calling hearings, the downfall of the Capehart bill, did not indicate a lack of Congressional interest in the proposed research program. According to Sen. Earle C. Clements (D.-Ky.), temporary chairman of the Senate Agricultural Committee, hearings could have been scheduled early in April, but the Agricultural Department did not furnish the committee with its views on the proposed legislation until three months after they had been requested. Spokesmen for Agriculture pointed out that the long delay was caused by the time required to iron out administrative details in the bill, not by a lack of interest in the subject.

Next year, if similar legislation is introduced in Congress, the findings of the Commission on Industrial Use of Agricultural Products might form the basis for a research program designed to lick the surplus problem.