Business Newsletter . . .

No Depression in Direct-Application Ammonia

Agricultural ammonia industry appears to be headed toward **new sales record.** Early reports on 1957 distribution show sales running as much as 30% higher than those for same period last year. Industry expects **ammonia for direct application** to corner a still larger fraction of total fertilizer nitrogen market this year than the nearly one-fifth registered in 1955–56. Number of bulk-plant ammonia distributors is now about 1500.

Speed-up in Gibberellins' Marketing

Commercialization of gibberellins is proceeding much faster than almost anyone would have predicted six months ago. Announcements of commercial availability in "bulk" form have already been made by Merck, Lilly, Pfizer, and S. B. Penick, while a number of smaller formulators are advertising gibberellin-based products for amateur gardeners and professional growers.

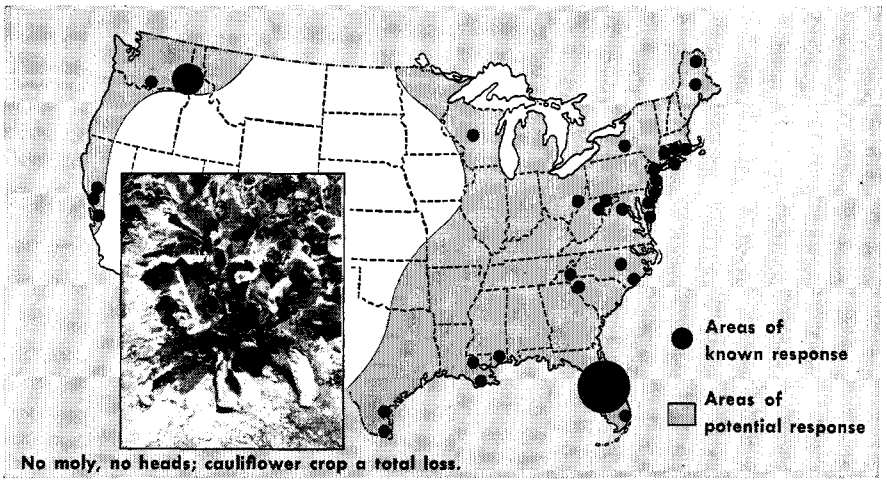
Seek ICC Exemption for Fertilizer Materials

Amendment to Interstate Commerce Act, proposed in bill (H.R. 5765) introduced by Rep. E. C. Gathings (D-Ark.), would exempt **fertilizer and fertilizer materials**—when transported by motor truck—from economic regulation by the Interstate Commerce Commission. If enacted, bill would permit anyone to truck fertilizer for hire without getting an ICC certificate of convenience and necessity, or filing a tariff stating rates to be charged. NPFI executive vice president Paul T. Truitt says enactment would help farmers by **facilitating fertilizer delivery during the spring season of peak demand.**

Firm Tone in Prices and Markets

Firmer market situation developed in nitrogen materials as Allied Chemical and W. R. Grace **advanced prices for urea** $5 per ton effective April 1. Action brought the delivered price for 45% nitrogen fertilizer urea to a range of $100 to $105 per ton, carloads, delivered East and South. Price at the ports was established at $105 per ton, free-alongside-ship. One trade view was that the **advance might encourage larger importations.** Other agricultural chemicals were steady. Carload quotation for DDT was continued at 23 cents per pound. Sales of chlorinated hydrocarbons generally were better in the cotton-producing sections.

- Technical and economic information available in USDA's soil surveys is good source of market research data for fertilizer and pesticide industries (**page 243**).
- Build-up of resistance to chlorinated hydrocarbons by cotton pests is restricted to local areas so far (**page 244**).
- To improve profits from sales of pesticides (**page 246**), industry will have to cut inventories and accounts receivable (**page 248**).
- Several new processes for manufacture of ammonium phosphates via wet process phosphoric acid will be vying with each other says George Burnet, Jr., in a technical and economic comparison of those processes (**page 258**).



No moly, no heads; cauliflower crop a total loss.

Can You Spot Crops Starved for Moly?

Recognizing moly-deficiency symptoms early enough to recommend moly applications can turn withering crops into healthy stands

At a technical meeting several years ago, someone asked a speaker where responses to molybdenum applications are most likely to be found. The speaker quickly answered, "On soils near an experiment station with a staff member who's familiar with moly-deficiency symptoms and who's testing for molybdenum responses."

This remark wasn't made entirely to provoke a laugh, notwithstanding the need for a little humor at technical confabs.

What the speaker was underscoring was that we didn't then have any idea how extensive the need for moly in the United States might be. There were relatively few agricultural people who knew much about moly, especially its effects in the field. Those few who did —naturally concentrated at places such as experiment stations—found soils that needed moly because they knew what they were looking for.

Dotting the Map

Now some years later, we have expanded our knowledge of moly's role in practical farming considerably. The once few pioneers working on moly at experiment stations are now many. They and other soil scientists at universities and research institutions, as well as farmers themselves, have dotted the map (see illustration) with locations of soils requiring moly for full productivity. At least thirty crops have been shown to respond to moly applications. Of these, ten are now being grown commercially in the United States with the aid of moly.

But, although we have come a long way with moly in just a few years, many growers are still getting marginal yields, or even losing crops, because they don't recognize the symptoms of moly starvation. They can see that something is wrong, but they don't know what. They either haven't heard, or can't believe, that as little as a few ounces to a pound of moly per acre can mean the difference between skimpy, curled, twisted and scorched plants of little value and healthy crops of prime quality.

Key to Growth

Moly, while required in amounts considered minute even for a trace element, performs two essential functions in plants. It is needed for the fixation of atmospheric nitrogen by the bacteria in the root nodules of legume crops. It also is required in all crops, non-legumes as well as legumes, in the reduction of nitrates to nitrogen—the first step in protein synthesis.

Plants lacking sufficient moly show characteristic symptoms related to moly's key role in plant growth. Legumes have the well-known signs of nitrogen starvation. They are stunted, pale yellowish in color, low in protein content and hard to establish; fields are patchy. Non-legumes exhibit yellowish coloration in the leaves—chiefly in spots where nitrate accumulates between the veins and around the rim—and often the leaves are curled or cupped upwards, or otherwise distorted. Growth is poor and irregular, and the crop has an overall pale yellowish cast.

Some of these symptoms had been recognized as specific diseases—e.g., "whiptail" of cauliflower and "yellow spot" of citrus—for years before moly deficiency was discovered as the cause.

Following are more detailed descriptions of easily detected symptoms in common crops:

Beets. Plants may be stunted. Leaves narrow. Yellowing leaves make red veins stand out.

Cauliflower, broccoli. Whiptail. (See illustration.) Heads do not develop, or develop unevenly.

Cabbage. Yellowish mottling throughout leaf area between the veins. Heading prevented by twisting and cupping.

Peas. Leaves turn yellow and become somewhat transluscent. Dwarfing occurs. Vines weak and short.

Beans. Yellowish mottling sometimes called "scald". Flower and seed yield often greatly reduced.

Tomatoes. Curling and cupping of leaves. Formation of flowers and fruit reduced.

Celery. Tops turn pale green, then yellow.

Cantaloupe, cucumbers. Leaves are light green to yellow, develop edges which wither and curl. Stunting.

Differences in Soils

Crop response to moly application is often observed on soils of low pH, since under acid conditions moly is often tied up in a form unavailable to the plant. Liming, in making the soil more alkaline, releases moly to plants, and on some soils, this release of acid-bound moly may be the chief function of lime. In such cases, a few ounces of moly may be more effective and economical than several tons of lime.

Soils likely to be extremely low in moly are those that have been highly leached, such as coastal sands and hill country soils, soils that have been heavily cropped, and soils in areas of heavy rainfall. Conversely, highly productive, fertile soils, heavily limed or manured soils, and soils in regions of low rainfall are unlikely to produce visible deficiency symptoms, but increased yield and better quality may result from moly application.

In the United States, most reported responses to corrective treatment with moly are in the areas east of the Great Plains, and along the Gulf of Mexico, and in the Pacific Northwest. But until more testing is done, it is unwise to say categorically that crops grown in other areas won't respond to moly.

No Trick to Testing

Deficiency symptoms and soil types are good guides to the possible need for moly but they aren't infallible diagnostic aids. Systematic testing should always precede general application to the field.

It's easy to do:

The first step is to make up a stock solution by dissolving one ounce of sodium molybdate in one gallon of water.

With vegetable crops such as cauliflower, broccoli and beets, select and mark one or more rows in the center of the field. Diluting three cups of stock solution to one gallon of water, apply the moly to the test rows, at the rate of one quart per 250 feet of row. Compare treated and untreated rows every other day.

With legumes such as alfalfa and clover, lay out a test plot 10 yards square adjacent to an untreated area to be used as a control. Follow your usual fertilizer program, but use no nitrogen on either control or test plot. Spray the test plot with one cup of stock moly solution diluted to one gallon. Applications can be made at seeding time or to an established stand. Make regular observations, comparing thickness of stand, color and quality of growth.

For a one-ounce test sample, and further information on how to lay out test plots, address Dept. 44, *Climax Molybdenum Company, 500 Fifth Avenue, New York 36, N. Y.*

Research Newsletter . . .

Imported Fire Ant a Growing Menace

The **imported fire ant,** already a serious pest in southeastern states, is building up a population pressure that **threatens extensive spread** to other areas. The ant damages vegetables, fruit trees, grains, and pastures; its sting is often fatal to small pigs and newborn calves, and causes painful, slow-healing sores on humans. Agricultural Research Service, USDA, is backing proposed legislation that would provide further authority to inspect, and to regulate interstate movement of, possible carriers of this and other pests; ARS also wants funds to send teams of exterminators into infested areas. A House Agriculture Subcommittee has approved the plan. Chlordan, dieldrin, aldrin, and other chlorinated hydrocarbons are capable of effective control.

Pesticide Residues in Meats, Milk

The first DDT-in-meat tolerance has been established by the Food and Drug Administration. FDA's ruling, prompted by a petition filed by Geigy Chemical, sets a limit of 7 p.p.m. for DDT residues in the fat of meats from cattle, hogs, and sheep. Within the new tolerance, farmers may apply DDT to control the corn borer on forage. Also permitted: DDT dips, sprays, and "back rubbers," used to combat flies and other pests on the animals . . . . . Federal Extension Service has passed the word along to extension dairymen to inform dairy producers that Food and Drug Administration found **pesticide residues in 62% of milk samples surveyed in 1955–56.** It is thought these residues were largely caused by incorrect use of insecticides. Educational program is to be started.

Pest Interceptions from Abroad Increase

Review of USDA's inspection activities for past decade shows **big increases in opportunities for new plant pests to enter U. S.** Between 1947 and 1956, the number of aircraft inspections increased by 62%, vessel inspections 23%, railway car inspections 41%, and vehicle inspections 156%. Interceptions of unauthorized plant material jumped 101%, to nearly a quarter-million last year. From this material, **destructive pest species were taken many times in fiscal 1956:** Medfly, 162 times; melon fly, 16; pink bollworm, 164; golden nematode, 26; citrus canker, 139; West Indian fruit fly, 110.

Promising New Herbicides

University of Minnesota results with **Simazin,** Geigy's new herbicide, are "promising." It gave satisfactory weed control in corn in both pre- and post-emergence application, without any damage to corn. Workers there also find **2,4-D butyric and MCP butyric** to give some control of sow thistle and **Canada thistle. CDAA** was termed particularly successful in pre-emergence control of grass weeds in soybeans and corn.

- Measuring the rates of solution of calcium phosphates and fluorapatites in dilute phosphoric acid solutions gives information about the complex chemistry of phosphates in soil systems (**page 266**)
- A boron compound with a solubility somewhere between those of borax and borosilicate glass is needed to supply that minor element to growing plants (**page 275**)
- Location and distribution of organic pesticide compound in a powder formulation can be determined by deliquescence method (**page 279**)
- Rapid scanning spectrophotometer detects adulteration of vanilla extracts and offers promise for quality control (**page 292**)