provisions of the Defense Production Act. To establish goals for this plan the USDA undertook a study with the objective of determining the requirements for the three major plant nutrients. The USDA's estimates of agriculture's requirements were then forwarded to the Office of Defense Mobilization for consideration in establishing industrial expansion goals.

The regional requirements projected by the USDA study are depicted on the outline map. In August 1953, the USDA estimated that total agricultural requirement for nitrogen in 1956–57 would be 2.435 million tons. Subsequently the ODM established an expansion goal of 2.93 million tons of nitrogen for 1955. Various companies promptly filed for certificates to construct the facilities needed to meet this production goal. The expansion program was opened up for review again last winter when government groups expressed their doubt that the planned production goals would be satisfactory to meet the demands of a national mobilization. Another survey of nitrogen capacity was undertaken, and a new expansion goal was established by the Government, over the objection of industry representatives. The new goal was set at 3.5 million tons of nitrogen by 1957. Despite the fact that the industry had expressed opposition to increasing production capacity, applications for tax amortization certificates exceeding the new goal were filed almost immediately.

Under the Certificate of Necessity program (see AG AND FOOD, March 3, page 227; June 7, page 603) rapid amortization advantages were granted for construction of facilities capable of producing 3.78 million tons of nitrogen per year. If all the certificates are used and the production facilities are completed by the target date, Jan. 1, 1957, there may be more than an ample supply of nitrogen available in 1957. It seems certain that the original goal of 2.185 million tons, for 1955 based on the USDA's estimates, will be met, the current estimate of supply predicting 2.2 million tons.

Many observers believe that the revised goal of 3.5 million tons by 1957 will also be met. This upward revision of the original goal is apparently based on an estimate of more than "normal" requirements. If the extra tonnage is available there may be about a half million tons of nitrogen capacity in excess of predicted requirements. Since the original government-subsidized expansion program was closed several additional companies have expressed interest in the high nitrogen boom. Standard Oil of Ohio, and Standard of Indiana combined with Sinclair Oil have announced plans for construction of nitrogen production facilities.

U. S. Fertilizer Supply

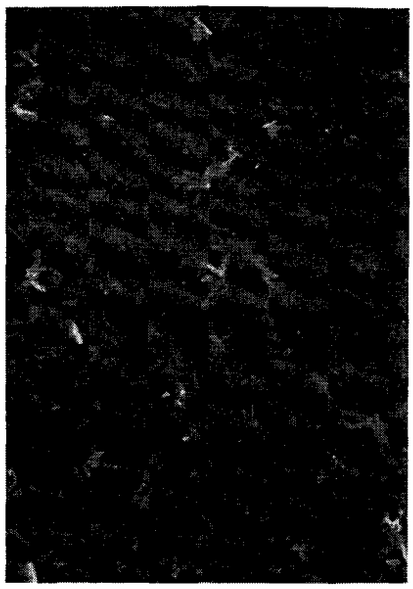
	1954–55	1953–54	1952–53
Nitrogen (Supply thousands of tons)	2,200	2,020	1,804
		Distribution, %	
Ammonium nitrate, all grades	23	24	24
Ammonium sulfate & ammonium sulfate nitrate	18	20	22
Other solids	13	12	14
Natural organics	2	2	2
Ammoniating solutions	18	18	20
Ammonia for ammoniation	5	5	5
Ammonia for direct application	18	17	12
Solutions for direct application	3	2	1
Phosphate (Supply thousands of tons)	2,350	2,364	2,414
		Distribution, %	
Normal superphosphate	65	68	71
Concentrated superphosphate	22	20	19
Other	13	12	10
Potash (Supply thousands of tons)	1,970	1,830	1,739
		Distribution, %	
50–60% Muriate	91	90	91
Sulfate	7	7	6
Miscellaneous	2	2	2

Gnat Eradication Project at Clear Lake, Calif., Called Success

20,000 gallons of insecticide used to relieve plagued residents in resort area

CALIFORNIA's largest fresh water lake was recently the scene of the largest larva control project of water infesting insects for the second time in six years. Renowned as a resort and fishing area, Clear Lake is located north of San Francisco, has an area of 41,000 acres, and ranges from shallow to fifty feet in depth. The Clear Lake gnat (*Chaoborus astictopus*, C. and S.) has been an economic problem to local residents and tourists in the area for many years and size of the infested area proposed many problems in eradication.

Six barges such as the one below were used to apply 20,000 gallons of insecticide over the 853,624 acre feet of water in clear lake. The skipper of each barge had two helpers



A day or two after treatment, floating larvae were observed on the surface of the lake. In some cases hundreds of larvae per square foot were concentrated on the surface of the water

By 1949, concentrations became so great that Clear Lake became known as the gnat capital of the world. Estimations of the gnat population were as fantastic as the numbers which one could observe swarming over the shore and as far inland as six miles during early evening hours—one report indicated that a million pounds of gnats left the mud at the bottom of the lake each season. In addition to invading homes and business establishments (being small enough to pass through screens), the gnats caused much other damage and annoyance and resulted in hordes of spiders that infested the area to feed on them.

After laboratory and field tests, Lake County Mosquito Abatement District used 14,000 gallons of a 30% TDE emulsion, dichlorodiphenyldichloroethane, to eradicate the pest in 1949. Results showed that this formula was 99.99% effective with little damage to the lake's high fish population. Treatment indicated complete eradication in the main lake. At that time, all larvae infestations were in water at least 10 feet deep. Many shallow outlying ponds were also infested. Many of these were difficult to treat adequately because of location or excessive weed growth, and a complete eradication was impossible within budget limitations.

During 1952 larvae were again found in Clear Lake. They were then concentrating around the edge in shallow water—apparently a separate strain that had developed in the shallow ponds and lakes. By August 1953, the infestation had developed to annoying proportions during one 2-week period. Major infestation was still concentrated in shallow water but adaptation to deep water was starting. During 1954, the infestation increased and was annoying to residents during the entire summer. A public indignation meeting sparked retreatment in spite of cost. Sept. 25 and 26 were set aside as gnat eradication days.

Gnats

The mechanical problems of distributing the insecticide over the surface of the lake so that it will be uniformly distributed in the lake water are difficult, wave action and water currents being important factors. The basic reason for the control obtained may be the habit of the larvae to migrate to the upper surface waters of the lake during the night. During daylight hours the gnat larvae are embedded in the mud of the lake bottom and laboratory experiments had indicated that it would be impossible to kill them in the mud. However, it was found that the larvae migrated upward when the water temperature of the lake was between 74 and 78° F. Thus, the control program depended for its success on a close cooperation between entomologists, weather experts, and the applicators.

Because of possible development of resistance and difficulty of contact in shallow, weedy water, dosage in 1954 was increased to 1–50,000,000 actual Rhothane D-3. Approximately 20,000 gallons of the insecticide was used. Cost was $38,000 to $40,000 for the insecticide plus $18,000 to $20,000 for labor. Early indications are that complete control has been realized and California Fish and Game authorities say that preliminary investigations show that no immediate damage to fish resulted.

Full Cooperation Required for Drafting Uniform Food Additive Law

AMSTERDAM.—Committees existing within the framework of WHO and FAO should take the lead in making legislation pertaining to food additives more uniform throughout the world. This procedure today is considered more workable than formation of a new supranational organization (such as the Schuman coal and steel community) as a regulatory body, says J. F. Reith, Pharmacy Laboratory, Utrecht. He spoke before the Third International Congress on Nutrition, held here Sept. 13 to 17.

First step towards uniformity is to collate facts behind existing legislation in the important countries of the world, declared Reith. It is necessary to make available translations of food legislation into one or two of the most generally spoken languages. To these translations mu t be added extensive background notes outlining reasons for any peculiarities. The information should be classified as to the food to which it applies and additional data should be collected on specific foods, where required.

Chemical and physical methods of analysis must be perfected and standardized. This was a point emphasized by several speakers during the sessions on chemical additives. Glaxo's A. L. Bacharach declared that solution to chemical analytical problems should precede any legislative restrictions, and pointed out that few biological methods are satisfactory for modern food production control.

Trace elements in foodstuffs present particularly difficult analytical problems. In France, the Société des Experts-Chimistes has set up a commission to study the toxic effects of trace elements and to offer advice for new legislation. Paris consultant Louis Truffert reported that the following elements had been found toxic and that tolerable limits in specific foodstuffs had been set up for them: antimony, arsenic, cadmium, fluorine, lead, selenium, and zinc; mercury is currently under investigation. General limits have been recommended for the following elements which are considered nontoxic: aluminum, chromium, copper, tin, iron, and nickel.

In addition to the chemical and physical methods required for day to day control, new toxicity tests must be devised and standardized for any questionable additives. Reith believed that setting up a new European laboratory for such testings was not practical. He preferred distribution of the work among the existing research centers.

In an earlier paper, J. N. Barnes, British Medical Research Council pointed out that toxicity tests must include studies on absorption, distribution, excretion, and metabolism. Barnes criticized the usual long-term animal feeding tests; he suggested that such tests were probably very inefficient ones for detecting abnormal responses. He made a plea for more widespread use of subacute toxicity tests with a more careful examination of any positive findings so disclosed.

As a further step in the international program, Reith went on to suggest that a positive list of tolerated additives be prepared. The aim should be to approve the smallest number of chemicals possible. Any additions to this list should be