Research, Education—Keys to Resources for the Future

Lowering of price supports for better balance of crop production recommended

Liberal tariffs and imports quotas should be maintained, say delegates to working conference

WASHINGTON.—Increased research and education were the two recommendations reported by the working sections of the Mid-Century Conference on Resources for the Future which met here Dec. 2–4.

The objective of the conference was to survey the natural resources of the U. S. and the demands which will be placed upon these resources in the next quarter of a century. The conference was initiated by Resources for the Future Inc. and financed by a special grant from the Ford Foundation. Approximately 1500 delegates from all parts of the nation participated in this working group.

To facilitate the work of the conference the general problem of the future resources of the U. S. was broken down into eight separate areas, most of these were in turn divided into from two to four subsections, which met as discussion groups.

Several of these subsections were concerned with the requirements on agricultural production and chemical technology in the future development of the American economy.

A complete survey of the nation's agricultural resources was one of the recommendations of the section of the conference which discussed the competing demands for use of rural land. At present there is no accurate data on the true rural land resources of the U. S. and it was thought that only when we truly determine the quality of this resource can we effectively utilize it.

Discussion of the competing demands for rural agricultural land revolved around the economics of farm land utilization. It was pointed out that about 40% of the present farm population produces about 90% of the nation's total agricultural product. About 30% of the total farm population produce a relatively small part of the total farm product. This low production is due either to poor techniques or marginal land. On about 1.5 million acres in the South, New England, and the Intermountain West, farm families struggle along spending too much labor on small farm units with insufficient capital to provide for farm machinery and fertilizer. It was generally agreed that educational and credit programs should be instituted to correct this lack of economic balance.

Agricultural Surpluses. The problem of agricultural surpluses may be with us for years to come, according to some participants in the conference. Others, however, expressed the view that the present domestic crop surplus problem is the result of temporary conditions created by the greatly increased demands of World War II.

The adoption of price supports at a somewhat lower level was proposed as a method of attaining a better equilibrium of crop production. Other specific measures suggested by the conference to alleviate the surplus problem included: an increased emphasis on production of livestock feed in the corn belt and eastern plains, increasing summer fallow in the high plains wheat areas, returning some wheat land to grass and encouraging greater diversification in the cotton region of the South.

Another viewpoint expressed was that an acreage adjustment program should be designed to achieve the maximum reductions on poor lands. It was recognized that many difficulties would have to be overcome before this idea, eventually to reduce the submarginal producers could be adopted.

World Resources. The section on United States concern with world resources principally considered the policy this nation should adopt for the most efficient utilization of raw materials resources overseas.

The problem of national security for the U. S. was agreed to have a direct influence on almost all aspects of the issue considered by this section.

In general, the section seemed to believe that the present liberal tariff and import quota policy of the U. S. should be maintained. This commercial policy was thought to be generally appropriate for the maintenance of a balance between foreign and domestic sources of raw materials.

On the policy for the development of these overseas resources there was a discussion of the relative roles of private enterprise and the Federal Government. In general, the middle view between these two theories would seem to be that private enterprise should be the primary agent for this foreign development, but the Federal Government should back up the private agencies not only by financing and technical assistance but also through the medium of such lending agencies as the Export Import Bank and the International Bank.

Land Resources for food Production. The need for research and education was emphatically agreed upon in all groups of the section dealing with utilization and development of land resources. While opinions varied as to the most effective procedure for making use of research ideas, there was virtually unanimous support for the idea that better technical development is the most likely avenue to more satisfactory utilization of our resources.

It was noted that the need for food

Farrington Daniels (left) presents the report on energy resources at the final session of the Mid-Century Conference on Resources. Listening are Edward S. Mason, Harvard University, and the chairman of the conference, Lewis W. Douglas

probably will increase 40 to 50% during the third quarter of this century. This will call for production increase during that period equal to the increase effected during the preceding 25 years. The main question is how to increase output most efficiently and at low cost. It was estimated that the increase of crop land probably will not be economically practicable beyond about 10%. Attention was called to the observation that with some crops we have reached a plateau in the curve of production increases which can be effected through the application of existing scientific knowledge. While more effective efforts to bring improved techniques into application—increased use of fertilizer, agricultural chemicals, machinery, and other technical aids—can be an important factor, we must increase our basic knowledge by further research.

More Fertilizer Use Needed. The use of greater amounts of fertilizers, including minor elements, was emphasized as a great need. This was called for not only on the basis of economics, but also of social responsibility for nutrients are being removed from the soil faster than they are being replaced. Understanding of the optimum combination of uses for land was generally considered far below that which is needed and particular attention to research was urged for this matter.

Water-surfaced lands were pointed out as under-rated sources of both recreational and food production values. There are about 30 million acres in the United States covered with water. Much better recreational use could be made of this land and food and fur production use is significant and increasing.

Timber and Wood. Research in fire prevention and control, pest control, reforestation, and forest management is a federal responsibility in the opinion of a majority of the participants in the discussion in the timber and wood products subsection, but it is not exclusively so. Private industry should give greater attention to applied research, it was agreed, while government should concentrate on basic studies. But it was noted that recent trends in both bases have been in the opposite directions. The areas of greatest need for research appear to be in pest control; watershed management; biology, including forest genetics; utilization of low quality woods; and economic aspects of forest management.

A good transportation system appears to be the most severe need to aid prompt and full utilization of the resources of our national forests. Other outstanding needs are simplification of timber sale procedure, speedup of timber inventories, and more advanced engineering and timber management planning.

Direct Application of Agricultural Ammonia to Double by 1956

New crops and new geographic areas to benefit increasingly from improved supply and distribution pattern

ST. LOUIS.—One of the agricultural industry's youngest offshoots again proved itself one of the fastest-growing, when the Agricultural Ammonia Institute paused to take stock at its third annual meeting here last month. Although the use of anhydrous ammonia for direct application to the soil had its commercial beginning only in 1947, annual volume has already increased to a level of 250,000 tons and is expected to reach 500,000 tons per year by 1956. The AAI itself, only three years of age this month, has paralleled in growth the chief stock in trade of its member companies. Members now number over 300, and nearly 700 persons attended the St. Louis meeting.

Rapid growth of the agricultural ammonia industry has been accompanied—and promoted—by a broadening of the geographic scope of its operations. From its early start on cotton in Mississippi, where a practical, efficient method of applying anhydrous ammonia to nitrogen-hungry cotton was perfected, it spread to other southern crops—corn, sugar cane, small grains, and pasture grasses—and into the nation's "bread basket," the Great Lakes and Great Plains farming regions which produce most of the nation's corn and wheat. Vegetable growers in the East similarly recognized in anhydrous ammonia a simple and efficient means of improving the productivity of their land. Attendance at the St. Louis meeting of ammonia dealers and prospective dealers from the Mountain and Far Western states indicated that agricultural ammonia has now found its way into virtually all corners of the land.

Predicting that agricultural ammonia would double its current application rate of 250,000 tons per year by 1956, Grace Chemical Co.'s C. J. Bown indicated that the industry's worst growing pains are past, and that with continued effort and attention to proper application the future potential of the industry is almost without limit. Bown's firm, the recently-formed Grace Chemical Co., typifies the industry's optimism toward the future; the company's new $20-million plant now under construction at Memphis, Tenn., will begin production of 72,000 tons of ammonia per year by next fall.

Already established as an adjunct to the improved growth of corn and cotton, said Bown, agricultural ammonia also shows much promise of providing similar benefits for other crops, and in time should gain a preferred place for use on a number of them. In most situations, he noted, anhydrous ammonia is equivalent to other sources of nitrogen for all crops. In general, it appears that agricultural ammonia will be most advantageous if:

1. The crops under cultivation require fairly high levels of nitrogen for optimum yields—corn for example.
2. Other plant nutrients are adequate, and only nitrogen is required for the soil under treatment, as in the Mississippi delta.
3. Medium to large acreages are to be treated.
4. The necessity for nitrogen side dressing is indicated by soil tests.
5. Special application methods, such as flood irrigation, are to be used.
6. The crop under treatment is one which prefers the ammoniacal form of nitrogen, as does rice.
7. Fall application for spring crops seems advantageous.

Agricultural ammonia naturally has its limitations, Bown cautioned, and should not be used in fields where soil conditions hinder direct application. Tight clays and steep or stoney land do not lend themselves well to direct ammonia application, and if the application equipment proves harmful or destroys a portion of the crop, other methods of fertilization are obviously preferable. The rapid broadening in the range of use for agricultural ammonia should continue, said Bown, as educational programs take effect in areas which have previously had very little or no ammonia available for use.

It is significant, Bown noted, that ammonia producers are currently much more interested in selling to the agricultural ammonia industry than they have been in years past. The industry has proved itself to be economically sound and to have a large growth potential; producers thus have come to look upon the industry as a solid, permanent market, rather than as an outlet for occasional surpluses. With this realization have come marked improvements in distribu-