

	USERS	NONUSERS	ALL FARMERS
Characteristics			
Number in sample	365	167	532
Average size farm (acres)	204	165	192
% owners or part-owners	56	56	56
% renters	44	44	44
Average owned capital (dollars) ^a	31,751	19,807	28,002
Average age of operator	43	49	45
Average years farming experience	18	22	19
Education			
% grade school only	48	64	53
% some high school	45	34	42
% some college	7	3	6
% Believed Fertilizer Has:			
Beneficial effect	87	63	80
Harmful effect	4	10	6
Effect not known	8	27	14

^a Owned capital is the cash value of the farm (if owned), livestock, feed supplies, machinery and equipment minus any mortgage or indebtedness.

This table from the Iowa study shows that a fertilizer user can in general be characterized as having more capital, a larger farm, more education, and fewer years of experience than the nonuser. He is also younger. Whether he owns the farm or not makes no difference

tistics, and economics department, along with TVA's agricultural relations division, prepared the questionnaire and analyzed the data.

In their report, which became available recently, the causative factors involved in acceptance of a practice are placed in four groups—mass media (newspapers, radio, TV, and magazines), agricultural agencies (extension service, state colleges, county agents, and others), neighbors and friends, and salesmen. The report also lists four stages in the farmer's acceptance: awareness, interest, trial, and acceptance. In creating awareness and interest, mass media ranked first in importance and agricultural agencies as second, with neighbors third. In trial and acceptance, neighbors move up to first place in importance, with agricultural agencies remaining in second place, and mass media moving into third. Salesmen ranked fourth throughout.

The firm second place through the four stages of acceptance held by agricultural agencies and the tremendous lead taken by them when it comes to information about a new fertilizer emphasizes the importance to fertilizer and agricultural chemical manufacturers of working through and with federal and state agricultural experts. This is a well recognized and widely practiced procedure.

The importance of neighbors and friends in clinching acceptance illustrates the importance of demonstrations and of identifying and selling the community leader—these are the steps necessary to start to get the ball rolling.

Farmers fall roughly into five different types in relation to their acceptance or nonacceptance of new practices: the innovators, the early adopters, the infor-

mal leaders, majority, and the non-adopters.

The innovator is the fellow who is usually knocking on the laboratory door to find out when a new practice will become available. Apt to be reckless in his driving desire to be "first," he is usually criticized by his neighbors. However, he usually does have high social and economic status in the community. Although not to be confused with the leader, he appears to be the first stop on the road from laboratory to farm acceptance.

The early adopter is characterized, educationally, socially, and economically with the innovator, the only difference being that he is somewhat more cautious in adopting new methods and is not possessed of the drive to be first. The innovator and the early adopter are seldom mentioned by farmers as a causative influence in practice adoption.

The informal leader is the next type to accept a new practice, and, although not elected or appointed to leadership, he has many followers in his neighborhood—he is the "average" farmer with average education and experience, has a medium social and economic position, and reads an average number of magazines and papers. When a new practice is accepted by the man, it is "over the hump," the next step being adoption by the majority, who are usually older and have less education than average. They read fewer magazines and newspapers and participate less in agency programs.

The nonadopters are differentiated from the majority by being somewhat older with less education, having relatively less social and economic position, and participating even less in farm organizations and agency groups.

Another trend that is suggested in this

report is the increasing importance of the fertilizer dealer and salesman. Only 4% of the farmers interviewed credited this group as the primary influence leading to acceptance of fertilizer use. However, 12% of the farmers indicate they would seek information on new fertilizers available from this group. Evidently farmers recognize that this is an era of rapid technological change in fertilizer and some of them expect fertilizer dealers and salesmen to have technical information and literature available.

Potash Market Faces New Era

Saskatchewan development could improve competitive position of North American producers in relation to European cartel

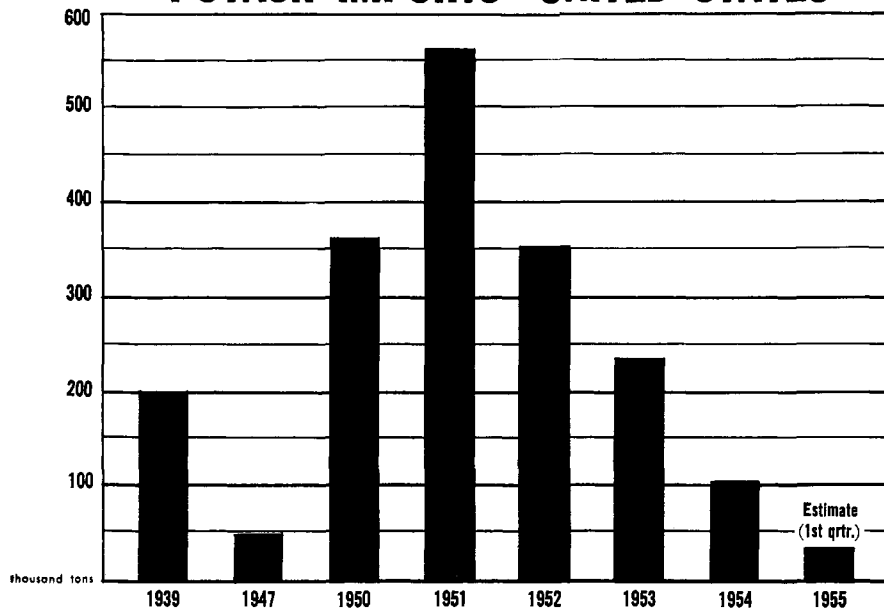
NORTH AMERICA may become a potash exporter within the next few years. The export future hinges on potential development of huge deposits in Canada. Investments are now being made for exploration and development with the aim of getting production in the near future. Canadian production when and if it comes in could be enough to wrest the balance of market control from the European potash cartel.

At this writing no potassium salts in commercial quantities have been recovered in Saskatchewan; still, four companies there are actively engaged in exploring what both American and Canadian potash interests call the largest, or next to the largest, reserve of these salts on the North American Continent.

The Saskatchewan potash is not as easily recoverable as the potassium ores in the Carlsbad, N. M., field. One company working the Canadian find, Campana, Ltd., has just been reported as striking a potash bed approximately 100 feet thick at the 3600-foot level near Wilkie, Sask. This may call for engineering and mining techniques not used heretofore in this industry.

By contrast, langbeinite ore has been reached in Carlsbad at the 800- and 850-foot levels, and sylvanite at 900 feet. Just what measures will be employed by the Saskatchewan companies to recover their salts and refine them profitably has not been disclosed in any detail thus far. In addition to Campana, Ltd., just mentioned, other firms active in the Canadian potash venture are the

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western Potash Corp., Ltd; the Potash Company of America; and the Duval Sulphur and Potash Co. The last two are American concerns. Western Potash appears to be a Canadian-American project that will be financed in both countries under the direction of F. H. McGraw and Co., to the extent of \$17,500,000. At mid-June 1955 this had not yet been arranged. Financing must be completed by July 5.

Others reported contemplating development of Saskatchewan potash are International Minerals and Chemical Corp., Poplar Oils Ltd., and Palmer Drilling Co., Ltd.

An idea of the costs involved will be seen in the story published by the *Toronto Financial Post* last month that Potash Company of America is spending \$3,000,000 in sinking a shaft near Saskatoon. The shaft is concrete-lined and freezing operations will be employed to reach the potassium deposits more than 3000 feet down. Before it suspended operations pending financial arrangements, Western Potash had sunk a shaft in the Unity area about one-third down to deposits at the 3400-foot level.

What will be the effect of the Canadian development in the world potash market assuming it is eventually brought to a large-scale producing basis? It may be tremendous, according to the more enthusiastic. In their view the Saskatchewan and New Mexico deposits are large enough to swing the balance of world market control to the North American Continent, with export surpluses over our domestic needs. This would mean for the first time a reversal of the potash movement of former years, when European potash dominated the markets.

The European cartel is now made up of Spain, France, and Western Germany, and while the United States brought up its production from virtually nothing after the first World War to around 3,500,000 tons annually, our exports hardly offered any competition in foreign markets. There is also the production of countries independent of the cartel—Israel, East Germany, and the U.S.S.R.

Our exports of potassium salts have been restricted to such nonproducing agricultural countries as Japan, Brazil, Mexico, Australia, and Cuba. These have been placed at 12,000 tons for 1953-54; 52,000 tons for 1954-55; and 100,000 tons for 1955-56. Omitting what potential exports may result from Canada's new industry, some feel that the American industry should be able to export about 10% of its yearly production, or approximately 350,000 tons. This goal, it is believed, may be reached by 1960.

This export figure may be reached or surpassed sooner than that, in the view of those concerned with American potash exports. A great increase took place in export shipments this year. Those for the first quarter of 1955 were around 40,000 tons, or 14 times greater than the potash exported during the corresponding period a year ago. This indicates to factors in the business that as far as potash exports are concerned the industry is cutting its eye teeth.

Our potash exports are even meeting about one half of Canada's requirements, or 30,000 tons on a K_2O basis. The remainder is supplied by European producers. This picture, of course, must change drastically when the Dominion is placed on the map as a source for the potassium salts.

American interests appear to dominate in that development at this stage, and there is no doubt that it is a welcome participation. The future may find Canada and the United States partners in a new world market venture, or it may find both in competition with each other in international potash trade. It took the United States many years to attain the position of a potash exporter. The trial will be much shorter for Canada.

Ammonia Safety

Industry moves toward standard anhydrous ammonia handling practice, although points of contention still exist

AMMONIA EQUIPMENT manufacturers are faced with a 15-pound area of disagreement among distributors and producers. The argument continues to pop up over whether storage tanks should be designed for pressures of 250 or 265 pounds per square inch. But for a product as new as agricultural liquid ammonia, the number of such areas of disagreement is small.

Anhydrous ammonia (and ammonia solutions) handling and storage standards, drawn up by the Compressed Gas Association, were submitted recently to the American Standards Association for adoption as an American Standard. This does not mean that all bodies who have prepared such standards agree on every point, but it does show that the industry is moving gradually toward a set of universally accepted practices for handling this useful though somewhat hazardous fertilizer.

While the lay public regards ammonia mainly as an obnoxiously fragrant gas, it can be lethal within a few minutes in concentrations of 0.6 to 1.0% by volume in air. Fortunately, it is detectable by nose at concentrations (50 parts per million) far smaller than this, and drives most people away before any physiological damage is done. The real problem is that anhydrous ammonia is a compressed gas, and must be handled accordingly. It is flammable between 16 and 25% concentration by volume in air, but such concentrations seldom occur at the distribution level, and combustion difficult to induce even within the stated theoretical limits.

Among those who have established anhydrous ammonia handling standards are the Agricultural Ammonia Institute, the Manufacturing Chemists' Association, the National Safety Council, and, of course,