

in the ground all winter without decaying, allowing the farmer to harvest it at his own convenience," says Julian Miller, head of horticulture research. He indicated the yam contains more of the compound (5%) from which cortisone is made than any other plant found in a recent world-wide USDA search for plants beneficial to health.

The plant was brought to the LSU Experiment Station three years ago; horticulturists are attempting to improve its productivity by breeding and selection. University researchers have grown almost 500 seedlings, and have reduced this number to 20 promising varieties.

Yams already produced at LSU weigh as much as one pound, but the search continues for a seedling capable of producing two-pound yams each season. Planting stock will not be made available to the public for at least two years, until further research can be completed, but several drug companies have already indicated they would be interested in establishing cortisone extraction plants in Louisiana.

## Nonmuriate Potash Salts

**Potassium chloride remains major potash salt, but there is a place for other forms**

**W**HILE POTASSIUM chloride accounts for most of the potash fertilizer used in the United States, there is an increasing interest in other forms of potash for certain applications. Sulfate, now supplying between 5 and 10% of the total, is the second most important potassium salt, and except for some imported nitrate is the only other salt of any real commercial importance at present. Three U. S. companies are producing potassium sulfate to satisfy the rising demand. One of these, International Minerals and Chemical, has recently increased production by 40,000 tons per year to reach a level of 150,000 tons. A similar increase was accomplished the previous year, and plans have been made for future expansion when demand requires it.

Traditional use of the sulfate has been for crops (such as tobacco) where chloride toxicity is a problem. Potatoes, whose increases in yield from fertilizer application are unfortunately combined with some quality reduction in the form of low starch content, show much better results when potassium sulfate rather than chloride is used. In California the sulfate is used for fruit and nut crops.

In Michigan sulfate shows promise for use in sour cherry orchards, while in New York State an improvement in grape quality has been indicated. Sweet potatoes and a number of other vegetable crops are good prospects for potassium sulfate salesmen.

In the Midwest there have been indications of chloride toxicity in corn treated with starter fertilizer containing potassium chloride. Attack on this problem so far, however, has consisted not of using non-chloride forms of potash, but of applying potash once or twice in the crop rotation cycle and keeping it out of the row. There is still a possibility of applying part of the potash in the starter mixture as sulfate.

Potassium salts whose anions are useful plant nutrients instead of the more-or-less useless, or occasionally even toxic, chloride would be very desirable in many cases, provided their prices were sufficiently low. Potassium nitrate is such a salt. Agronomically it might be ranked at the top of the list of potash salts, but its high price generally confines it to home garden formulations. The nitrate as well as some of the phosphates, should also be useful in liquid fertilizers, where it is desirable to keep salt content as low as possible to decrease salting out.

If available at low enough price, potassium carbonate would also be quite desirable in liquid fertilizers because of its high solubility. With muriate a 6-6-6 complete liquid fertilizer is about the highest analysis obtainable without risk of salting out. Using potassium carbonate this could be raised to perhaps 12-12-12. In an acid mixture the carbonate would be decomposed and

carbon dioxide would be given off, lowering the salt content while keeping the nutrient content the same.

International Minerals and Chemical is currently developing a low-cost process for making carbonate, and expects to be in production within four or five years—perhaps sooner. The company expects the product to be well accepted for a variety of applications because of its high  $K_2O$  content and lack of any toxicity, but several problems remain to be investigated. For example it is not known what effect the presence of carbonate might have on ammoniation procedures for preparing mixed goods. Like ammonium nitrate, potassium carbonate also needs some conditioning treatment to prevent caking.

Potassium metaphosphate has been produced on a pilot scale by TVA. There has been some interest shown in this material, even though for all practical purposes it is insoluble.

The double sulfate of potassium and magnesium is sold for soils having a magnesium deficiency. This salt is found in nature as langbeinite, which is also used to prepare the sulfate by base exchange with sylvite (potassium chloride).

Potassium chloride, since it is the most commonly found natural potassium salt, will probably continue to be the basic potash fertilizer material. Conversion to other salts is usually too expensive to give products priced low enough for general use. However, as fertilizer application and manufacture become more specialized, there will be a growing market for potash salts other than the muriate.

### Shell Weedkiller Eradicating a Floating Menace in Ceylon

Before and after pictures from Ceylon where a water weed called salvinia is threatening agriculture and health by choking up paddy fields, irrigation canals, streams and reservoirs. Shell Petroleum Co., Ltd., has developed a weedkiller, being sprayed from a pontoon-floated tank, of pentachlorophenol, and wetting agents in an oil emulsion. Because of the density of the foliage 10 gallons of the weedkiller and 190 gallons of water have to be sprayed on every acre. A second spraying may be necessary to achieve results shown on the left. The Ceylon government is considering a five-year program costing about \$210,000 a year to eradicate the weed

