

4-percent nitrogen. Varieties of sugarcane had to be developed that had very low efficiency in using this excess nitrogen so as to enable sugar to accumulate.

This is part of the natural growth processes. If the plant is using too much nitrogen, it will not accumulate sugar or carbohydrates. This may be why there is some complaint about the poor quality of New England potatoes at the present time. Too much nitrogen?

We can develop varieties of plants that have much higher efficiency in the use of the nitrogen. As a matter of fact, this is what has been done in the last few years by the Rice Institute in the Philippine Islands. They developed varieties of rice with a very short stalk which will not fall over when given high levels of nitrogen. The varieties are not responsive to day length, so they will produce crops every 90 days regardless of time of year; and they will respond to and use very high levels of nitrogen application. As a consequence, the Rice Institute of the Philippines has been producing 200 bushels of rice per acre every 90 days on their experimental fields.

India's average yield of rice per acre is now about 25 bushels per acre. Think what it means in terms of world food needs to develop rice varieties that have high efficiency in the use of available nitrogen together with the tremendous potential for high yields.

Mr. DADDARIO. That is very interesting. I am always amazed that you people can do these things.

Dr. WADLEIGH. Thank you.

Mr. DADDARIO. We are very proud, in New England, that we do have people who have an interest in this. Some of our great seed and food crops have originated through research done in New England. We sometimes take a little more credit in Connecticut than we should, but we keep it in the New England area.

Mr. Grant, will you continue, please.

ANIMAL WASTES

Mr. GRANT. Domestic livestock produces wastes. For example, the 125 million cattle on our farms and ranches produce over a billion tons of solid wastes and over 400 million tons of liquid wastes. About half of these wastes are produced in concentrated supplies such as in barns, barnyards, and feedlots. Offensive odors may arise from these wastes. Piles of manure may become breeding grounds for flies and other pests. This manure may be a carrier for infectious agents. If it drains into streams, it may deplete the oxygen by its biochemical oxygen demand.

A large cattle operation such as a feedlot carrying 20,000 head must dispose of 550 tons of manure a day.

Mr. DADDARIO. What are we going to do about it?

Mr. GRANT. This is a problem which is related to many of the things that are being done in the Department. We feel that the relationship between this problem and the land use practices which we are putting on farms to curb erosion and reduce the amount of runoff that gets into streams is a part of the problem. There are many other possibilities which, again, I would say Dr. Wadleigh has investigated very carefully and I am sure he would be in a much better position to indicate the extent of involvement of the Department in this important area.