especially per unit of product, are practices which operate best in terms of increasing yields per acre, or better still, aggregate output for the farm as whole; and second, farm expenditures for fertilizer do tend to vary directly with farmers' cash receipts from year to year, even though there is a long-run trend toward increasing use of fertilizer. These facts underline the common interest of farmers and farm suppliers in finding ways and means of increasing the farm market.

Organic Farming. Although he cannot agree with many of the extreme views of the organic farming enthusiasts, Richard Bradfield of Cornell said that he did agree with them on the importance of soil organic matter on the maintenance of good soil structure. Dr. Bradfield said that farming under modern conditions of plentiful supplies of chemical fertilizers and increased mechanization requires the frequent application of fresh organic matter to the soil. If fresh organic matter is added frequently and regularly, he said, farmers need not worry about the total organic matter content of the soil. It is not a question of organic or chemical fertilizers, he stressed; both are essential and as inseparable as Siamese twins. Dr. Bradfield's paper is presented on page 1216 in this issue of AG AND FOOD.

NFA-APFC Consolidation. One more step was taken toward the consolidation of the National Fertilizer Association with the American Plant Food Council when NFA members voted almost unanimously and finally made approval unanimous for consolidation into the National Plant Food Institute. The final step needed for the approval will come Dec. 1 when the APFC membership meets in Washington, D. C., to vote.

Hundredfold Beef Increase Possible Through Grassland Management

JACKSONVILLE, FLA.—Beef production per acre could be increased in some areas 100 times over that gained from unmodified natural vegetation if known methods of improvement were all applied under optimum conditions. Experiments at the Coastal Plain Station, Tifton, Ga., are showing several practical methods of making forage crops strikingly more productive. Combinations of those results offer a potential beef yield that makes present averages seem almost primitive.

High level nitrogen fertilization has nearly doubled the pounds of beef per acre over what is now considered good fertilizing practices, while there is indication that supplemental irrigation can boost this another 50%.

Known techniques of grazing rotation already are giving 50% increases in beef yield and the addition of winter grazing crops have added considerably to the production from pasture lands.

Water and Nitrogen. Glenn Burton of the Coastal Plain Experiment Station, USDA, told the Joint Committee on Grasslands Farming that while all of the known improved practices for glasslands management might not be combined practicably or economically on any given site at the present time, there certainly is good opportunity for improving productivity on most grazing areas. With rainfall 37% above normal in the Tifton area in 1953, hay yields were increased from 10.8 to 12.1 tons per acre by increasing the nitrogen application from 400 to 800 pounds per acre. By increasing nitrogen to 900 pounds and clipping at six-week intervals rather than more frequently, the yield was 15.4 tons per acre.

Yields of beef per acre were used by Dr. Burton as a scale to indicate the possibilities for increased pasture land production. With coastal Bermuda grass fertilized with 200 pounds of nitrogen per acre, the average production of beef was 696 pounds per acre; 800 pounds of nitrogen per acre could increase this to 1044 pounds, he said. On the basis of increased rainfall during the 1953 season, he estimated that adequate supplemental irrigation could bring the beef yield up to 1500 pounds per acre.

Rotational Grazing System. Using the Dutch system of rotational grazing in which grass is allowed to grow several weeks, then grazed down in a single day, can give production increases as high as 50%. Adding this factor, Dr. Burton got an increase of beef production to 2250 pounds per acre. All this was based on an April 1 to Oct. 31 grazing season. In the winter of 1951–52 the Alabama Experiment Station produced 430 pounds of beef per acre on a mixture of rye grass and crimson clover seeded on a coastal Bermuda pasture which normally makes little if any growth in the winter. This, added to the other beef increases produced by combining pasture management techniques could theoretically produce a yield of 2680 pounds of beef per acre, well over 100 times the production that might be expected from natural vegetation of the area.

Dr. Burton pointed out that this is the pasture potential in sight at present without even considering improved insect control and plant disease control.

Three special feature articles on grasslands improvement will be presented in AG AND FOOD, January 1955. Authors will be Drs. Sprague and Burton and Dr. Jack Harlan of Oklahoma A & M.

Howard B. Sprague, head of the agronomy department at Pennsylvania State University and chairman of the Joint Committee on Grasslands Farming, with Glenn Burton, Coastal Plain Experiment Station, USDA