

turn of \$12.12 per acre for an expenditure of \$14.40. In experiment 1 the 60 pounds per acre application of N gave 6.9 bushels more corn than 30, whereas, 90 pounds nitrogen produced 12.6 bushels more than 60. Likewise, in experiment 2 the 80 pounds per acre application of N gave 3.7 bushels more corn than 40, whereas, 120 pounds N produced 6.4 bushels more than 80. Thus, in both experiments, the second increment of applied nitrogen produced approximately twice as much yield increase as the first increment. In both experiments the highest applications of nitrogen were applied with a higher percentage as a side dress. This indicates a much higher return from the side dressed nitrogen than from that applied at time of seeding.

The leaf blight disease caused by *Helminthosporium turcicum*, Pass. was present, being most severe during the second experiment. The higher incidence of this disease is probably one of the major factors which contributed to the over-all lower yields of the second experiment and the smaller response to increments of applied nitrogen. Measurements made by Dr. J. F. Darby, Assistant Plant Pathologist, Indian River Field Laboratory, on the severity of this disease in the first experiment did not establish any relationship between fertilizer treatment and disease incidence. The need for varieties and hybrids with more resistance to helminthosporium leaf blights is recognized and an attempt is being made to meet this need through an extensive breeding, selection and testing program being conducted by the agronomists and pathologists of the Experiment Station. Better adapted

varieties may yield more bushels of corn for a given amount of applied nitrogen.

CONCLUSIONS

With the presently accepted fertilizer program for unstaked tomatoes growing on the sandy soils of the Florida lower east coast, a satisfactory yield of field corn as a spring crop following a fall crop of tomatoes may be obtained by applying up to 120 pounds per acre of soluble nitrogen. Most of the nitrogen should be side dressed in 2 or more applications. The tomato crop may be expected to have left sufficient residual phosphate and potash to produce maximum yields of corn.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to U.S. Phosphoric Products, Spencer Chemical Company, E. I. duPont Company and Tennessee Coal, Iron and Railroad Company for some of the fertilizer materials used in these experiments, and to Mr. T. E. Pennington, Laboratory Assistant, Everglades Experiment Station, who aided in the collection and analyses of all soil and plant tissue samples and prepared the various fertilizer mixtures used.

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THE TRAINING OF RETAIL STORE PRODUCE HANDLERS IN HANDLING VEGETABLES

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"Nothing sells merchandise like good merchandise." That is a statement that is known to be true by all good retailers. It is here that our great vegetable industry is weakest. So much of our produce that is offered to the consumer is not good merchandise. I know that most retailers can improve their techniques but they cannot sell quality produce

when quality merchandise is unavailable to them. Who is at fault? There is room for improvement throughout the entire industry.

Our vegetable producers cannot prosper unless they can find profitable sales for their products. Unless it is guaranteed that good quality merchandise is placed in the hands of the retailer, it is impossible to ever expect maximum profitable sales.

When it comes to the point of retail food sales, we find that the majority of the nation's food supply is being sold by independent

stores. Chain stores sell at a current rate of 38% of the food sales while independents reap 62%. However, when it comes to produce sales, the percentages are even more distorted. For instance, the United Fresh Fruit and Vegetable Association has found that 75% of all produce sold by retail stores is being sold by only 30% of the stores. It is obvious from figures like these that many stores are not carrying their share of the produce business. To emphasize this, it has been found that a great many independent stores do not carry any produce items other than potatoes, onions, and cabbage; even though this group of stores claimed the greater share of the nation's food sales.

Another important phase of retail operation that will interest us is the amount of waste and spoilage that takes place at retail level. The Bureau of Agricultural Economics has found that on the average an amount equal to 7% of produce sales are losses. A further breakdown of these losses reflects that larger stores are doing a much better job of controlling their produce losses than are the small stores. Losses in the larger stores average between 3 and 4% of their produce sales while the smaller store losses shot up to an average of 15% of their produce sales. We know from experience that good management and know-how can keep produce losses under control regardless of store size. As a further bit of information on produce losses some of the best educated estimates that we can find indicate that around a third of all produce harvested is never consumed as food. These estimates as to the amount of the harvested produce that are losses, range between 30 and 40%. That means that the vegetable producer is selling only two thirds of his products to consumers. The other one third being waste and losses in marketing.

Some of the things that we are doing in our produce merchandising program for retailers is to show them that a well managed produce department can be the most profitable department in their store. We encourage retailers to sell more fresh fruits and vegetables and waste less, using as an incentive greater profits. Actively training retailers in the arts of successful produce merchandising, in sound business principles, and effective displaying is also a phase of the retail merchandising program. We carry to the retailers information on research results that are pertinent to maintain-

ing the quality and condition of their products. This latter phase mentioned is probably one of the most important parts of our work because until recently retail food handlers have been left to shift for themselves without research results or technical training. The result has been that many undesirable and wasteful practices have come into use. Retailers are helped to organize daily produce activities, routines and techniques because we find that traditional habits are lasting. Once good habits are formed the effects of the training are continued on into time. To insure that new practices are continued we have a follow-through program in which the cooperating retailers are contacted after a lapse of time, in order to keep up their enthusiasm.

To report on the accomplishments of the program, it should be explained that the work with retailers is on a voluntary basis and that some of the improvements that are made are hard to measure. But I think we can boast of such things as making retailers more produce conscious and merchandise wise. We have been instrumental in having produce displayed and sold in communities where fresh produce had previously been unavailable. A majority of the stores that have cooperated in our training program have shown increases in their weekly produce sales. Also, we find that most stores show a greater margin of profit, which I think can be interpreted as reflecting less losses.

Now for a few things that I think we should know about selling produce. Some of these items mentioned are not confined to the retail level alone. The first that I would like to point out is the great amount of misunderstanding of terms at all levels of produce marketing. Terms that are so badly misunderstood are such things as grade, condition, and quality. Grade is composed almost entirely of physical visual factors, while condition generally denotes the freshness and appearance. Quality, on the other hand, is a much broader term and involves many different factors some of which cannot be seen as well as all those that go to make up grade and condition. A quick look at these three terms will reveal one of the greatest weaknesses of the produce industry. It is a combination of quality and sight that generally determine the consumers acceptance. Yet it is on a basis of grade and condition that produce changes hands throughout all other levels of our marketing system.

The hidden implications of this word quality that are not exposed by a definition of grade, leaves plenty of room for error between fresh produce at farm level and what the consumer sees in the retail store. Especially is this true when many marketing people cannot define quality. Another thing that I would like to mention is that this concept of profit as determined by retailers, is entirely different from what most of us would consider as profit. For instance, the historical accepted retail margin for produce departments is 25%, but the average of 7% losses that I spoke of earlier does not come out of this 25%. Also, this 25% margin as used by retailers involves adding one-third the cost of the merchandise to what they pay for it. Retailers figure their profit on a basis of cash received from sales. Whereas most of us generally consider profit as what is received over and above what we pay for it. I think it is important to mention why retail price levels seem quite reluctant to change. This is brought about by the fact that retailers are not interested particularly in sales or profits from one particular commodity. They place all of their produce commodities, literally, into one pile and sell them as a department. It is the average profits from this department that they are concerned with. Most retailers feel that once consumers have been conditioned to a certain price level it is better for them to maintain that price for a commodity even though their margin of profit may vary considerably on a commodity basis. The last thing that I would like to mention in regards to important things that we should know, is that a tremendous lack of skills, training, and technical information help to hold down the farmer's share of the consumer's produce dollar. It is a wellknown fact that the producer, in general, is a residual claimant on what's left from the consumer's dollar after marketing charges have been paid. Therefore, any reduction in marketing waste and spoilage and any saving through handling efficiency will be eventually passed on to the farmer.

To give an idea of what I think can be done to improve the best marketing system in the

world, I will start with a broad statement and become more specific. Marketing starts at the farm and continues through to the consumer. All levels and phases of marketing activities should be well informed and trained for the jobs which they are to perform. For instance, maximum production per acre is not enough when quality is such that the consumers will not buy. Grading for size, maturity, and damage should be much more closely and thoroughly done. An effort should be made to either label as such or to prevent inferior products from being placed on the market in competition with quality merchandise. It is my feeling that in many cases one man's gain by the sale of inferior merchandise results in a loss to the entire industry. It is important to do a much more thorough job of seeing that proper quality insuring conditions are maintained throughout the marketing period. In order to reach maximum sales, an effort should be made to see that fresh quality merchandise is properly displayed in all neighborhoods where it is profitable to sell fresh produce.

Some of my thoughts on how these things may be accomplished are that this problem is not one of marketing alone but is also one for the horticulturist. I could go on to mention each level of produce handling and cite specific examples of improvements needed, but we have time for only a few. Harvesting crews could use much more care in handling. Precoolers, in many instances, should be informed that their job is more than just a cool refreshing bath. Shippers should be shown that precooling is wasted effort if perishable merchandise is to be shipped in hot cars or trucks. There is room for improvement in transportation. Wholesalers are way behind in handling efficiency and facilities for maintaining quality. Retailers are receiving attention in only a few states. Consumers on the average are not eating enough fresh produce from a nutritive standpoint according to the health authority. Any improvements that can be made regarding any of the problems from farm to consumer will result in material savings to the nation, the farmer and the consumer.

FIELD CONTROL OF BLACKHEART OF CELERY

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Blackheart has been a serious problem of celery growers for more than 50 years. In Florida, individual growers have at times lost all or large portions of a given crop depending