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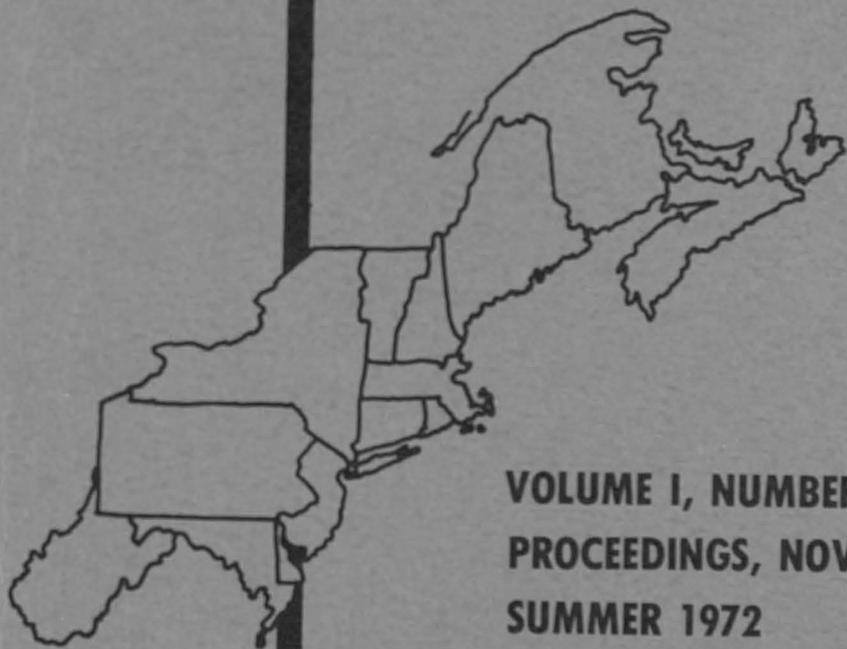
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JOURNAL OF

Northeastern Agricultural Economics Council



VOLUME I, NUMBER I
PROCEEDINGS, NOVA SCOTIA
SUMMER 1972

IMPACT ON NORTHEAST FRUIT AND VEGETABLE PRODUCTION
OF EXPANDING INTERNATIONAL TRADE

Earle E. Gavett 1/
Agricultural Economist
Economic Research Service
United States Department of Agriculture

The Northeast has sharply reduced its acreage of vegetables and production of most fruit except apples from 1950 to 1970. Much of this decline has occurred over time as production shifted from a relatively high cost area to areas having lower costs. We have seen canning factories close down in the Northeast and move operations to the Mid West and Far West as new varieties of sweet corn, snap beans, peas, and other vegetables were developed for those areas.

Mechanization of harvest of these crops permitted relocation into areas having no surplus of seasonal workers. Formerly, this was a major constraint in relocating labor intensive enterprises. As a result, vegetable acreage in the Northeast has dropped from about 1,270,000 acres in 1950 to less than 800,000 acres in 1970. While production per acre increased, total production dropped 20 percent. Strawberry acreage declined more than half and production dropped about half. Apple production, on the other hand, has continued to increase--up 29 percent from the 1950 level (table 1). But, in recent years, we have not been utilizing all of our apples. Markets have become glutted and prices have been too low to warrant harvest and storage expenses; likewise for strawberries and certain other fruits and vegetables.

I have had the opportunity to study the production of fresh winter produce in this country and in Mexico in 1967/68 and 1970/71 (ERS-154 and it's supplement). One might ask how such an experience with winter produce would be applicable to the Northeast which is usually draped under a deep mantle of snow all winter. When we looked at strawberry production at Zamora--we saw bulging cold storages filled with beautiful berries, and were shown bonding certificates for 30,000 tons of berries in warehouses in this country. Prices were depressed and stayed that way most of the 1970/71 season. Fresh market berries did not bring their usual premium because people's desire for strawberries had been largely sated by less expensive frozen berries.

1/ Leader, Farm Labor and Mechanization Group, Production Resources Branch, Farm Production Economics Division, ERS, U.S. Department of Agriculture, for presentation at the Northeastern Agricultural Economics Council Annual Meetings. Nova Scotia College of Agriculture, Truro, Nova Scotia, June 19-21, 1972. The views presented herein are those of the author and are not necessarily the views of the U. S. Department of Agriculture.

Table 1
Acreage and Production of Vegetables, Strawberries and Apples, Northeast Region, 1950-1970

| Year | All vegetables | | Strawberries | | Apple production | | |
|------|----------------------|--------------|----------------------|--------------|----------------------|----------------------|----------------------|
| | Acres | Production | Acres | Production | Not utilized: | Having value: | Total |
| | harvested : 1,000 | : 1,000 cwt. | harvested : 1,000 | : 1,000 cwt. | : 1,000 : bushels | : 1,000 : bushels | : 1,000 : bushels |
| 1950 | 1,270 | 150,879 | 13.6 | 433 | 1,695 | 36,316 | 38,011 |
| 1951 | 1,193 | 126,910 | 13.8 | 482 | 4,895 | 33,751 | 38,646 |
| 1952 | 1,236 | 126,360 | 12.8 | 390 | 0 | 24,916 | 24,916 |
| 1953 | 1,219 | 137,305 | 10.8 | 360 | 0 | 30,663 | 30,663 |
| 1954 | 1,183 | 123,321 | 10.2 | 309 | 0 | 36,510 | 36,510 |
| 1955 | 1,104 | 120,443 | 10.6 | 368 | 2,622 | 37,258 | 39,880 |
| 1956 | 1,101 | 142,345 | 10.9 | 317 | 0 | 29,860 | 29,860 |
| 1957 | 1,041 | 124,478 | 10.2 | 351 | 530 | 36,500 | 37,030 |
| 1958 | 1,047 | 135,989 | 9.9 | 369 | 966 | 41,374 | 42,340 |
| 1959 | 997 | 122,148 | 9.6 | 303 | 1,496 | 43,824 | 45,320 |
| 1960 | 1,000 | 131,965 | 9.6 | 389 | 0 | 35,170 | 35,170 |
| 1961 | 993 | 136,046 | 9.3 | 382 | 1,285 | 46,305 | 47,590 |
| 1962 | 979 | 138,798 | 9.1 | 355 | 0 | 44,630 | 44,630 |
| 1963 | 922 | 128,198 | 8.7 | 318 | 366 | 40,274 | 40,640 |
| 1964 | 948 | 123,039 | 8.9 | 364 | 594 | 45,076 | 45,670 |
| 1965 | 954 | 130,062 | 8.6 | 316 | 1,407 | 45,493 | 46,900 |
| 1966 | 953 | 121,237 | 8.7 | 290 | 894 | 39,726 | 40,620 |
| 1967 | 919 | 129,964 | 8.5 | 268 | 259 | 42,848 | 43,107 |
| 1968 | 920 | 124,873 | 6.8 | 232 | 80 | 39,961 | 40,041 |
| 1969 | 843 | 114,775 | 6.2 | 213 | 738 | 44,640 | 45,378 |
| 1970 | 792 | 119,034 | 5.9 | 210 | 2,454 | 46,475 | 48,929 |

Source: SRS, Vegetable-Fresh Market of Tree Fruit, Annual Summaries.

What is the prospect for fresh strawberries in the Northeast? There will always be a demand for some fresh native berries, but the price they bring will be tempered by the constant supply of frozen whole and sliced berries from Mexico available in the local supermarket at competitive prices. The effect of such competition has sharply reduced the production of processing berries in major producing States (table 2). All this adds up to a soft market for U.S. berries, including those in the Northeast.

What about apples? With this crop, the effects of international trade are more complex. The European Economic Community has established some formidable barriers. European production has been increasing. Imports from New Zealand and Australia have risen sharply. Significant imports are coming from South American countries. And, Mexico has been planting many acres of apple trees.

Did you know that in 1971 Mexico was our chief export market for apples after Canada? With the European Economic Community market declining, Mexico became our number two apple export market last year. That country does not intend to use foreign exchange on items it can produce itself, so it has encouraged the establishment of apple orchards. It will not be long before Mexico will be self sufficient in apples. And, they will be trying to export to us. If so, we are likely to have a substantially higher percentage of our crop not utilized than the 5 percent in 1970.

How can we compete with countries like Mexico? Let us look at some comparative production costs. Tables 3 and 4 present the cost of producing strawberries in Mexico and in the Northeast. Fresh market berries from Mexico cost 46¢ per qt. f.o.b. Laredo, Texas, and 60¢ per qt. in New York City. Northeast berries cost about 40¢ per qt. f.o.b. and 45 to 50¢ per qt. in New York City. Mexico can almost compete with the Northeast for the fresh market berry trade.

Tables 5 and 6 show costs of producing apples in New York and estimated costs of producing apples in Mexico. ^{2/} Paul Stark, writing in the American Fruit Grower indicates nectarines can be grown for \$2.25 to \$2.35 per box (22 lbs.). These bring \$6 to \$7 per box in Mexico City. ^{3/} Stark in the Goodfruit Grower stated that Golden Delicious apples bring \$7 to \$8 per box there. ^{4/} When I was in Mexico City in March 1971, Bartlett pears cost \$1 each. Red Delicious apples were 50 to 60 cents each on the fruit stands.

^{2/} I am unaware of any production cost data for Mexican apples so reworked a California irrigated apple budget to approximate Mexican conditions.

^{3/} Stark, Paul J., Mexico Goes Modern, American Fruit Grower, January 1972 issue.

^{4/} Stark, Paul J., Mexico Could be Major Competitor for Fruit Industry in the Future. The Goodfruit Grower, October 15, 1970 issue.

Table 2.
Strawberries for Processing, Selected States, 1959-1970
1,000 pounds

| Year | Florida | California | Oregon | Washington | Michigan | Louisiana |
|------|-----------|------------|---------|------------|----------|-----------|
| 1959 | 167 | 74,000 | 85,100 | 42,800 | 10,300 | 1,450 |
| 1960 | 602 | 71,000 | 70,350 | 41,750 | 12,500 | 508 |
| 1961 | 884 | 72,200 | 63,480 | 44,700 | 7,700 | 1,183 |
| 1962 | <u>1/</u> | 76,000 | 80,850 | 44,650 | 10,900 | 2,067 |
| 1963 | <u>1/</u> | 84,100 | 66,100 | 40,090 | 10,500 | 245 |
| 1964 | <u>1/</u> | 87,500 | 104,350 | 39,920 | 15,220 | 548 |
| 1965 | <u>1/</u> | 79,000 | 99,980 | 27,800 | 14,420 | 787 |
| 1966 | <u>1/</u> | 60,500 | 93,000 | 33,940 | 11,160 | 176 |
| 1967 | <u>1/</u> | 60,700 | 92,300 | 32,340 | 11,100 | 144 |
| 1968 | <u>1/</u> | 76,630 | 68,160 | 34,560 | 8,910 | <u>1/</u> |
| 1969 | <u>1/</u> | 66,400 | 66,850 | 22,520 | 15,000 | <u>1/</u> |
| 1970 | <u>1/</u> | 73,600 | 68,400 | 26,700 | 10,400 | <u>1/</u> |

1/ Included in other States to avoid individual disclosure.

Source: SRS, Vegetables-Fresh Market, Annual Summaries.

Table 3.--Strawberries: Cost of growing, harvesting, and marketing per acre and export flat, Mexico, 1970/71 season

(Yield: 610 12-pint export flats)

| Item | Annual hours | Labor 1/ | Equip-ment | Material | Cost of materials | Combined costs | Total cost |
|--|--------------|---------------|--------------|---|-------------------|----------------|---------------|
| | | Dollars | Dollars | | Dollars | Dollars | Dollars |
| Operation: | | | | | | | |
| Plow----- | 0.91 | 0.41 | 4.91 | | | 5.32 | |
| Subsoil (3 times)----- | .74 | .33 | 4.48 | | | 4.81 | |
| Disk (3 times)----- | 1.45 | .65 | 9.25 | | | 9.90 | |
| Level (2 times)----- | .69 | .31 | 4.51 | | | 4.82 | |
| Fumigate----- | .32 | .14 | 1.76 | PCNB, 22 lbs. @ \$1.09 lb. | 23.98 | 25.88 | |
| Mark rows----- | .32 | .14 | 1.09 | Aldrin 45 lbs. @ 65¢ lb. | 29.25 | 30.48 | |
| Press beds----- | .40 | .18 | 2.09 | | | 2.27 | |
| Make ditches----- | .32 | .14 | 1.85 | | | 1.99 | |
| Irrigate (50 times)----- | 42.31 | 14.81 | 23.28 | Water | .40 | 38.49 | |
| Haul plants----- | .45 | .16 | .50 | Plants, 25,000 @ \$7.00 thous. | 175.00 | 175.66 | |
| Set plants (dir. sys.) | 70.00 | 19.60 | --- | | | 19.60 | |
| Haul fertilizer(4 times) | 1.38 | .48 | 1.52 | | | 2.00 | |
| Fertilize by hand (4 times)----- | 10.36 | 2.90 | --- | 15-30-15 890 lbs. @ \$0.073 lb. Ammonium sulfate, 350 lbs. @ \$0.029 lb. | 64.97 10.15 | 78.02 | |
| Cultivate by mule (6 times)----- | 15.55 | 4.35 | 5.05 | | | 9.40 | |
| Weed and cut runners (5 times)----- | 248.64 | 69.62 | --- | | | 69.62 | |
| Spray, motorized back pack (10 times)----- | 37.57 | 10.52 | 4.14 | Insecticides, fungi- cides, & nutritional materials | 100.98 | 115.64 | |
| Road repair----- | .61 | .27 | 3.06 | | | 3.33 | |
| Scare birds----- | 20.24 | 5.68 | --- | Shotgun shells | 1.50 | 7.18 | |
| Other labor expenses | --- | 13.07 | --- | Soil tests | 5.00 | 18.07 | |
| Total growing cost --- | | 143.76 | 67.49 | | 411.23 | 622.48 | |
| Cash overhead: | | | | | | | |
| Rent, land----- | | | | | | 64.78 | |
| Interest on production capital (12 pct.7 mo.): | | | | | | 43.57 | |
| Miscellaneous----- | | | | | | 24.99 | 133.34 |
| Total cash cost ----- | | | | | | | 755.82 |
| Noncash overhead: | | | | | | | |
| Equipment investment (\$143.94): | | | | | | 15.89 | |
| Depreciation----- | | | | | | 8.04 | 24.53 |
| Interest (12 pct.) | | | | | | | |
| Total all production costs | | | | | | | 780.35 |
| Prorated fresh market cost----- | | | | | | | 312.14 |
| Total production cost per export flat ----- | | | | | | | 2/.51 |
| Marketing | | | | | | | |
| Harvesting----- | | | | | | | 2/.18 |
| Packing & selling----- | | | | | | | .56 |
| Mexican export cost to Laredo, Tex.----- | | | | | | | .74 |
| Sales commission and promotion----- | | | | | | | |
| Total shipping and selling----- | | | | | | | 1.51 |
| Total f.o.b. marketing :- | | | | | | | 2.25 |
| Total producing and marketing ----- | | | | | | | 2.76 |

1/ Labor: Machine operators, \$0.45 per hr; truck drivers, \$0.35 per hr; irrigators, \$0.35 per hr; field hands, \$0.28 per hr. 2/ Prorated fresh market cost. 3/ Hauling and other expenses. 4/ Includes picking labor.

Source: Supplement to USDA-ERS, A.E.R. 154, Sept. 1971.

Table 4.--Estimated detailed costs of growing and harvesting one acre of strawberries in the Northeast

| Items of expense | Amount per acre | Price per unit (Dollars) | Cost Per acre (Dollars) |
|---|-----------------|--------------------------|-------------------------|
| First Year Growing Costs | | | |
| Weed control (pre-planting): 1/ | | | |
| Amino Triazole (applied as spray in August before plants are set following spring)----- | 10 lbs. | 3.00/lb. | \$30.00 |
| Spraying (includes machine, power & operator)----- | | 2.50/acre | 2.50 |
| Plowing (includes machine, power & operator)----- | | 5.00/acre | 5.00 |
| Dalapon (applied one spray 6 weeks after Amino Triazole): | 15 lbs. | .92/lb. | 13.80 |
| Spraying (includes machine, power & operator)----- | | 2.50/acre | 2.50 |
| Disking (two weeks after Dalapon applied)----- | | 3.00/acre | 3.00 |
| Fertilizer: | | | |
| 10-10-10 (applied after plowing)----- | 800 lbs. | 2.75/80 lbs. | 27.50 |
| 20% Superphosphate (applied after plowing)----- | 700 lbs. | 1.85/80 lbs. | 16.19 |
| 20% Nitrogen Fertilizer (applied as top dressing in Aug.): | 100 lbs. | 4.25/80 lbs. | 5.31 |
| Hand application of above fertilizer----- | 5 hrs. | 1.85/hr. | 9.25 |
| Disease Control: | | | |
| Dieldrin----- | 59 lbs. | 9.95/50 lbs. | 11.74 |
| Labor (application of Dieldrin)----- | 1 hr. | 1.85/hr. | 1.85 |
| Soil preparation: | | | |
| Disking (includes machine, power & operator)----- | | 3.00/acre | 3.00 |
| Harrowing (includes machine, power & operator)----- | | 2.00/acre | 2.00 |
| Plants: | 5000 | 17.50/1250 plants | 68.00 |
| Planting-labor (man-boy method)----- | 2 men-2 boys | | |
| | 8 hrs. each | 1.85/hr | 44.42 |
| Weed Control: | | | |
| Crag Sesone (applied as spray 3 weeks after setting plants) | 4 lbs. | 2.27/lb. | 9.08 |
| Spraying (includes machine, power & operator)----- | | 2.50/acre | 2.50 |
| Cultivation (before application of Eptam & Simazine)---- | | 2.50/acre | 2.50 |
| Eptam & Simazine (granules applied in late May with cyclone seeder)----- | 100 lbs. | 30.00/100 lbs. | 30.00 |
| Labor (application of Eptam & Simazine & raking between plants)----- | 3 hrs. | 1.85/hr. | 5.55 |
| Cultivation (after application of Eptam & Simazine) | | 2.50/acre | 2.50 |
| Cultivation (late July)----- | | 2.50/acre | 2.50 |
| Hoing and weeding (entire season) | 40 hrs. | 1.85/hr. | 74.00 |
| Deblossoming----- | 12 hrs. | 1.85/hr. | 22.20 |
| Disease & Insect Control (2 spray treatments): | | | |
| Malathion (25% wettable powder)----- | 12 lbs. | .50/lb. | 6.00 |
| Methoxychlor (50% wettable powder)----- | 6 lbs. | .82/lb. | 4.92 |
| Captan (50% wettable powder)----- | 14 lbs. | .64/lb. | 8.96 |
| Spraying (includes machine, power & operator)----- | 2 times | 2.50/acre | 5.00 |
| Mulching: | | | |
| Mulching straw----- | 2½ tons | 20.00/ton | 50.00 |
| Labor for mulching----- | 8 hrs. | 1.85/hr. | 14.80 |
| Family vehicle (hauling fertilizer, plants, chemicals, mulch, etc.)----- | 200 miles | .12/mile | 24.00 |
| Land charge (covers taxes, return to land, mainten., etc.) | 1 acre | 8.00/acre | 8.00 |
| Total cost Excluding Return on Investment | | | \$518.55 |
| Return on Investment (518.55+2=259.28 x 8%) | | | 20.74 |
| Total First Year Growing Cost | | | 539.29 |
| Second Year Growing Costs | | | |
| Labor for removing mulch----- | 3 hrs. | 1.85/hr. | \$ 5.55 |
| Weed Control: | | | |
| Weeding labor (April-May) | 24 hrs. | 1.85/hr. | 44.40 |
| Disease & insect control (3 spray treatments): 2/ | | | |
| Malathion (25% wettable powder)----- | 18 lbs. | .50/lb. | 9.00 |
| Methoxychlor (50% wettable powder)----- | 9 lbs. | .82/lb. | 7.38 |
| Captan (50% wettable powder)----- | 21 lbs. | .64/lb. | 13.44 |
| Spraying (includes machine, power & operator)----- | 3 times | 2.50/acre | 7.50 |
| Transportation costs (hauling materials)----- | 50 miles | .12/mile | 6.00 |
| Land Charge (covers taxes, return to land, mainte., etc.): | 1 acre | 8.00/acre | 8.00 |
| Total cost excluding return on investment----- | | | \$ 101.27 |
| Return on Investment (539.29 x .08)+(101.27+ 2 x .08) | 43.14 + | 4.05 = | 47.19 |
| Total Second Year Growing Cost----- | | | \$ 148.46 |
| Total First Year Growing Cost----- | | | \$ 539.29 |
| Total Cost of Growing One Acre of Strawberries Up To Harvest Time----- | | | \$ 687.75 |
| Harvesting | | | |
| Picking, sorting, crating, and loading----- | 3000 qts. | .10/qt. | \$300.00 |
| Quart containers----- | 3000 | \$18.00/M | 54.00 |
| Crates(16 qt.)----- | 188 | .45 ea. | 84.60 |
| Supervision and Misc. labor----- | 3000 qts. | .02/qt. | 60.00 |
| Total harvesting costs----- | | | 498.60 |
| Total Cost----- | | | \$1,186.35 |
| Cost per quart----- | | | .40 |

1/ Pre-planting weed control is used to control perennial plants (quackgrass, Johnson grass, nutgrass, and sheep sorrel). If the weeds are not present, no pre-planting weed control will be needed. Therefore \$56.80 could be deducted from the total cost.

2/ Three spray treatments were used in preparing this budget. However, the grower may need to spray more or less than three times. The number of spray treatments depends on the location, season, etc.

Source: Adapted from West Virginia Circular 114, May, 1965.

Table 5.
Apples: Cost of Producing in New York, 1969/70
(Yield - 323 bu. of packable fruit)

| Item | Average per acre <u>Dollars</u> |
|---|---------------------------------------|
| Growing: <u>1/</u> | |
| Orchard overhead----- | 37.62 |
| Fertilizer and spreading - lbs. N 57 P 11 K 15 ---- | 8.55 |
| Spray and dust materials ----- | 75.11 |
| 26.1 hours of labor ----- | 74.28 |
| 7.9 hours of tractor work ----- | 16.64 |
| Other equipment (including auto and truck) ----- | 34.23 |
| Interest ----- | 8.29 |
| All other ----- | 20.32 |
| Total growing ----- | 275.04 |
| Harvesting: <u>1/</u> | |
| 46.8 hours of labor ----- | 133.21 |
| 2.6 hours of tractor work ----- | 5.05 |
| Auto and truck ----- | 15.44 |
| Other equipment ----- | 22.14 |
| All other ----- | 9.37 |
| Total harvesting ----- | 185.21 |
| Storage: <u>2/</u> | |
| Common, 216 bushels @ \$0.33 ----- | 71.28 |
| Controlled atmosphere, 107 bushels @ \$0.67 ----- | 68.48 |
| Total storage ----- | 139.76 |
| Packing and selling: <u>2/</u> | |
| 323 bushels @ \$1.25 ----- | 403.75 |
| Total cost per acre <u>3/</u> ----- | 1,000.66 |
| F.O.B. cost per bushel ----- | 3.10 |

1/ From N. Y. AE Res. 325 Dec. 1970.

2/ Podany, J. C. & R. W. Bohall Regional Costs of Harvesting Storing and Packing, Apples, USDA/ERS-496, Nov. 1971

3/ Excludes charges for land depreciation, and interest on investment.

Table 6.
Apples--Estimated costs of producing in Central Mexico,
1970/71

(Sample costs to produce apples in Mexico. Costs are based on a mature orchard containing 201 trees per acre, planted 12'x18', sprinkler irrigated. Total labor costs average \$0.28 per hour. Yield is assumed to be 10 tons per acre (455 bu.) after 10% cullage.)

| Item | : | Sample costs per acre Dollars |
|---|---|-------------------------------------|
| Pre-harvest Cash Costs: | | |
| Prune - 1/3 hr. @ \$0.28 - per tree ----- | : | 16.88 |
| Brush disposal ----- | : | .84 |
| Fertilize - materials ----- | : | 12.00 |
| application ----- | : | .84 |
| Spray - materials ----- | : | 54.40 |
| application ----- | : | 4.48 |
| Tillage ----- | : | 15.00 |
| Irrigate - power cost, 2-1/2 acre feet ----- | : | 43.75 |
| labor ----- | : | 5.60 |
| Bees - 2 hives per acre ----- | : | 8.00 |
| Thin - 50¢ per tree ----- | : | 14.07 |
| Prop and tie - remove props ----- | : | 3.64 |
| Hand weeding ----- | : | 1.96 |
| Repairs - except tractor ----- | : | 30.00 |
| Miscellaneous labor and materials ----- | : | 8.63 |
| Business expenses and management ----- | : | 21.50 |
| Total pre-harvest cash costs ----- | : | 241.59 |
| Harvest, pack and sell: | | |
| Pick - 455 bushels @ \$0.03 ----- | : | 13.65 |
| Pack - 455 bushels @ \$0.04 ----- | : | 18.20 |
| Materials - 455 bushels @ \$0.30 ----- | : | 136.50 |
| Overhead and selling 455 bushels @ \$0.10 ----- | : | 45.50 |
| Export costs - 455 bushels @ \$0.80 ----- | : | 364.00 |
| Sales commission - 455 bushels @ \$0.20 ----- | : | 91.00 |
| Total harvesting, packing and selling ----- | : | 668.85 |
| Total cost per acre <u>1/</u> ----- | : | 910.44 |
| F.O.B. cost per bushel ----- | : | 2.00 |

1/ Excludes charges for land, depreciation, and interest on investment.

Source: Adapted from University of California, Agricultural Extension Service, Kern County Budget for Techachapi Area, 1967.

It is obvious from these budgets that the inexpensive labor available to Mexican producers has enabled them to compete with us. Let us compare picking costs. In New York, Del Kearl reports 47 hours of labor were needed to harvest 323 bushels at a cost of \$133.21. In Mexico, on dwarf and semi-dwarf trees I estimate almost 46 hours per acre to harvest 455 bushels at a cost of \$13.65. New York picking labor earned \$2.84 per hour. Mexican pickers were paid \$0.28 per hour.

Total costs f.o.b. the orchard near Rochester, New York were \$3.10 per bushel as compared with \$2.00 f.o.b. Laredo, Texas for Mexican apples. Of course Laredo is a long way from New England markets. Let us add transportation costs and see how our competitive stance changes. From Rochester, N. Y. to New York City, freight rates are \$0.66 for a delivered cost of \$3.76 per bushel. From Laredo, Texas to New York City, the freight rate of \$1.82 hikes the delivered cost for Mexican apples to \$3.82. Not much different from New York apples.

Let us consider another market--Chicago. New York apples delivered to Chicago would cost \$3.94. Mexican apples can be delivered there for \$3.39, thus, able to displace New York apples from that market.

The total costs cited here do not include land charges, depreciation, or interest on the investment, but both budgets include comparable items.

It is apparent that inexpensive labor has enabled Mexican fruit and vegetable growers to sustain heavy transportation charges and still compete with U.S. growers in their markets. What about the future?

Table 7 compares Mexican hourly wage rates with those for New England. I have projected these rates to 1975 under the assumption that Mexico will continue increasing its minimum wage rate every two years, and that the Fair Labor Standards Act is amended to provide covered agricultural workers with a minimum rate of \$2.00 by 1975. While the percentage change is greater for Mexican wages, the absolute change from 1970 is 42 cents per hour in New England as compared with 14 cents in Mexico.

In addition to the wage rates increasing sharply, we have other labor costs that should also be considered. Perhaps they can be best illustrated by the use of a few slides.

Production practices are quite different growing strawberries above and below the border. In Florida, growers plant through a plastic mulch and use pine straw to keep weeds down in the middles. This cost the Florida grower \$109 per acre, as compared with a \$70 weeding bill for the Mexican grower. Can you find a weed here? Scaring birds cost \$27 in Florida, but less than \$6 in Mexico. Spraying cost the Florida grower \$13 for labor, \$14 for equipment, and \$93 for materials for a total of \$120 per acre. For Mexican growers they used \$10 for labor, \$4 for motorized back pack, and \$101 for materials or \$115 per acre. Both sprayed about 10 times.

Table 7.
 Labor: Rates per hour without board and room,
 New England and Mexico, 1960-1971 with projections to 1975

| Year | New England | Mexico |
|------------|-------------------|--------|
| | -----Dollars----- | |
| 1960----- | 1.16 | 0.09 |
| 1961----- | 1.19 | .09 |
| 1962----- | 1.22 | .11 |
| 1963----- | 1.27 | .11 |
| 1964----- | 1.28 | .13 |
| 1965----- | 1.33 | .13 |
| 1966----- | 1.41 | .16 |
| 1967----- | 1.54 | .18 |
| 1968----- | 1.61 | .21 |
| 1969----- | 1.72 | .21 |
| 1970----- | 1.83 | .28 |
| 1971----- | 1.91 | .28 |
| 1972e----- | 2.00 | .35 |
| 1973e----- | 2.08 | .35 |
| 1974e----- | 2.16 | .42 |
| 1975e----- | 2.25 | .42 |

e= Estimated.

Source: USDA, SRS, Farm Labor, selected issues, and the Yearbook of Labor Statistics, 1970, International Farm Organization, Geneva, Switzerland.

Fertilizer, petroleum and domestically produced spray materials are substantially cheaper in Mexico as these industries are nationalized. Agricultural chemicals that are brought in from the States are taxed sharply. Growers only use them when all else fails. Escaping the ravages of the cyclamen mite as shown here, warrants such an expenditure.

Growers in the United States must abide by the provisions of the Occupational Safety and Health Act and, for example, protect workers exposed to pesticides. In Mexico, there is no similar law protecting workers.

In U.S. apple growing, we are reducing our spray schedules from one of a preventative maintenance program to one of combatting actual infestations. We are deeply concerned about residues. Concern in the same magnitude has not yet surfaced in Mexico.

In this country, we have the Department of Labor, H.E.W., OEO, State health departments and others inspecting fields for portable sanitary facilities, and labor camps for screens, toilets, showers, ventilation, and other standards prescribed for housing and caring of workers. This is desirable. What is of concern is that we may force a domestic producer out of business by hiking his labor costs via higher wage rates, costly housing standards, and improved safety equipment and working conditions, if we import food produced by growers not subject to such conditions.

What can we do to compete with foreign production such as from Mexico? Mechanize wherever feasible to reduce our labor inputs. And, for tree fruits for fresh market, plant dwarf or semi-dwarf trees and head them low so that most fruit can be picked by workers standing on the ground. In a study at Washington State, apple pickers increased output per hour from 11.7 to 18.1 boxes per hour in dwarf orchards as compared with standard orchards. ^{5/} Also, women and older people were able to participate in the harvest. We cannot afford to have people spending a third of their time climbing and moving ladders to crawl up into a 25 foot tree to pick some 350 bushels per acre, when it is possible to harvest 1,000 or more bushels per acre with no apples over 7 feet from the ground.

We have been changing our technology over time as indicated by the increase in production per man-hour (table 8). But, these changes have not occurred fast enough to counteract rising labor costs. The future does not look very profitable for the Northeast producer who is unwilling or unable to adopt the new technology. On many of their farms, houses and factories will replace fruits and vegetables. Northeast acreage and production will continue to slide. And we will fight for the betterment of the remaining U.S. farmworkers.

^{5/} Miller, Marlen F. and Walter R. Butcher, Factors Affecting Labor Productivity in Apple Picking, Washington Agr. Exp. Bul. 752, March 1972.

Table 8.
Productivity of Labor on Vegetables and Fruits and Nuts,
Northeast Region, 1950-1970

| Year | Man-hours 1,000 | Index 1967=100 | | |
|------------------------|--------------------|----------------|------------|------------|
| | | Hours | Production | Prod./hour |
| <u>Vegetables</u> | | | | |
| 1950 | 121,632 | 191 | 115 | 60 |
| 1951 | 108,551 | 170 | 101 | 59 |
| 1952 | 105,363 | 165 | 101 | 61 |
| 1953 | 106,168 | 166 | 108 | 65 |
| 1954 | 96,217 | 151 | 99 | 66 |
| 1955 | 87,980 | 138 | 97 | 70 |
| 1956 | 89,280 | 140 | 111 | 79 |
| 1957 | 79,888 | 125 | 101 | 81 |
| 1958 | 80,946 | 127 | 107 | 84 |
| 1959 | 73,802 | 116 | 97 | 84 |
| 1960 | 75,728 | 119 | 105 | 88 |
| 1961 | 74,054 | 116 | 106 | 91 |
| 1962 | 73,056 | 114 | 107 | 94 |
| 1963 | 67,435 | 106 | 99 | 93 |
| 1964 | 64,806 | 102 | 96 | 94 |
| 1965 | 67,198 | 105 | 101 | 96 |
| 1966 | 62,444 | 98 | 94 | 96 |
| 1967 | 63,836 | 100 | 100 | 100 |
| 1968 | 61,762 | 97 | 96 | 99 |
| 1969 | 56,387 | 88 | 89 | 101 |
| 1970 ^{1/} | 55,827 | 87 | 91 | 105 |
| <u>Fruits and Nuts</u> | | | | |
| 1950 | 63,408 | 172 | 107 | 62 |
| 1951 | 59,287 | 161 | 102 | 63 |
| 1952 | 48,830 | 133 | 80 | 60 |
| 1953 | 50,885 | 138 | 91 | 66 |
| 1954 | 52,939 | 144 | 102 | 71 |
| 1955 | 53,336 | 145 | 106 | 73 |
| 1956 | 48,224 | 131 | 89 | 68 |
| 1957 | 49,273 | 134 | 94 | 70 |
| 1958 | 52,375 | 142 | 113 | 80 |
| 1959 | 50,858 | 138 | 112 | 81 |
| 1960 | 45,746 | 124 | 101 | 81 |
| 1961 | 46,794 | 127 | 113 | 89 |
| 1962 | 43,734 | 119 | 108 | 91 |
| 1963 | 39,135 | 106 | 99 | 93 |
| 1964 | 41,210 | 112 | 115 | 103 |
| 1965 | 40,842 | 111 | 114 | 103 |
| 1966 | 37,165 | 101 | 98 | 97 |
| 1967 | 36,797 | 100 | 100 | 100 |
| 1968 | 35,326 | 96 | 96 | 100 |
| 1969 | 36,429 | 99 | 106 | 107 |
| 1970 | 36,797 | 100 | 112 | 112 |

^{1/} Preliminary.

Producer groups have recommended that Congress impose higher tariffs to keep out some foreign production. If wage rates continue to change as rapidly as they have in the past 5 years, Congress would have to change the tariff rate each year to protect producers. It is quite unlikely that Congress would change tariffs yearly. The negotiation of quotas is an alternative approach and the one that has been used with some success on fresh tomatoes and more recently on fresh strawberries. However, getting foreign producers to stay within their quotas may be a very difficult task.