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United States Apple Supplies, Trends and Future Projections

by

Donald J. Ricks

Department of Agricultural Economics

Michigan State University

East Lansing, Michigan

Agricultural Economics Staff Paper No. 83-52

Aug. 1983

UNITED STATES APPLE SUPPLIES, TRENDS AND FUTURE PROJECTIONS\*

by

Donald J. Ricks\*\*

The size of U.S. apple crop has shown a distinct upward trend during the past three decades. Each of the last three years have brought a larger crop of record proportions. Will this trend continue in the future? What are the trends for major apple-producing regions of the country and by major varieties? These are some of the topics which I have been asked to discuss today.

For my presentation I will draw on two major sources of information. One of these is an analysis of the recent Michigan fruit tree survey which became available about a year ago. This analysis is summarized in a report entitled Michigan Fruit Tree Survey, 1978--Some Implications for the Michigan Industry (Agricultural Economics Staff Paper #79-92, December 1979). I mention this title because if you are interested you may obtain a copy of this report by writing to me or through your local extension agent.

The second major source of information for my talk today is a recent bulletin entitled U.S. Apple Supplies Trends and Future Projections. I presume it is not a coincidence that the title of my talk is the same as the one for the earlier report. In this report, we did some trend analysis of apple production in the United States by major producing region and major variety categories. In addition, we analyzed the available tree survey information from a number of states along with information from other industry sources to make some projection estimates of future apple production. For today's paper I have updated the

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\*\* Department of Agricultural Economics, Michigan State University, East Lansing, Michigan.

trends and projections summarized in the bulletin by including the last three year's data on apple production. Therefore a part of my talk will be these updates. If you would like more complete explanations of the analyses and some additional projections you can also obtain a copy of this bulletin by writing to me or through your extension agent.

#### Michigan Fruit Tree Survey Analysis

The 1978 Michigan tree fruit survey data shows that the total acreage of apples in Michigan decreased considerably from 66,000 acres in 1973 to 52,000 acres in 1978. There was also a substantial decrease in acreage of most other tree fruits in Michigan (Table 1.). Sweet cherries decreased from almost 14,000 acres in 1973 to 11,000 acres in 1978. Plums decreased from about 8,000 acres in 1973 to near 5,000 acres five years later. Peaches showed a very large decrease from 18,000 acres in 1973 to about 8,000 acres in 1978. Pears also showed a very large decrease from almost 11,000 acres in 1973 to about 3,000 acres in 1978.

Table 1. MICHIGAN TREE FRUIT ACREAGE

	<u>1978 Survey</u>		<u>1973 Survey</u>	
	<u>Acres</u>	Percent of all fruit	<u>Acres</u>	Percent of all fruit
APPLES	52,000	43%	66,100	42%
TART CHERRIES	41,000	34%	41,200	26%
SWEET CHERRIES	11,200	9%	13,700	9%
PEACHES	8,600	7%	18,100	11%
PLUMS	5,400	4%	8,300	5%
PEARS	3,200	3%	10,900	7%
APRICOTS	300	--	400	--
NECTARINES	100	--	300	--
TOTAL	121,800	100%	159,000	100%

Tart cherries were the one Michigan crop which did not decrease, with acreage remaining approximately constant at 41,000 acres. Thus the percentage of the state's total tree fruit acreage represented by tart cherries increased from 26% in 1973 to 34% in 1978. Because of the large decreases in peaches, pears and plums, and with the smaller decrease in apples, the percentage of the total Michigan fruit acreage in apples increased somewhat. Thus the Michigan fruit industry in the future will be more highly concentrated in apples and tart cherries than in previous time periods such as during the 1950s and 1960s. Perhaps in the future plantings of peaches and plums may rebound somewhat providing a stronger diversification in the Michigan fruit industry. However, for the immediate future it appears there will be heavy reliance on tart cherries and apples. In this regard Michigan has recently become somewhat more like New York's fruit industry.

The Michigan fruit tree survey in 1978 documented a very heavy switch to size controlled apple trees (including dwarf and semi-dwarf rootstocks and spur-type trees). As summarized in Table 2, the tree survey showed that for mature bearing trees, 12 years and older, 71% of the state's trees were on standard rootstock, with about 30% on size-controlled rootstocks. By contrast, for the trees of young bearing age (from 7 to 11 years old), the percentages reverse with about 30% of the trees on standard rootstock and about 70% are size controlled. The tree survey shows further that for young trees of 1-6 years of age, almost all (92%) of the state's apple trees are on size-controlled rootstocks. This documents a very heavy switch to the types of trees and planting systems which have a good potential for high yields and efficient production. This is one reason why Michigan apple production is trended upward with near record production levels in both 1978 and 1980 despite a decrease in apple acreage in the state.

Table 2. MICHIGAN STANDARD AND SIZE-CONTROLLED APPLES -- 1978

	STANDARD		SIZE-CONTROLLED	
	1,000 trees	Percent of all trees this age	1,000 trees	Percent of all trees this age
APPLE TREES				
12+ YEARS	1,334	71%	550	29%
7-11 YEARS	194	29%	484	71%
1-6 YEARS	72	8%	864	92%

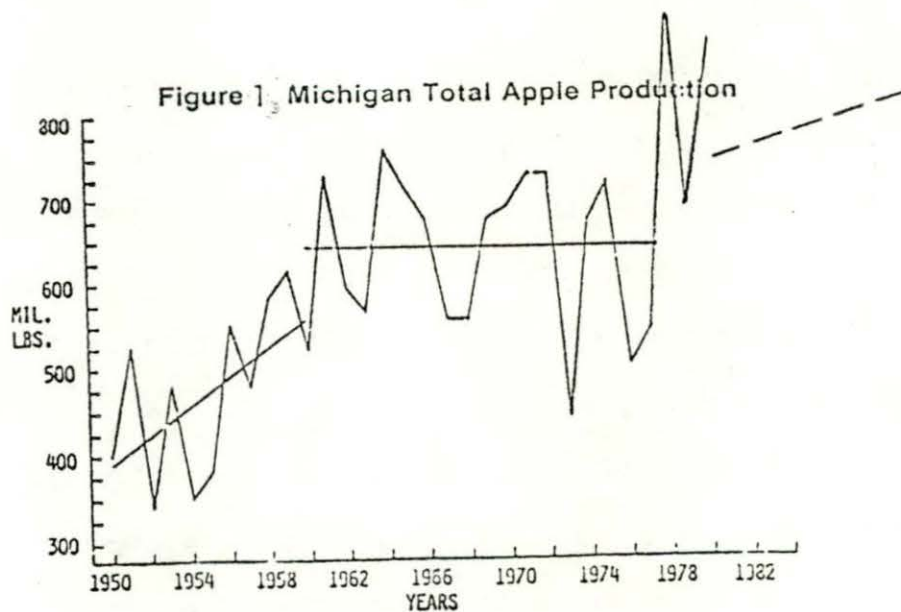
The 1978 tree survey showed that Michigan apple tree age distribution has a balance of substantial numbers of young trees, medium age trees and more mature trees (Table 3). The tree survey shows that the percentage of trees in the 1-6 year age category and the 7-11 year age category were slightly higher in 1978 than the percentages of these younger trees in 1973. By contrast the percentage of trees 22 years+ was lower in 1978 than in the early 1970s. This may be particularly significant when we consider the fact that the somewhat lower percentage of young trees in 1973 were sufficient to provide record apple production in 1978 and 1980. Therefore the age distribution of apple trees in Michigan suggests continuation of increasing productive capacity.

In the future, Michigan's apple production is expected to continue high and probably trend upward gradually (Figure 1). This seems likely despite smaller apple acreage, because of the many young trees, the highly productive size-controlled planting systems, improved technology and because existing orchards tend to be on highly productive sites. Although annual crop production

Table 3. MICHIGAN APPLE TREES AGE DISTRIBUTION

	1978 Survey		1973 Survey	
	1,000 trees	Percent of all trees	1,000 trees	Percent of all trees
1-6 YEARS	937	27%	998	26%
7-11 YEARS	678	19%	699	18%
11-21 YEARS	949	27%	941	
22+ YEARS	935	27%	1,146	30%
TOTAL	3,498	100%	3,784	100%

will fluctuate depending on the weather, the average will likely be higher than during the 1960s and most of the 1970s when Michigan experienced a relatively stable production trend.



The 1978 Michigan tree survey indicated changes in varieties of apples which will be produced. The survey shows that Red Delicious is the top variety in terms of tree numbers. This is true both for bearing age trees (7+ yrs.) and for younger trees (1-6 yrs.) most of which are nonbearing (Table 4). In contrast to Red Delicious the position of Jonathans in Michigan is slipping somewhat. Although Jonathan has long been Michigan's top variety in production, in the future, Red Delicious will likely be the variety with the greatest output. As summarized in Table 4, Jonathan trees represent 22% of all trees of bearing age (7+ years). By contrast of the nonbearing trees (1-6 years of age), Jonathan comprises only 9% of the total. Thus in the future, the Jonathan productive capacity will likely drop off as a percent of the total.

Table 4. APPLE VARIETY DISTRIBUTION -- 1978

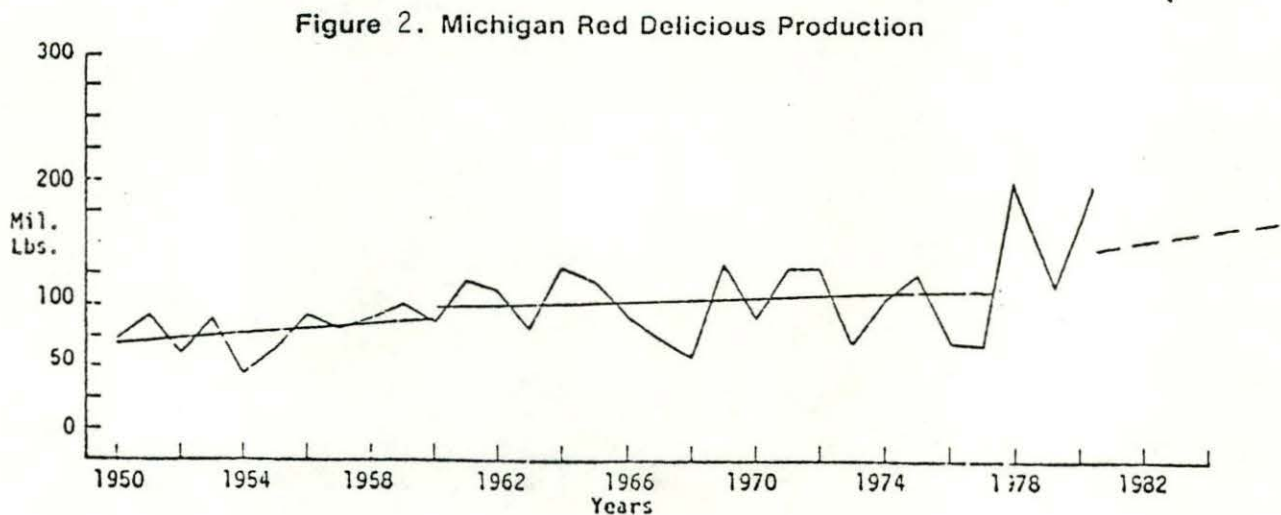
	<u>Age</u> 1,000 trees	<u>1-6 Years</u> Percent of all trees of this age		<u>Age</u> 1,000 trees	<u>7+ Years</u> Percent of all trees of this age
RED DELICIOUS	234	(25%)	RED DELICIOUS	726	(28%)
IDA RED	174	(19%)	JONATHAN	554	(22%)
JONATHAN	81	( 9%)	McINTOSH	263	(10%)
GOLDEN DELICIOUS	81	( 9%)	GOLDEN DELICIOUS	262	(10%)
McINTOSH	72	( 8%)	N. SPY	154	( 6%)
ROME	57	( 6%)	ROME	143	( 6%)
N. SPY	47	( 5%)	IDA RED	105	( 4%)
PAULA RED	37	( 4%)	WINESAP	67	( 3%)
GREENING	15	( 2%)	PAULA RED	67	( 3%)
WINESAP	13	( 1%)	GREENING	52	( 2%)
JERSEY MAC	13	( 1%)	CORTLAND	20	( 1%)
OTHERS	106	(11%)	OTHERS	118	( 5%)



The tree data show that Ida Red will likely have a substantial increase in future production. Ida Red, as shown by the tree survey, comprise 4% of the bearing age trees in Michigan but a substantially greater 19% of the state's total for non-bearing age apple trees. Thus Ida Red production will likely expand considerably and the Ida Red portion of the total Michigan crop will rise based upon the percent of non-bearing trees.

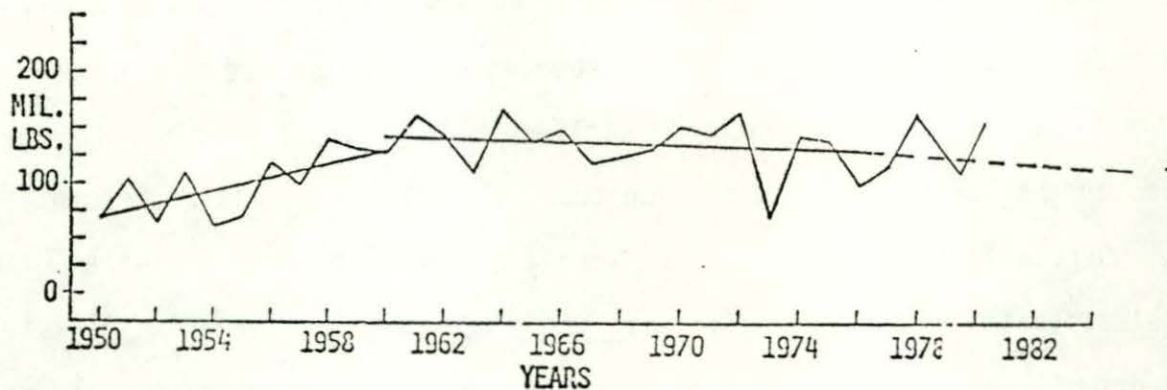
Future production of the Paula Red variety is expected to increase in Michigan based on existing trees. It appears that the portion of McIntosh will decrease somewhat in the future based on the smaller percent of non-bearing trees now existing (Table 4 ).

Based on tree numbers and other factors, we expect the trend for increasing production of Red Delicious in Michigan to continue upward (Figure 2). Because of the increased reliance on Red Delicious by the Michigan apple industry, this will probably mean substantial crop size fluctuations from year to year. This is because the Red Delicious variety is especially prone to erratic production under Michigan climatic conditions. Red Delicious will in the future probably constitute a higher percentage of Michigan's fresh market apple sales with a decline in the percent of fresh market from Jonathan and McIntosh.



McIntosh production in Michigan has shown a gradual downward trend in recent years (Figure 3). Tree number data indicate a substantial percentage of old trees for McIntosh. This suggests that the gradual downward production trend will continue in the future. If it were not for the fact that McIntosh trees tend to produce high and consistent yields per acre, growers would likely take out even more old McIntosh orchards. Thus if it were not for the high yielding feature, the proportion of old McIntosh trees suggests that the downward trend might be even faster than indicated in Figure 3.

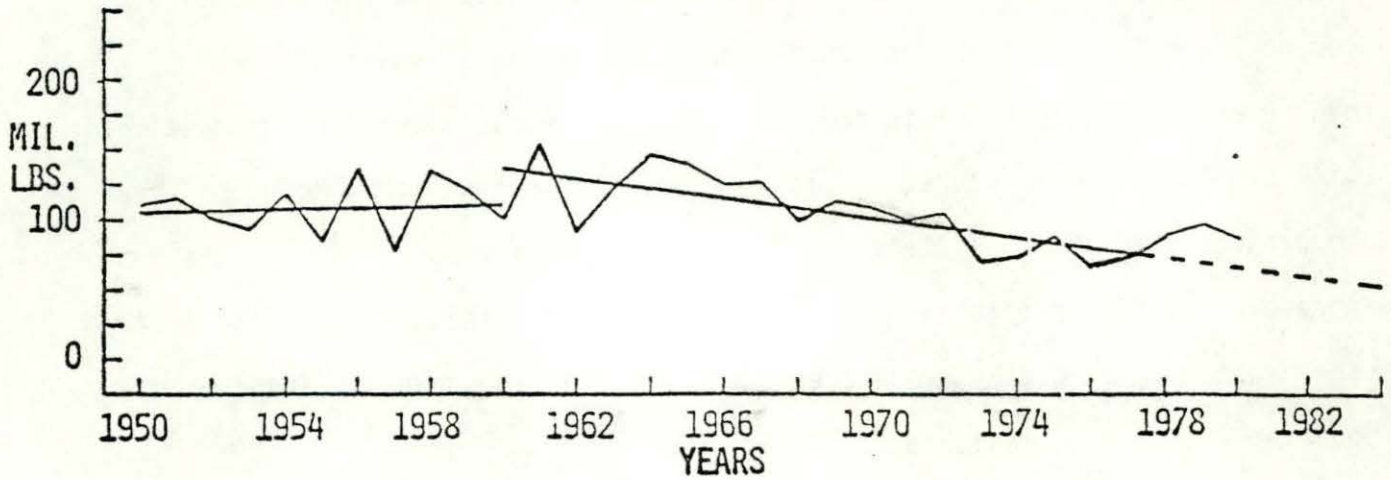
Figure 3. Michigan McIntosh Production



In Michigan the premium processing varieties are mainly Spy and Greening. Production of these varieties during the 1960s and 1970s has shown a gradual downward trend (Figure 4). Tree survey data on tree numbers and age suggests that the downward trend for production of these varieties will continue in the future. This is likely in part, because there are substantial numbers of old trees of these varieties.

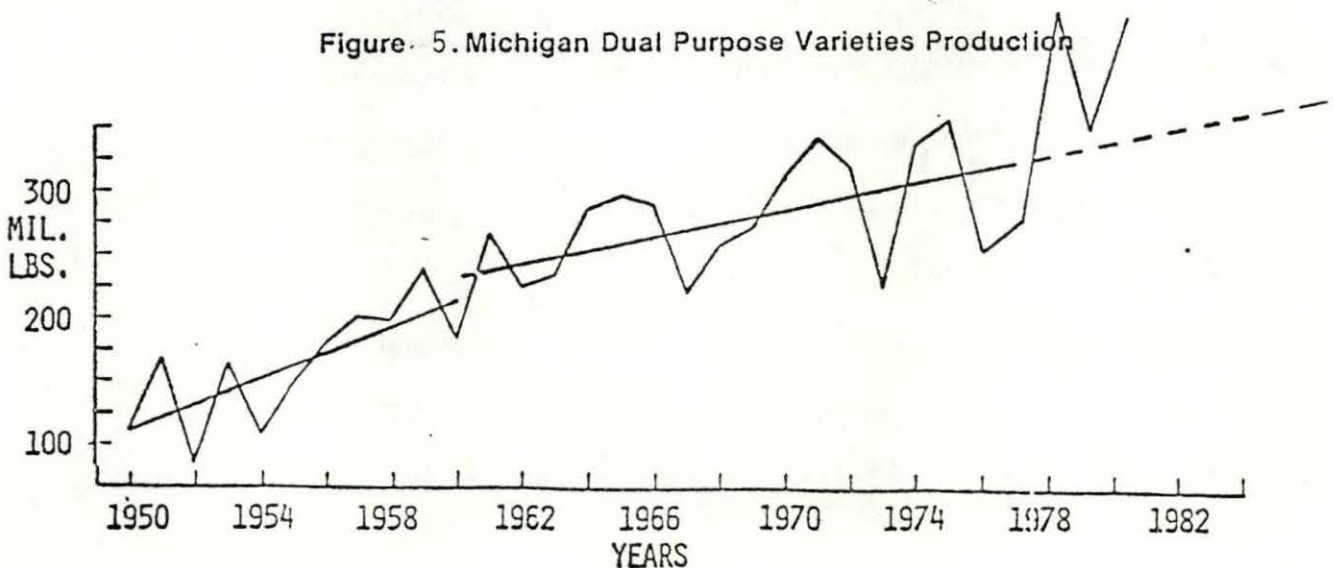
Growing supplies of apples for processing in Michigan are expected to be available from dual-purpose varieties. These dual-purpose varieties include Jonathan, Ida Red, Golden Delicious, Rome, Staymen Winesap, etc. Production

Figure 4. Michigan Processing Varieties Production

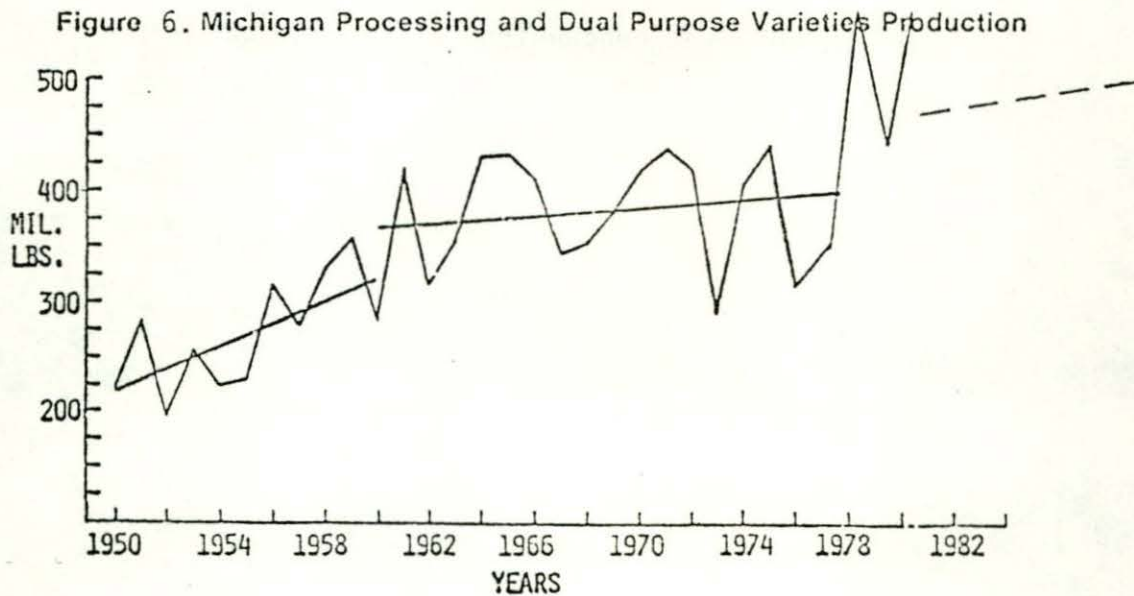


of dual-purpose varieties in Michigan has shown a distinct upward trend during the past two decades (Figure 5). Tree number data suggests that this upward trend will continue in the future. As mentioned earlier, this growth trend will be especially notable for the Ida Red variety and Jonathan will make up a smaller percentage of dual-purpose varieties than in past years. The dual-purpose varieties will provide substantial future supplies both for processing and for fresh market. Processors will continue to rely increasingly upon dual-purpose varieties for their raw-product supplies with somewhat less reliance on the traditional premium processing varieties such as Spys and Greenings.

Figure 5. Michigan Dual Purpose Varieties Production



If the production of processing varieties and dual-purpose varieties are combined into an aggregate category, there has been a gradual upward trend in production of these varieties in Michigan (Figure 6 ). This has occurred because the upward trend for dual-purpose varieties has been at a more rapid rate than the gradual decline in the premium processing varieties. Tree number data suggest that a gradual increasing trend in the future is likely for the combined category of processing and dual-purpose varieties. This indicates substantial supplies will be available for processing in Michigan in the future. On the other hand if processing apple markets are weak in the future, growers may become discouraged and take out substantial acreage. If this happens, future supplies for processing could be significantly less than those projected which are based on existing trees.



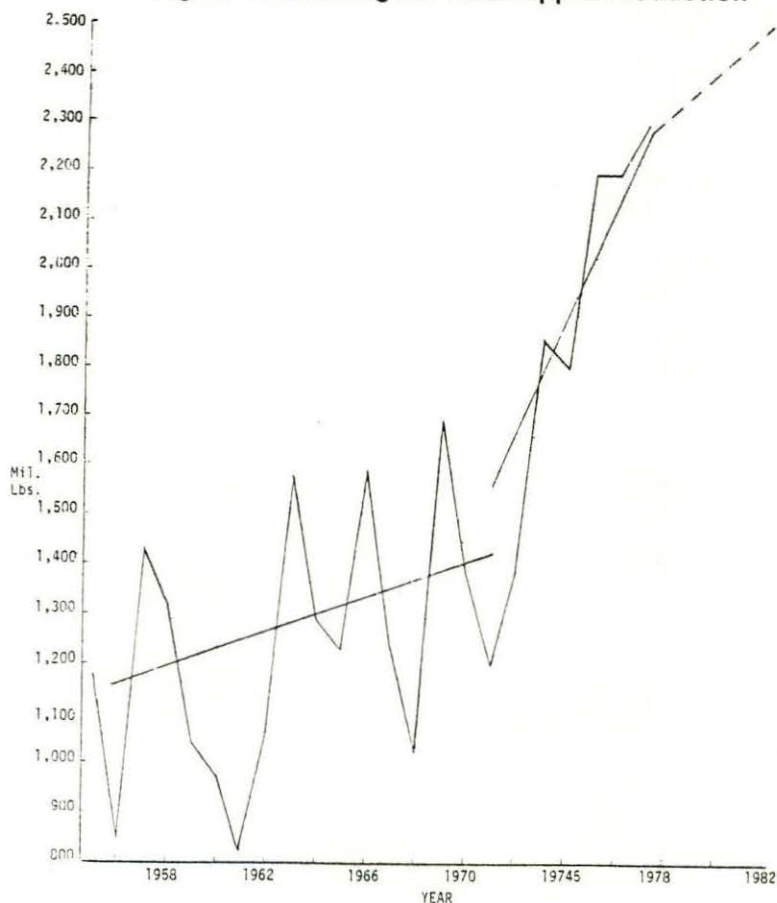
#### Washington Apple Production Trend

Apple production in the state of Washington has shown a large growth trend during the 1970s (Figure 7 ). This is particularly important because Washington

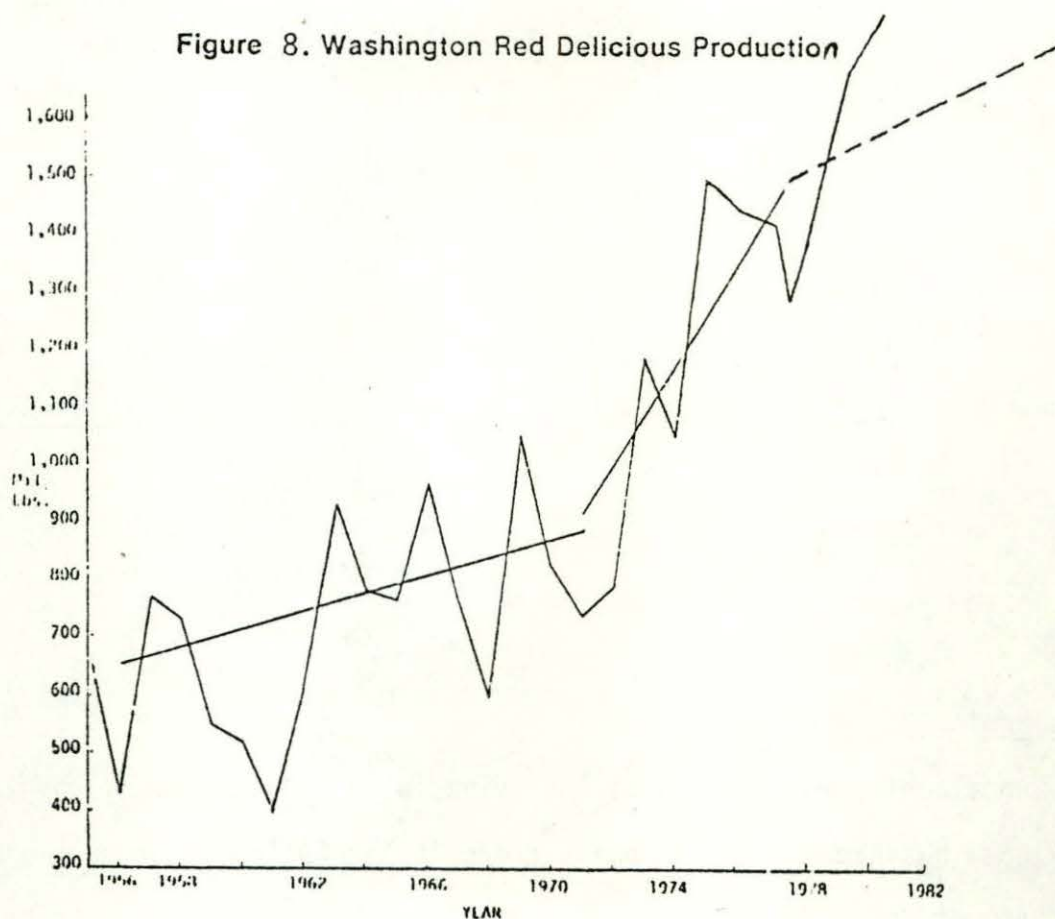
is by far the largest apple producing state in the country. Rapidly expanding new plantings as well as high yields per acre with their desirable climatic conditions add to this very pronounced growth trend in Washington.

Precisely predicting future production levels for Washington is made more difficult and complex by the fact that they have not had a tree survey for many years. Nevertheless Washington people seem to all agree that Washington will continue to expand apple production considerably in the future. The only question is by how much. The projections which are shown here are based upon estimates of knowledgeable industry-related people in Washington. Clearly Washington is a major growth state for apples. There will be a continuing trend for increasing supplies from Washington which will impact growers in the Eastern United States including New York and Michigan.

**Figure 7. Washington Total Apple Production**

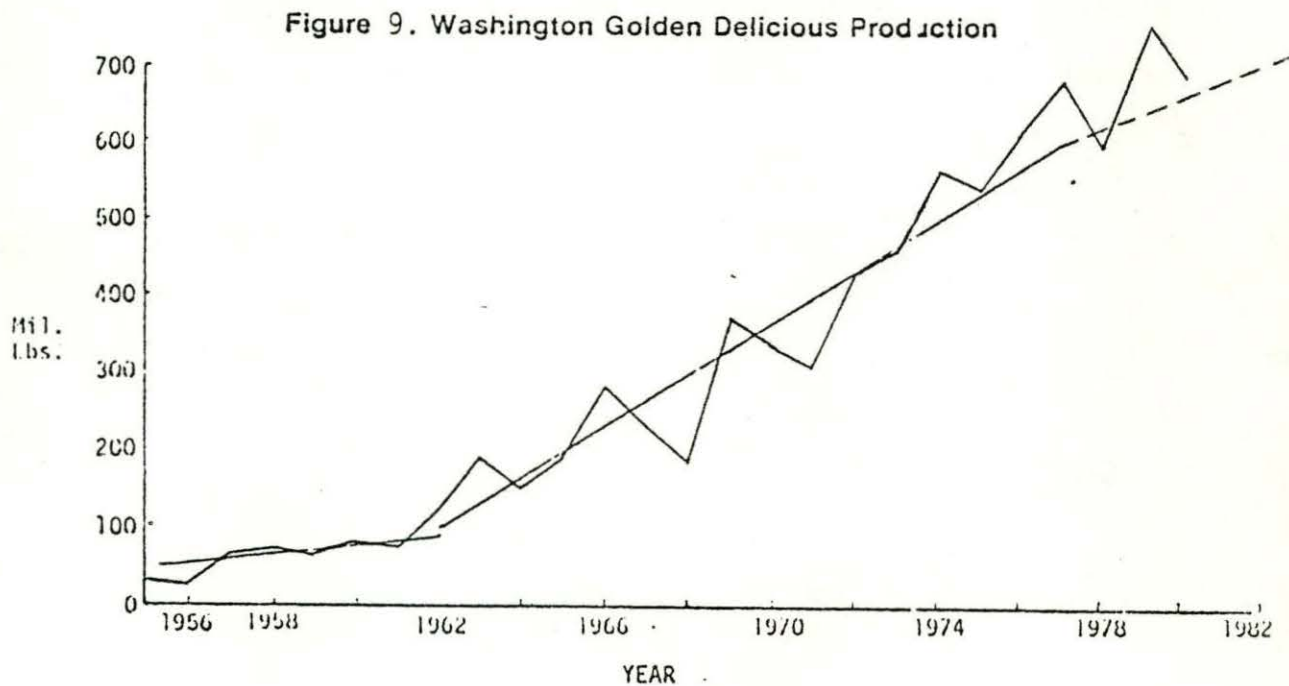


The expansion trend of apple production in Washington has been particularly noteworthy for Red Delicious (Figure 8). Industry sources in that state expect Red Delicious production to continue to increase substantially in the future. This will mean large quantities of highly colored Red Delicious available for the U.S. fresh markets.



Golden Delicious production has also shown marked upward trend in the state of Washington (Figure 9). The upward trend is expected to continue for Golden Delicious in the future, but at a slower rate than for Red Delicious. Although Golden Delicious from Washington are primarily grown for fresh market, many can be processed too. In the future even more Washington Golden Delicious could be processed. This could potentially have an impact of considerable

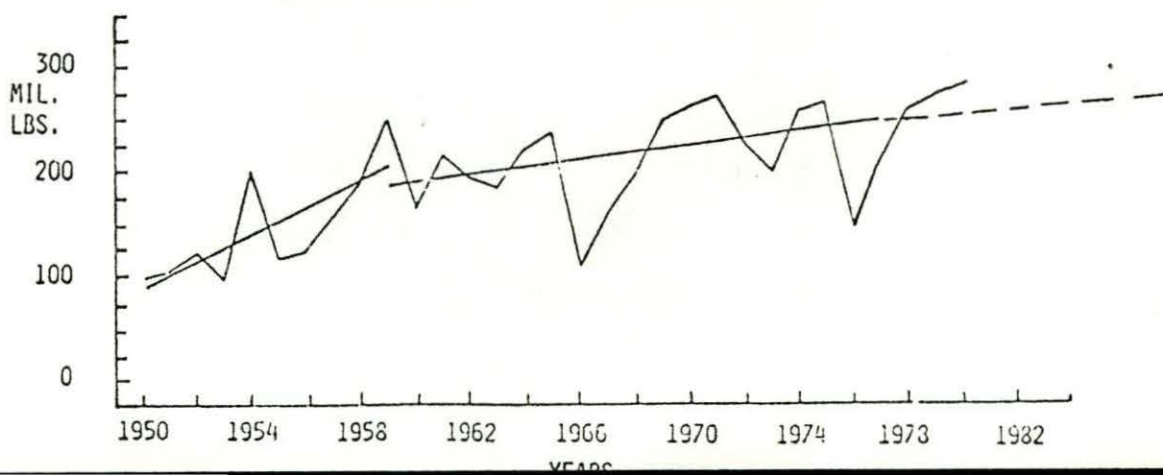
importance on the Eastern U.S. processed apple supply situation.



### Appalachia Apple Production

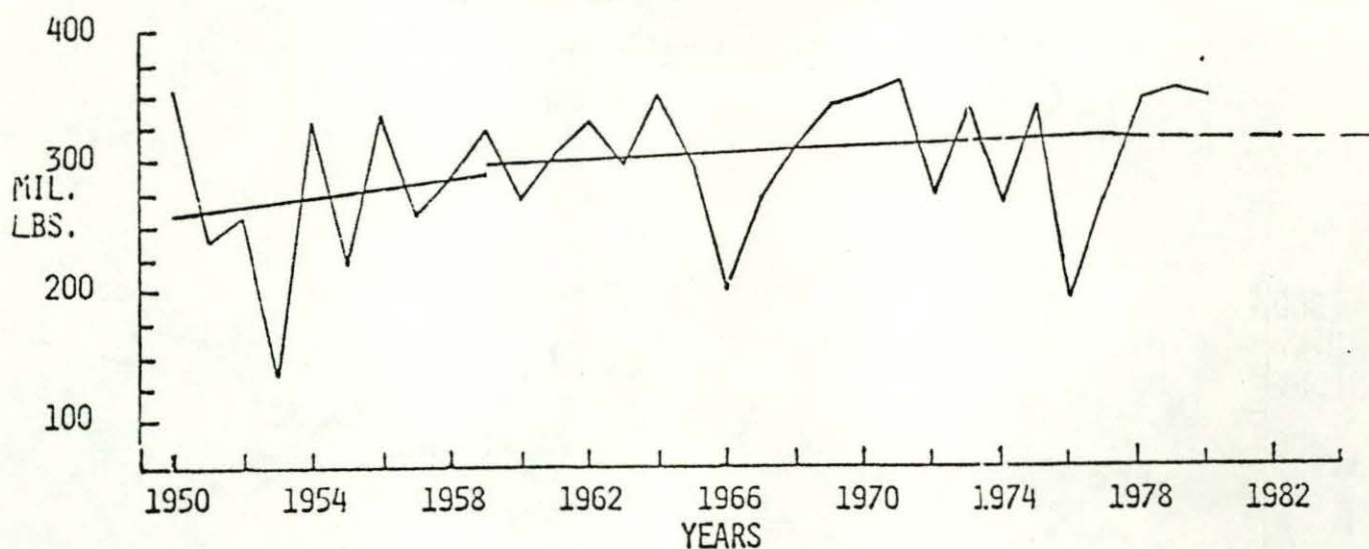
Appalachia, which includes Pennsylvania, Virginia, West Virginia and Maryland, has had a gradual upward trend in Red Delicious production (Figure 10). Tree number data suggests this will continue in the future. Growth in Appalachian Red Delicious production will come particularly from Pennsylvania where there are many young trees of this variety according to their 1978 tree survey.

**Figure 10. Appalachia Red Delicious Production**



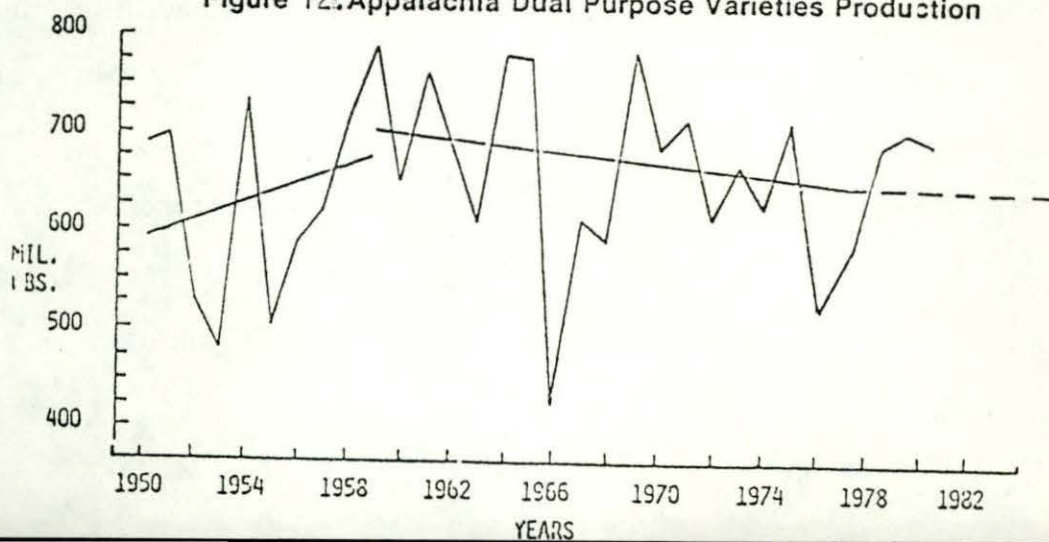
In Appalachia, the York Imperial has long been an important premium processing variety. During the 1970s production of Yorks showed annual fluctuations, but exhibited a fairly stable trend (Figure 11). During the next few years, tree number data suggest that the stable production trend will continue. A small number of non-bearing trees, however, suggests that in the more distant future York production will likely trend downward.

Figure 11. Appalachia York Production



Production of dual-purpose varieties in Appalachia has shown a gradual downward trend during the last two decades (Figure 12). Tree number data indicate that production of dual-purpose varieties in Appalachia will likely be fairly stable during the next few years.

Figure 12. Appalachia Dual Purpose Varieties Production

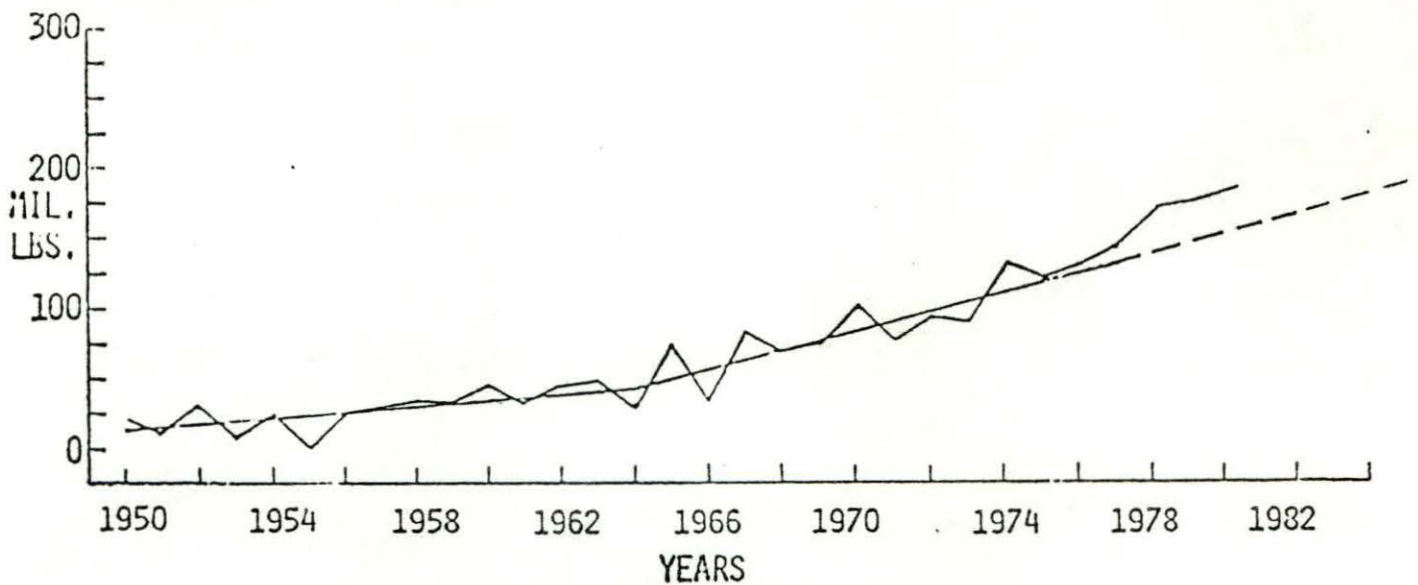




### North Carolina Apple Production

Red Delicious production in North Carolina has exhibited an upward growth trend during the 1960s and 1970s (Figure 13). Tree number data indicate that this upward trend will continue in the future. Thus a gradual increase in future Red Delicious production from North Carolina can be expected to continue. This will add to growing supplies of Red Delicious from most regions of the United States.

Figure 13. North Carolina Red Delicious Production



Dual-purpose varieties have also shown a growth trend during the past two decades in North Carolina. This is expected to continue in the future, but probably at a somewhat slower rate than has been experienced in recent years (Figure 14.).

Total apple production in North Carolina has shown a distinct upward trend (Figure 15 ). As with the dual-purpose varieties, this upward trend is expected to continue, but probably at a somewhat slower rate than in the past.

Figure 14. North Carolina Dual Purpose Varieties Production

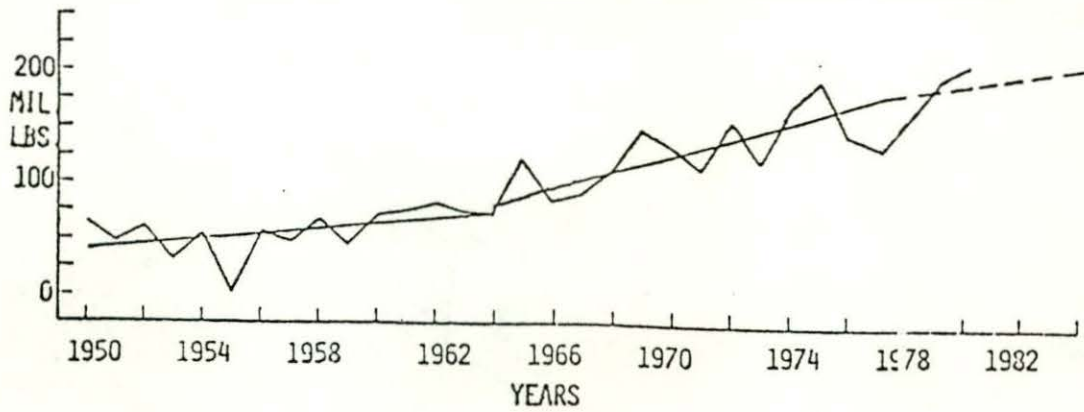
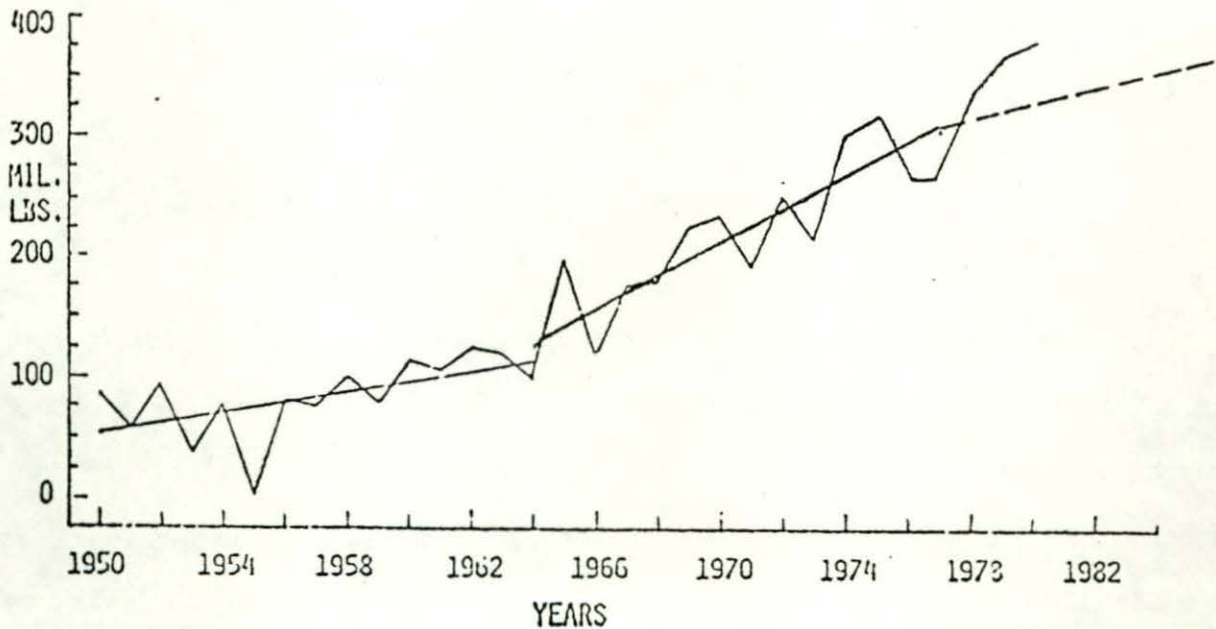


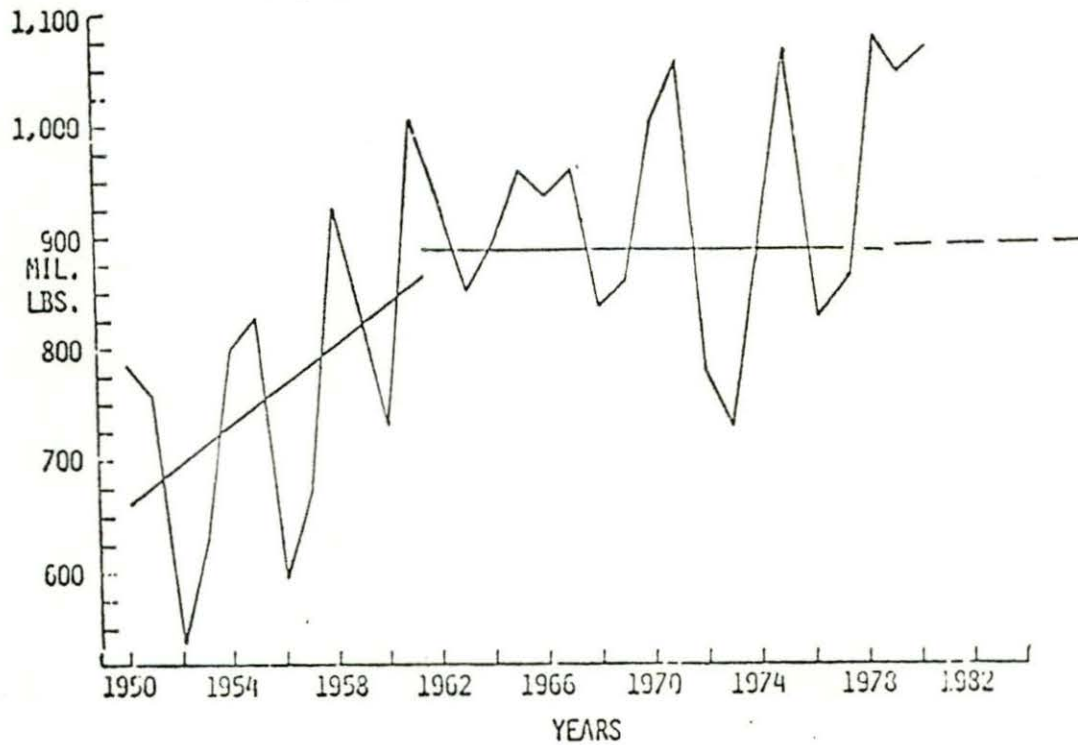
Figure 15 North Carolina Total Production



#### New York Apple Production Trends

Apple production here in New York has shown a steady to gradually rising trend (Figure 16 ). Tree number data for the state as a whole suggests that a steady trend for total apple production in the state will likely continue.

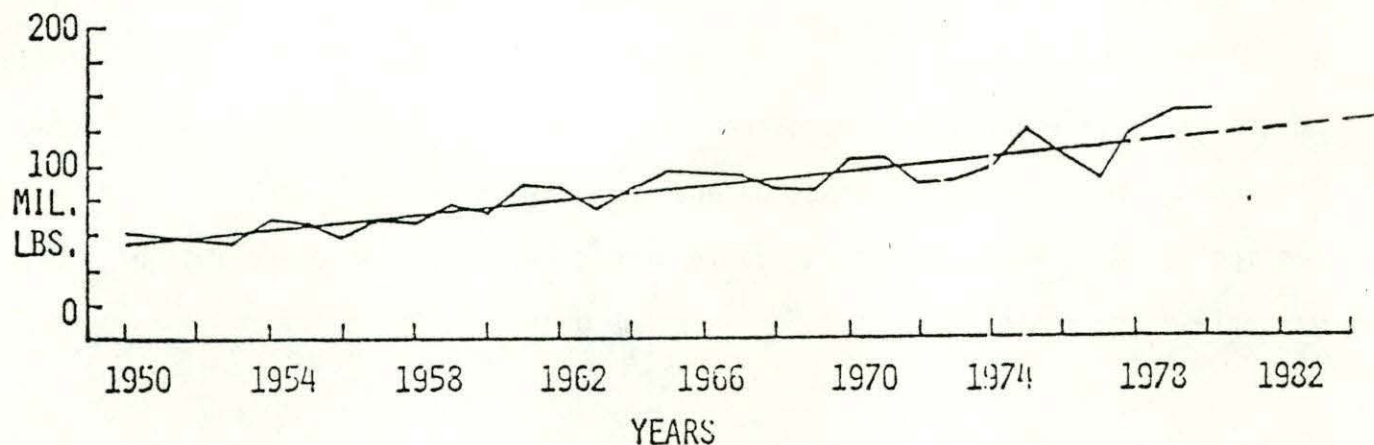
Figure 16. New York Total Apple Production



When considering projection estimates for your home state of New York, I would like to add that I'm somewhat hesitant on this since I'm an outsider and therefore I may be in a poorer position to interpret tree number data implications for New York than are some of you. Nevertheless, for the sake of completeness in the apple trends bulletin, we did include projections for New York, and I will relate these here. If your analysis is somewhat different I'd be interested in your reactions.

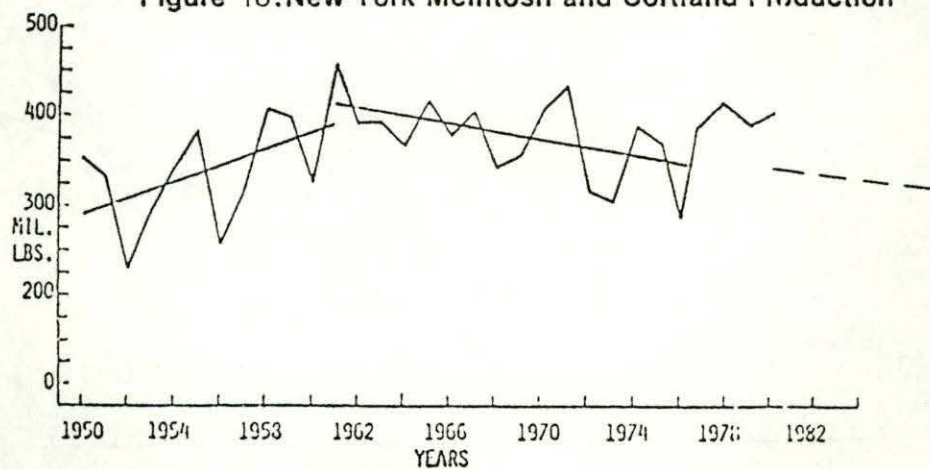
Red Delicious production in New York has shown a gradual upward trend (Figure 17 ). Tree number data suggest that this increasing trend will continue in the future as with most states, adding to the increasing amounts of Red Delicious for fresh market.

Figure 17. New York Red Delicious Production



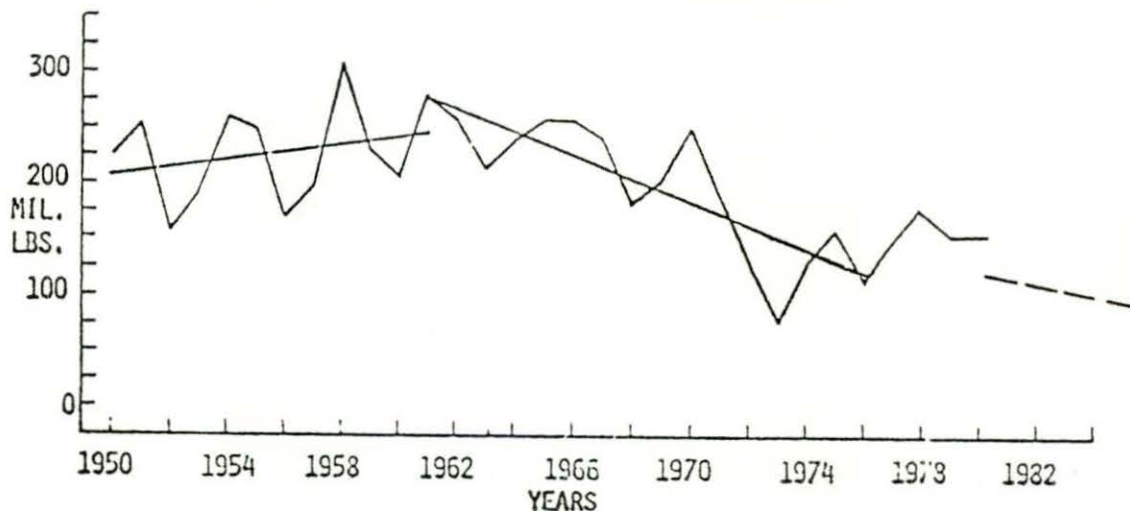
McIntosh and Cortland have long been important varieties in the state of New York. During the 1960s and 1970s production of McIntosh and Cortland in New York has shown a gradually declining trend (Figure 18). There are many old trees of these varieties in the state. This suggests a continued decline in the future. However, the high yields per acre and the special markets which New York has developed for these varieties suggest that growers will probably continue to rely to a substantial degree on these varieties in New York. This means that the downward trend will probably be more gradual than would be suggested by the large number of old trees as shown in the tree survey.

Figure 18. New York McIntosh and Cortland Production



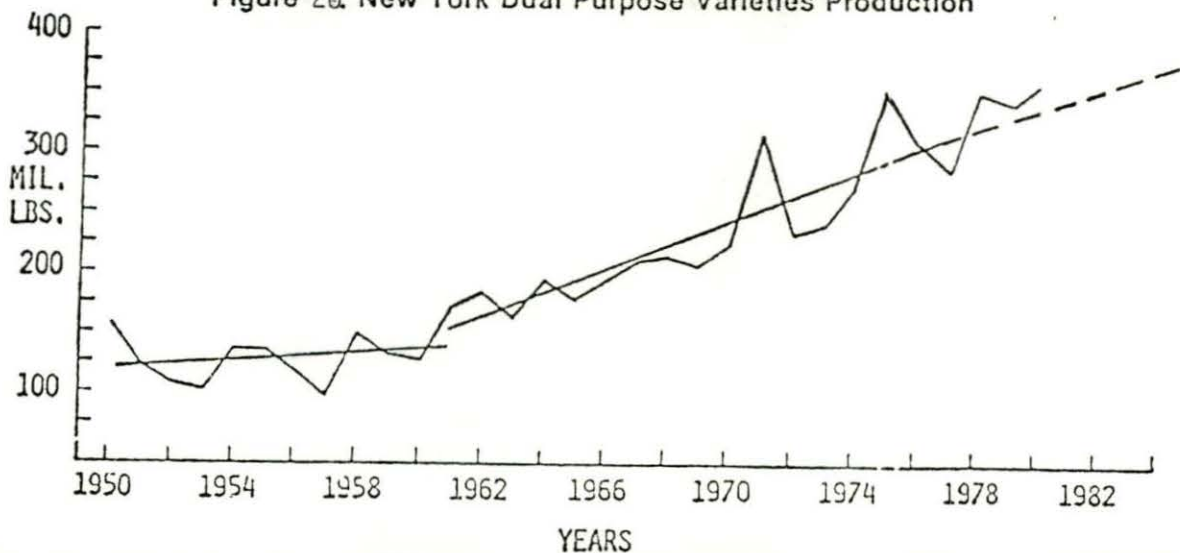
Premium processing varieties in New York, particularly Greenings, have shown a downward trend during the 1960s and 1970s (Figure 19 ). Tree number and age distribution suggest that this trend will continue down in the future although perhaps at a somewhat slower rate than has occurred during the past two decades. The future trend will, of course, depend upon the strength of markets for processing apples. Weak markets may cause growers to remove some orchards of these varieties more rapidly than projected in the graph of Figure 19.

Figure 19. New York Processing Varieties Production



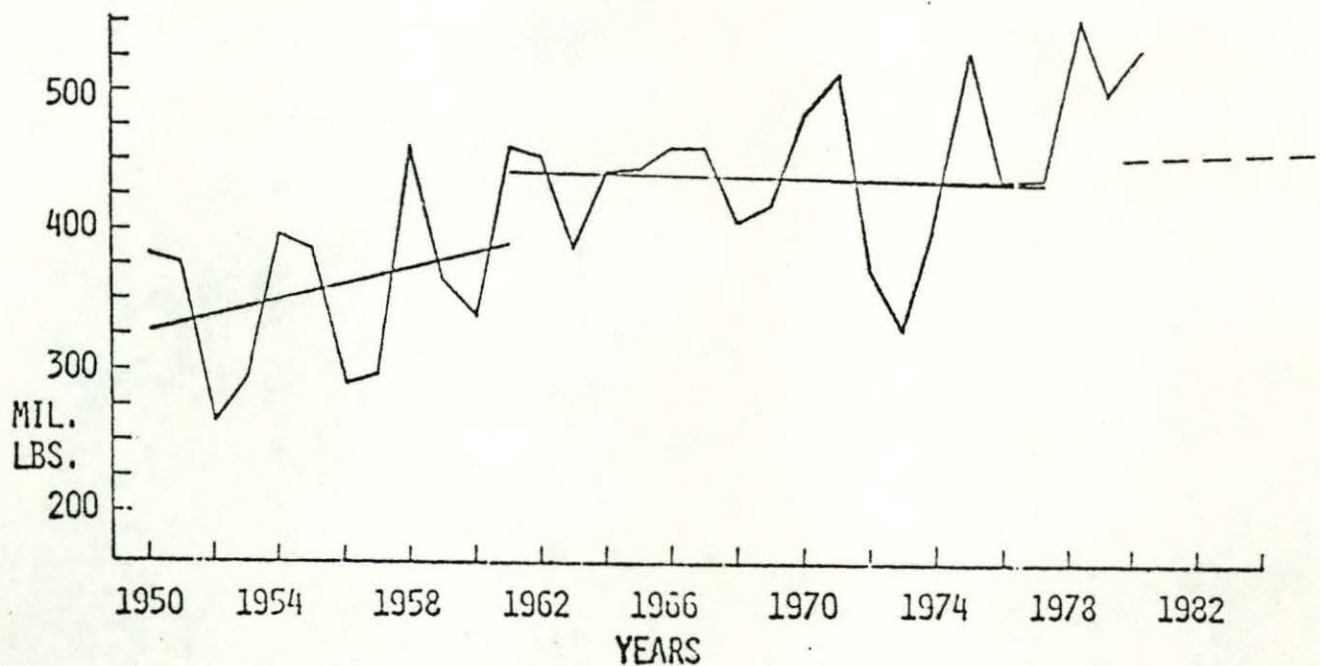
Dual purpose variety production in New York has shown a distinct upward trend. Tree number data indicate this will continue in the future (Figure 20).

Figure 20. New York Dual Purpose Varieties Production



If processing varieties and dual-purpose varieties are combined into one category, New York has shown a stable to gradually rising production for this aggregate category (Figure 21 ). Thus considerable supplies of apples for processing in New York have been available. Tree number data suggest that in the future there will be a stable trend for combined supplies of processing and dual-purpose varieties in New York.

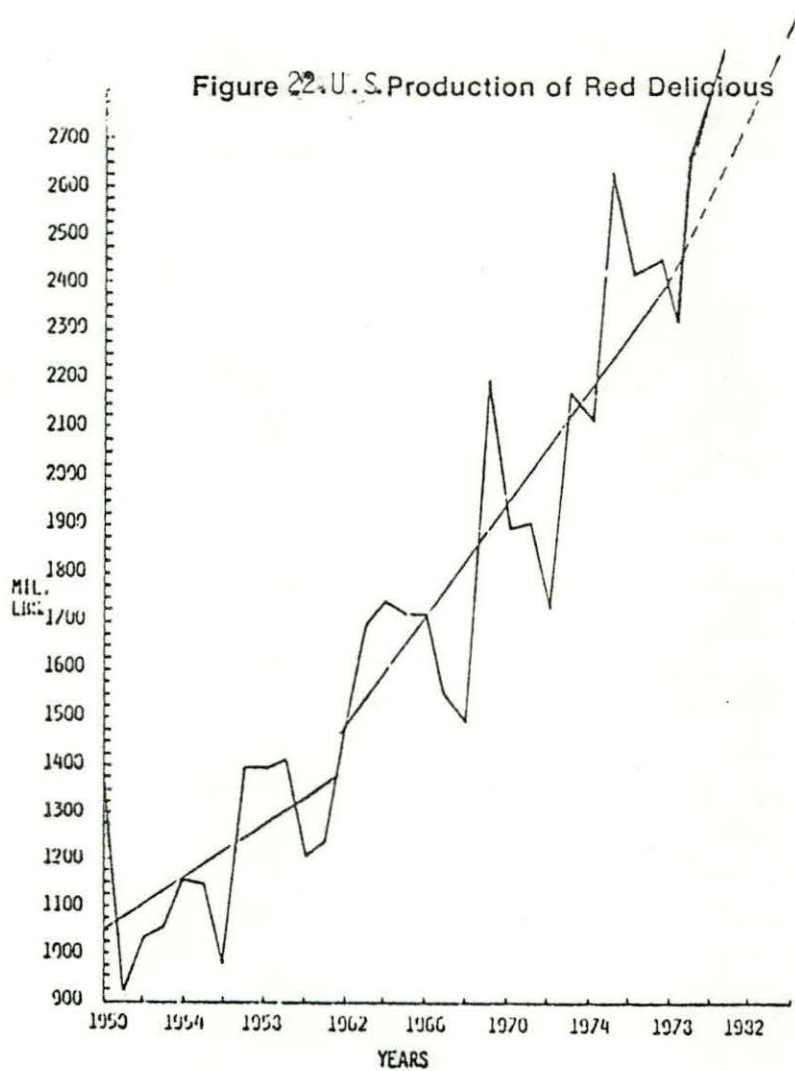
Figure 21. New York Processing and Dual Purpose Varieties Production



#### U.S. Apple Production Trends

The growth trend in U.S. apple production has been especially noteworthy for Red Delicious. This has been particularly rapid during the 1960s and 1970s (Figure 22). Expansion of the nation's Red Delicious production is expected to increase even more rapidly during the 1980s. This is due in part, to the large expansion of Red Delicious which will continue in Washington. In addition, other major apple producing states (except California) are also expected to increase Red Delicious production still further in the future. Thus, large

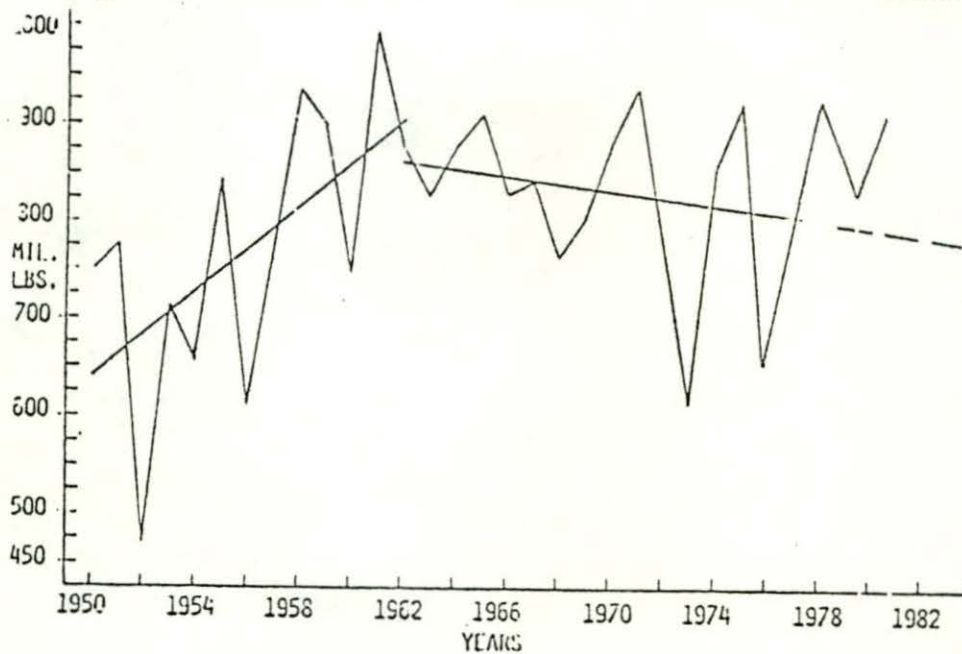
increases in supplies of this main fresh market variety will occur. I guess we can say that it is good that consumers like Red Delicious, because they are going to have a lot more of them available in the future. There will also probably be plenty of U.S. Red Delicious to export to other countries.



U.S. production of McIntosh and Cortland, which are primarily grown in New York and Michigan, has shown a gradual downward trend. Tree survey and age distribution data suggest that a gradual downward trend for these varieties will continue in the future (Figure 23 ). The rate of this trend will depend

in part upon the competitive position of McIntosh vs. Red Delicious in the fresh market and of McIntosh with some of the dual-purpose varieties in certain processing markets. Unusually low returns from McIntosh and Cortland could cause growers to remove many old orchards; thus causing the future downward trend in production to perhaps be even more rapid than indicated in Figure 23.

Figure 23. U.S. Production of McIntosh and Cortland Varieties

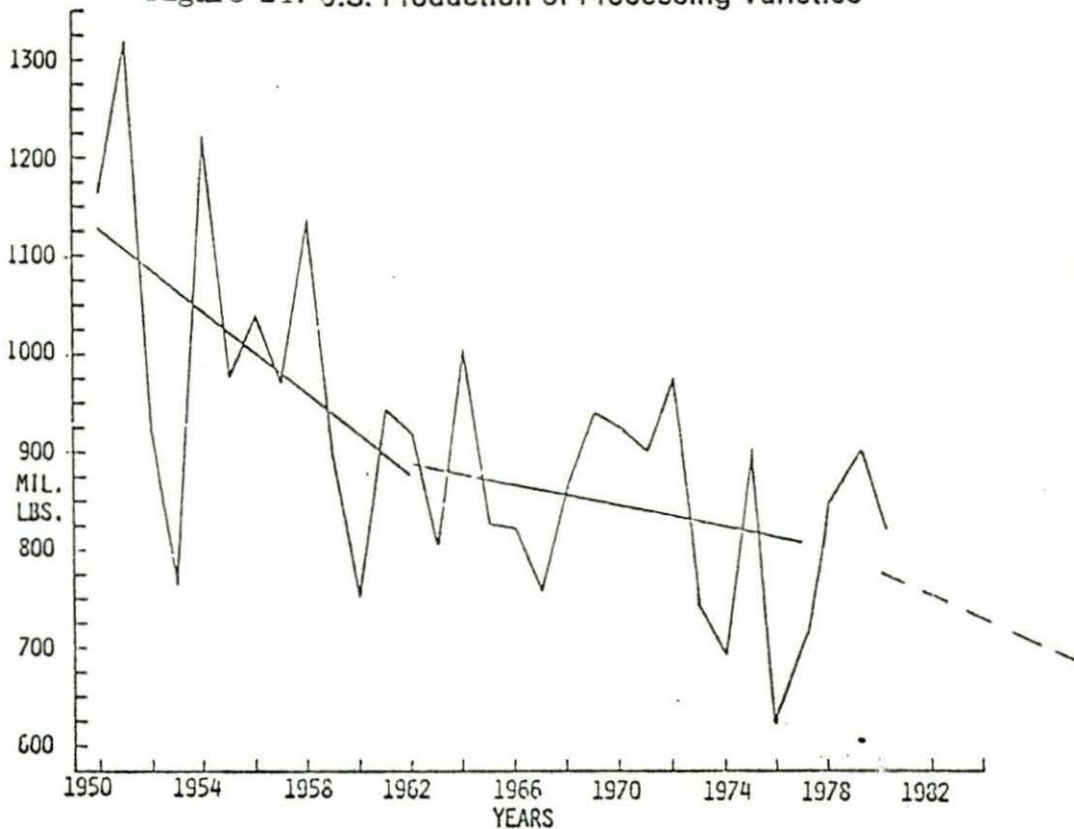


U.S. production of premium processing varieties has shown a distinct downward trend during the last three decades (Figure 24). (In the U.S. this category includes Greenings, Spies, York Imperial and Gravenstein in California.) Although the downward trend for processing varieties has been more gradual during the 1970s than during the 1950s, in most regions there is a substantial percentage of old trees of these varieties. Thus it appears that a definite downward trend in future production in these varieties is likely in the U.S.

A distinct upward trend for production of dual-purpose varieties has been shown in the U.S. (Figure 25). These provide substantial quantities of apples

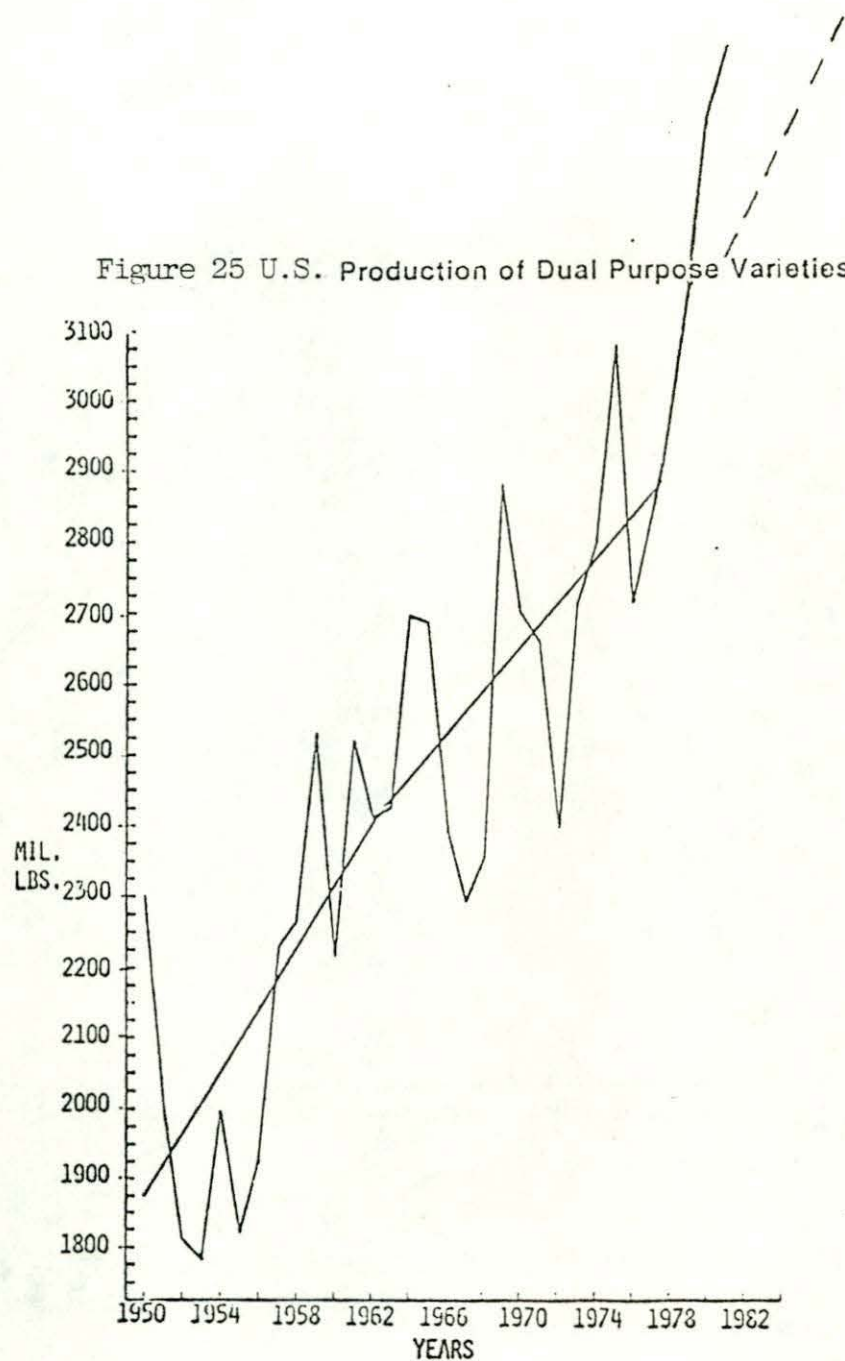


Figure 24. U.S. Production of Processing Varieties



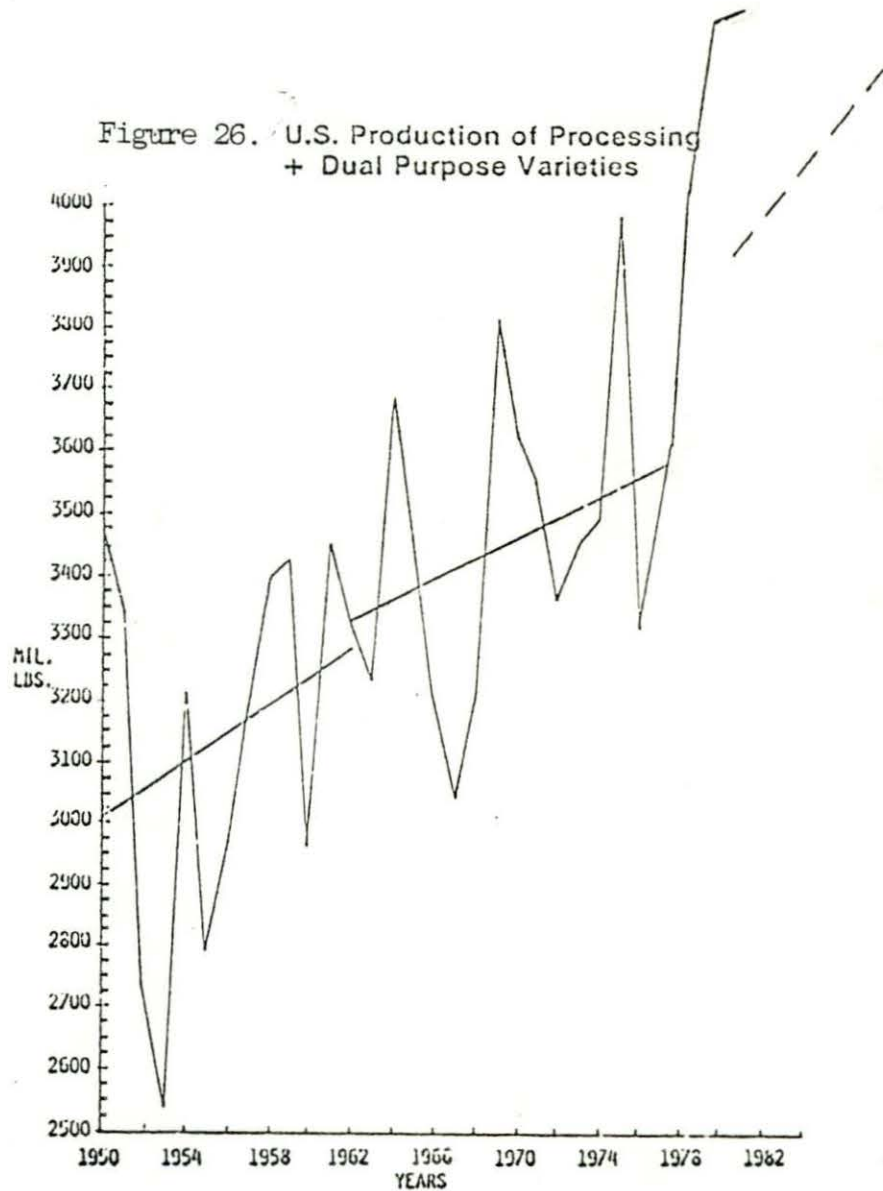
for processing or fresh market use. Most major apple producing states have been expanding production of dual-purpose varieties. Tree survey data and other information suggest that dual-purpose production in the U.S. in the future will continue to expand and probably at an even more rapid rate than has been experienced during the 1970s. The percentage of these varieties that will actually be sold processed will, of course, depend in part upon the strength of the demand in the processing markets relative to fresh market demand.

Because of the substantial increasing production trend for dual-purpose varieties, the U.S. production of combined processing and dual-purpose varieties has shown an upward trend (Figure 26). That is, the growth in dual-purpose varieties has been more rapid than the decrease in processing varieties. This trend situation is expected to continue in the future. In fact the increase in the combined processing and dual purpose category will probably be at a faster rate in the future than it has been during the 1970s. This shows that



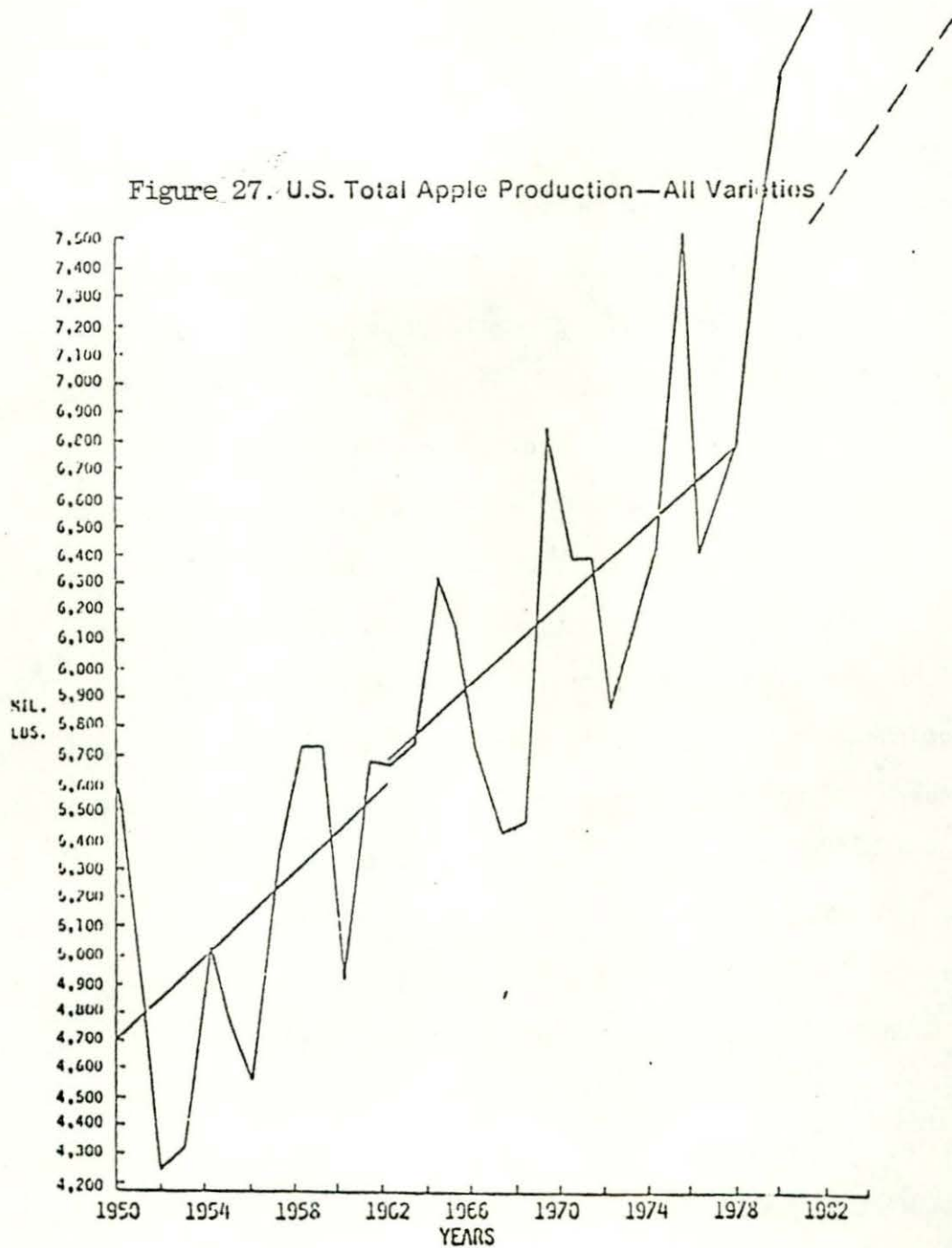
there will be substantial U.S. supplies of raw apples for processors.

If we add together the production of all varieties of apples across the nation there has been a distinct upward growth trend for the past three decades. (Figure 27 ). The rate of growth seems to be increasing especially rapidly in recent years. The large recent increase has been particularly noteworthy from



the state of Washington. In the future it appears that U.S. apple production will continue to expand considerably.

The increasing national supplies of apples will provide challenges for the industry. One of the important challenges will be to find sufficient market demand for this expanding production to be sold at profitable prices. Until 1980 the recent experience on apple demand expansion to balance increasing supplies has been positive. That is, the U.S. apple industry has been relatively successful in most years in expanding markets to sell the growing apple crops at relatively favorable prices to growers. Market expansion has been particularly successful for apple



juice and fresh market sales. Growth in the markets for apple sauce and frozen apples have not been as rapid as for fresh and juice. A key question for the future is: Will market demand grow sufficiently to permit sales at favorable grower prices with the substantial further increases in apple production? Hopefully this can be achieved by the apple industry. It will, however, take concerted action both by individuals and by the apple industry through its

organizations. Sufficient market expansion to sell the rapidly expanding supplies at a profit will not happen just by itself.

#### Some Marketing and Economic Trends Affecting Michigan Apple People

Both the rapid increase in the apple juice sales and growth in the U.S. fresh market for apples have been positive features for apple marketing during the latter years of the 1970s. These are two reasons why a large Michigan apple crop in 1978 was sold fairly strongly. The juice market was especially bullish in that year. There was also a shorter crop in the state of Washington that year which influenced the nation's apple supplies and hence the total fresh market in an important way. In the future it appears that the trend toward increasing juice sales will continue, although perhaps not as rapidly as occurred during the past five years. Fresh market demand for U.S. apples will also probably continue to expand. Export of fresh apples may also increase considerably in the future. Of course, the fresh market sales will need to expand substantially if growers are to get a profitable return in the future.

Despite the positive growth trends for fresh apple markets and apple juice, 1980 was a difficult economic year for apple growers in Michigan. Markets and prices have not been strong. A large crop of apples nationwide, including a large crop in Washington as well as a large crop in Michigan, have contributed to supplies and have been price depressing factors. In addition, high interest rates, a weak economy, and high inflation in the U.S. economy have added to high risks and costs for processors. Processor profits on apples have also not been especially high during recent years. Also the longer-run market growth trend for U.S. peeler apples has been slow in recent years. These factors, especially high interest rates and the weak economy, resulted in Michigan processors during 1980 in many cases being unable or unwilling to pay cash at harvest time for peeler

apples. Delayed payments were common. This added to growers' difficulties in terms of their cash flow. This cash-flow crunch coupled with low prices and in some cases no market at all for their apples made it a very difficult year for Michigan apple growers.

Fresh market prices for the 1980 crop have also not been very strong. Large supplies and strong competition from the many apples in Washington are major factors affecting this situation.

Some of the factors affecting markets in 1980 are examples of certain long-term trend factors. Other factors seem to be unique for this particular year. It appears that in Michigan the trend toward more grower financing of the processed packs through both delayed payments and more grower owned cooperative processing facilities will continue in the future. In recent years there has been a significant but rather gradual increasing trend in the percentage of the apple processing done by grower owned firms with a corresponding decrease in the percentage handled by proprietary processors. This trend has not proceeded nearly as far for Michigan apples as it has for tart cherries. The increase in grower-owned processing has been until recently primarily for apple sauce and frozen slices. Until 1980 a large majority of the apple juice processing was done by proprietary processors. But now there are some major changes occurring which indicate that there will be a substantial shift in the near future to more co-op processing for apple juice as well as continuing with other types of processed apple products.

It appears likely that in the future when processors are in a difficult economic situation (as they were in 1980), especially when interest rates are very high and/or there are weak market conditions for processed apples, delayed payments to Michigan growers will continue to be common. On the other hand, if supplies are short or markets are strong for processed apples, probably there will be a switch back to more cash-at-the-time -of-delivery payments in those

years. Although it is understandable why processors are making changes in the timing of payments, this does put growers in a difficult cash-flow situation. This is particularly difficult for growers when they are receiving low prices at the same time that their costs continue to rise with inflation and with increasingly costly government regulations such as for minimum wage, worker's compensation and social security taxes.

Although prices for juice apples are down in 1980, the quantities of juice sold continues to be strong. Since this market is expected to experience continued growth in the future, during the next few years in Michigan perhaps there will be an increasing percent of the apples sold for juice with a gradual lowering of the percentage of apples sold for peelers. The extent of such a switch will, of course, depend upon the relative prices in the juice and peeler markets. It will be particularly likely to happen if juice prices in future years are especially strong as they were in certain recent years.

During the 1970s there has been strong interest on the part of many Michigan apple growers in the use of bargaining with the support of the unique bargaining legislation which exists in Michigan called "The Michigan Agricultural Marketing and Bargaining Act." Interest by growers in this has occurred as they seek rises in apple prices to the extent possible so that growers can keep up with their rising costs of purchased inputs. The growers' need for stronger prices to match inflationary increases in costs will probably continue to fuel their interest in bargaining as one approach to this problem. It is recognized, of course, that effective bargaining and pricing also must consider what price levels will move the volume of the crop that needs to be sold. Pricing and other marketing approaches also need to strive for realistic economic situations that will not put processors out of business. Strong economically viable processors are needed to continue to provide volume markets outlets for the substantial percentage of

the apple crop that usually is sold for processing.

The growth in the U.S. fresh apple markets provide some favorable opportunities for the Michigan apple industry and I presume for New York too. The growth in fresh apple demand seems to be centered heavily on the Red Delicious variety. The increase in Red Delicious plantings in Michigan is consistent with the growing demand for fresh sales of this variety. Improved strains of Red Delicious which predominate in the young plantings also enable Michigan to have an improved quality of this premium fresh market apple. The growth in plantings of Ida Reds also provide an opportunity for Michigan to have a positive impact in the nation's growing fresh markets. Rapidly rising transportation costs will help Michigan and other Eastern U.S. apple producing areas regarding competitive position on delivered costs in comparison to Washington. This is because the rising costs of fuel, and hence truck transportation costs, will impact Washington to a greater degree than eastern producing states which are closer to the population centers in the eastern part of the country. Therefore, this provides another positive feature for fresh apple sales from Michigan and New York.

One important trend that the apple industry can view with pride is the record of expansion of fresh markets. This has been aided by the activities of the various apple promotional programs including that of the Western New York Apple Growers, Michigan Apple Committee and the Washington Apple Commission. These programs have also contributed to the market expansion for apple juice. As we face increasing apple supplies in the future from many areas of the country the demand expansion efforts such as by these organizations and by shippers, processors and sales agencies will continue to be extremely important.

Another positive change that has occurred in Michigan recently has been that several juice processing operations have tied in with especially strong brands of apple juice. This enables Michigan processors and hence growers to gain some advantages from the strong brand position in order to sell large



volumes of juice in a strong fashion. This can be important for exploiting the future potential for growth in the apple juice market. It is especially important when one considers the difficulty and expense of starting from "scratch" to establish and maintain a strong regional or national brand position. Because of these considerations, it appears that in the future there may be even more efforts by processors and grower groups to tie-in with some strong apple juice brands. This makes sense also in view of the trend toward more grower owned processing cooperatives.

### Summary

Apple production in the U.S. has shown a substantial upward trend during the 1970s. Available tree data for most states indicate that most regions will have steady to increasing production during the 1980s. Increases will be especially large from the state of Washington. Thus continued growth in total U.S. apple production is expected for the 1980s. Increasing supplies will provide challenges to the apple industry to expand markets sufficiently to balance the expected larger increases in supplies at profitable grower prices. Expanding supplies can also provide desirable opportunities for the apple industry. The apple industry's record during the 1970s in expanding demand by a magnitude comparable to the increasing national supplies has been generally a notable success. Careful planning and continued diligent efforts by the industry will be required in the future to continue a comparable success story of overall apple market growth during the 1980s. Positive trends which can contribute to relatively strong market in the 1980s include the notable trend for expansion of apple juice demand and a significant increase in the fresh apple markets. In the future export markets for fresh apples may also make substantial contributions to overall markets for U.S. apples.

Trends toward more efficient apple planting systems and increased percentages of the plantings to varieties which are preferred by the markets, especially Red Delicious and Ida Red for fresh market, appear to be favorable factors in adjusting to changing demands. Rising transportation costs will also likely improve the competitive position of the eastern apple producing states.

Although the 1980s will undoubtedly be challenging years for the apple industry, with good planning and strong demand expansion programs there will likely continue to be good opportunities for the apple industry in Michigan and New York. There will need to be continuing industry efforts to turn the challenging supply trends into favorable opportunities for positive economic returns to the industry.