Urban and Agricultural
Land Use Trends & Projections
1985, 1994, 2000, 2025, 2050
Miami-Dade County, Florida

Urban Development Expansion

The attached Table 1 contains actual land use data for Miami-Dade County for three historical years, 1985, 1994, and 2000. Using these three trend years, "baseline" projections to 2025 for the large aggregate categories of land use were prepared. This was accomplished by first deriving ratios of population and employment to the developed urban land for those years.[1] Then applying a log-linear regression equation to the ratios a value for the year 2025 was obtained. This ratio was then applied to the average of population and employment from existing projections for those variables to derive the associated urban land use for 2025. Countywide, this figure is 297,863 acres, an increase of 49,415 acres from 2000. This exceeds the stock of undeveloped private land by only 1,666 acres so it would seem that little agricultural land would be converted during this time period. However, as the table shows the stock of agricultural land declines substantially (by 26,437 acres). This would occur under the likely scenario that new development takes place incrementally starting from the existing Urban Development Boundary (UDB).

The approach used to reach these final results proceeded in steps. A judgment was made about the future increase in protected and government owned land. From 1985 to 2000 more than 61,000 acres was added to this category. The present information available from various sources indicates that this magnitude will not be repeated out to 2025. The best assumption appears to be that only 3,750 acres (150 acres/year) would be transferred to this category over the 25-year period from areas that would affect agriculture. Increases in the amount of inland water were estimated by using historical relationships between urban development and the associated lake excavations. This resulted in projecting a figure of 3,301 acres. With these three variables in place, the next step was to determine how the growth in urban developed land would be allocated between undeveloped private land and agriculture in accordance with the assumption stated above (from the UDB outward, as needed).

[1] In the average of population and employment, population was given double weight since residential acreage greatly exceeds commercial and industrial acreage and the three together are a proxy for all urban land uses. The regression equation is given by $Y=a+b \ln X$ where Y=total urban acres and X= ratio (Pop)2+emp./urban acres.

As Table 2 shows, as of 2000 within the UDB there were 18,330 acres of undeveloped private land and 12,958 acres of agriculture. To meet the requirements for urban development, which includes only urban land uses, the increase in protected land and inland water, this total of 30,738 acres (allows for 3 percent unused) is exhausted just beyond the year 2015. At that time the UDB would need to be adjusted. The first land to be utilized would very likely be the undeveloped private land in the Urban Expansion Area (UEA) and the agricultural land within the UEA.[2] This totals about 10,400 acres, most of it agriculture land. At this point about 18,000 acres of agricultural land will have been converted. However, to absorb the urban growth out to 2025 more than 8,000 additional acres of agricultural land is converted.

Table 1
Land Use Trends & Projections
Urban Development Accommodation
Total County
1985, 1994, 2000, 2025
Miami-Dade County, Florida

	1985		1994		2000		2025	
Land Use	Acres	%	Acres	%	Acres	%	Acres	%
Developed-Urban Uses*	209,564	16.9	236,737	19.2	248,448	20.2	297,863	24.2
Undev- Private	139,253	11.2	71,398	5.8	47,749	3.9	17,720	1.44
Agriculture**	94,932	7.7	90,388	7.3	80,403	6.5	53,966	4.4
Protected & Gov. Owned***	794,789	64.2	836,098	67.7	856,013	69.5	859,763	70.0
Total Land	1,238,538	100	1,234,621	100	1,232,613	100	1,229,312	100
Water^	309,837	——	313,754	——	315,748	——	319,049	——
Total County	1,548,375	——	1,548,375	——	1,548,361	——	1,548,361	——

* Residential, Commercial, Industrial, Hotels, Institutional, Urban Parks and Beach, Transportation, Comm., and Utilities

** Groves, Crops, Grazing, Horse trng.& stables, Poultry, Fallow land, Plant nurseries, Aquaculture, Farm storage& Other

*** National Parks, Water Cons. Areas, CDMP Env. Protected and Vacant Government Owned. Assumes 150 acres per year average increase, 2000-2025.

^ Inland and Coastal Water; change is entirely due to additions to inland water.

Source: Research Section, Miami-Dade Department of Planning & Zoning

[2] Specific crop losses within the UDB and UEA are estimated (acres) at: Vegetables-8,140; Nurseries- 3,452; Fruit Groves- 1,000 plus some fallow land and miscellaneous agricultural uses totaling about 500 acres. This does not include a few thousand "out" acres which consist of parcels that were recently in agriculture but have been withdrawn and no longer receive an agriculture exemption. Source is special GIS coverages found in University of Florida, Institute of Food and Agricultural Sciences, Miami-Dade County Agricultural Land Retention Study, Vol.1, Summary and Recommendations, April, 2000.

Table 2
Land Use Trends & Projections
Urban Development Accommodation
Within Existing UDB
1985, 1994, 2000, 2025
Miami-Dade County, Florida

Land Use	1985 Acres	%	1994 Acres	%	2000 Acres	%	2015* Acres	%
Developed-Urban Uses**	180,224	76.3	205,580	80.9	216,024	85.1	244,216	96.9
Undev- Private***	34,632	14.7	27,750	10.9	18,330	7.2	338	0.1
Agriculture^	18,033	7.6	17,472	6.9	12,958	5.1	-	0
Protected & Gov. Owned^^	3,208	1.4	3,386	1.3	6,682	2.6	7,575	3.0
Total Land	236,097	100	254,188	100	253,994	100	252,129	100
Water^^^	9,907	——	12,107	——	12,297	——	14,162	——
Total UDB	246,004	——	266,295	——	266,291	——	266,291	——

* All values are actually for first quarter of 2016.

** Residential, Commercial, Industrial, Hotels, Institutional, Urban Parks and Beach, Transportation, Comm., and Utilities

*** Three percent of undeveloped private land is assumed to be held from development.

^ Groves, Crops, Grazing, Horse trng.& stables, Poultry, Fallow land, Plant nurseries, Aquaculture, Farm storage& Other

^^ National Parks, Water Cons. Areas, CDMP Env. Protected and Vacant Government Owned. Assumes 886 acres added, 2000-2015. This increase is one-fourth annual rate of 1985-2000.

^^^ Inland Water. Increase is derived using 1985-2000 ratio of inland water to developed land.

Source: Research Section, Miami-Dade Department of Planning & Zoning

The reason for this is that a large portion of the 47,749 acres of undeveloped private land countywide is in scattered sites or larger pieces on the outlying fringe which will not be developed until much later, if at all, except at very low densities. Some of this land may also be purchased by governmental agencies. In this analysis a relatively small amount of this scattered land was assumed to be developed (about 2,000 acres). Again, this estimate was based on the historical experience from 1985-2000 of residential expansion beyond the UDB.

Table 1 provides the land use breakdown for the year 2025 after all conversions are made. About 24.2 percent is urban developed land, with only 1.44 percent remaining as private undeveloped and 4.4 percent agriculture. The largest use is the various protected and vacant government owned land; the majority being in the first category. Almost 54,000 acres of agricultural land is still available and, under the growth assumptions herein, it would be largely contiguous.

Of course, these projections are based on the assumption of a continuation of essentially the same land use trends that occurred during the 1985 to 2000 period. If in the future higher densities can be achieved then considerable reductions in the amount of urban land required can be realized. For example, a modest 12 percent increase in the residential population density from the year 2000 figure would result in a savings of 15 square miles of land by 2025 (10,000 acres). This could be available for agriculture. But even absent this, the analysis presented here indicates that by 2025 a substantial supply of land for agriculture will be retained despite the very large growth in urban land uses. However, the viability of agriculture in the future is dependent upon

many variables other than urban growth pressures. Thus, the long-term future of agriculture land use needs must be assessed independently.

Land Requirements for Agriculture

Before doing this it is instructive to list recently published figures for total agricultural land from three reliable sources. The U.S. Census of Agriculture reports 85,093 (published in 1999 for the year 1997); the Miami-Dade Department of Planning and Zoning land use counts, 80,403 (2000); the University of Florida GIS coverage, 76,423 (2000).[3] Given the difficulties of arriving at accurate counts of land used for all types of agricultural purposes, these values are quite consistent with each other even though different methods were used in measurement.

A good place to start in projecting future use is to review the historical trend for agriculture land use, and data from the five year Censuses of Agriculture by the U.S. Department of Commerce, Bureau of the Census, is one of the best sources. Data from the six agricultural censuses are available (Table 3). The three variables shown, Acreage in Farms, Total Cropland and Harvested Cropland show a high degree of stability. Over this 23-year period Acreage in Farms has a mean value of 85,691 and figures for all years except 1978 are quite close to this (the 1974 number is 11 percent below). The same is true for Total Cropland with 1974 now being the outlier with a mean value of 68,674. The variable, Harvested Cropland has the lowest variation of the three with a mean of 60,798 and no value differing by more than eight percent. Not surprisingly, regression analysis yields almost a straight line projection for the first two. Total farm acreage drifts downward slightly and total cropland shows a very small upward tilt. Harvested cropland however, displays a fairly strong upward trend.[4]

Table 3
Trends and Projections of Agricultural Land
1974-2025

Year	Acreage in Farms	Total Cropland	Harvested Cropland
1974	76,318	62,096	55,730
1978	98,574	74,506	64,084
1982	87,420	72,784	58,940
1987	83,061	66,313	61,997
1992	83,681	68,795	61,342
1997	85,093	67,550	62,693
2005	**84,706**	**68,780**	**64,365**
2015	**84,217**	**68,833**	**66,133**
2025	**83,731**	**68,885**	**67,893**

Note: Bold indicates projected values.

Source: U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census, Census of Agriculture, 1974, 1978, 1982, 1987, 1992, and 1997. U.S. Government Printing Office (Washington, D.C.).

Projections by Research Section, Miami-Dade Department of Planning & Zoning.

[3] This figure does not include "out" land.
[4] The regression is a simple time trend (log linear): $Y = a + b \ln X$; Y= total ag. Acres and X = year value.

While these Census of Agriculture data are probably the most reliable and certainly the most consistent source, the period since 1997 is crucial in making any prognostication of long-term trends. Several events have occurred since that date which have significant implications for the future of agriculture in Miami-Dade County.[5] The impact of these events has shown up in the data as the 2000 total for agricultural acreage is given as 80,403 compared to 90,388 in 1994.[6] When this value is added to the six data points from the Agriculture Censuses a decidedly downward trend appears for total farm acreage, as shown below. The total for 2025 is now 4,500 acres below the value in Table 3.

Acreage in Farms: Total-Revised

1974	1978	1982	1987	1992	1997	2000	2005	2015	2025
76,318	98,574	87,420	83,061	83,681	85,093	80,403	82,229	80,726	79,230

Likewise, when an estimate for year 2000 is provided for acreage of harvested crops, the projected growth shown in Table 3 drops off to almost a straight line projection (see below).[7] No reliable 2000 estimate for total cropland is available.

Acreage in Farms: Harvested Crops-Revised

1974	1978	1982	1987	1992	1997	2000	2005	2015	2025
55,730	64,084	58,940	61,997	61,342	62,963	58,059	61,415	61,975	62,532

These results are not definitive but certainly emphasize the importance of utilizing more recent data in constructing future projections. The recent University of Florida study of Miami-Dade agriculture has done this and a particularly important analysis is displayed in Table 4, the contents being taken from that document. As the authors of the study state, the table is designed to provide a "more current picture of the economic health of the most important vegetable and fruit crops" grown in this area. The data runs from the 1980/81 season to 1999/00 with tomatoes being 2000/01. The full table in the report also contains data on revenues but the authors note that; "Acreage trends are important because they are thought to reflect profitability over time".[8] Acreage utilized is thus a prime indicator for the bundle of factors that determine profitability. And it is expectations of profits which dictate the ultimate health of an industry. The eight commodities shown in the table have a total of 45,200 acres in production which is almost 80 percent of the estimated 58,059 harvested acres for all commodities shown above. Two of the eight crops clearly show statistically significant downward trends and a third, limes, has practically disappeared although statistics are not shown.

[5] These include Hurricane Andrew, the implementation of NAFTA, several recent years of heavy flooding, and the citrus canker eradication program, along with continued intrusion from urban development.
[6] Measured by Research Section, Miami-Dade Department of Planning & Zoning, 2001.
[7] The estimate for 2000 was made by using data provided in the Miami-Dade County Agricultural Land Retention Study, Summary and Recommendations & Appendix B, Economic Issues, prepared by the University of Florida, Institute of Food and Agricultural Sciences, April, 2002. See List of References for specific volumes and tables.
[8] Ibid. Summary & Recommendations, p.26.

Table 4
Acreage Trends for Major Vegetable and Fruit Crops
Miami-Dade County

Commodity	Year	Latest Acreage 1,000 Acres	Change from previous year 1,000 acres/year	Time Trend[a] 1,000 acres/year		P-value[b] Probability
Snap Beans	1999/00	18.50	1.00	-0.070	N.S.	0.562
Tomatoes	2000/01	3.66	0.53	-0.567	**	1.15E-10
Squash	1999/00	7.35	-0.45	0.124	**	0.004
Sweet Corn	1997/98	4.23	0.98	0.090	*	0.015
Potatoes	1999/00	2.90	-1.00	-0.092	**	0.001
Avocados	2000/01	6.0	0.10	0.038	N.S.	0.346
Mangos	1998	1.4	0.00	-0.008	N.S.	0.665
Limes	2000/01	1.15	-1.65	N/A	N/A	N/A

[a] Statistical significance of the time trend coefficient at the 0.05 probability level is indicated by "*" and at the 0.01 probability level by "**". Coefficients that are not statistically significant at the 0.05 level are labeled "N.S.".

[b] The P-value is the probability that the coefficient values for the time trend in the previous column are actually equal to zero, or that there is no statistical trend. P-values equal to or smaller than 0.05 are deemed to be statistically significant.

Source: University of Florida, Institute of Food and Agricultural Sciences. Miami-Dade County Agricultural Land Retention Study, Appendix B, Economic Issues, Section 2, Table 1.

In order to come to a conclusion regarding the future, this table is examined taking each crop individually. In addition to the trends developed and discussion provided for each crop in the IFAS study, the conclusions presented here are also influenced by very recent analysis of urbanization pressure. Specifically, data from the Miami-Dade Property Appraiser was assembled which showed building activity in the major agriculture area for the years 1998 through 2001.The main purpose of this undertaking is to make an assessment of the extent of "fragmentation" of agriculture by the construction of residential structures on land primarily in the AU and GU zoning districts which requires a minimum of five acres. Complete urbanization such as will occur within the UDB and UEA clearly will supplant agriculture. Additionally, the proliferation of the very low-density residential development will be incompatible with most agricultural production for commercial markets. The most pressure is on field crops such as beans, tomatoes and squash which require relatively large tracts of land for efficient production (preferably at least 40 acres). The more land that is divided into five-acre tracts the more difficult it is to assemble the larger tracts. This is also true for fruit groves, but to a lesser extent (a ten acre tract can suffice for a profitable operation if well managed). Nurseries are even less affected from a tract size standpoint. However, other conflicts occur if residential development becomes pervasive in the agricultural area, even at these very low densities. Simply put, the area moves from being rural to being semi-rural with the majority of residents not committed to commercial agriculture.

Even though a trend of development of one unit per five acres is recognized, precise data on its magnitude are ambiguous. The Department's land use files show that between 1994 and 2000, there were 334 acres of residential development outside the UDB on agriculturally designated land. This implies 668 units since the housing "footprint" which is measured typically averages

one-half acre. This gives an annual average of 111 units compared to 73 units per year for the period 1994-2001 using Property Appraiser files. The difference might be explained by the slightly different time periods and methods, but the actual number is not that important; the trend is clear. For the purpose here, the significant information is the location of this activity which is provided by the Property Appraiser data. In general, that shows that current vegetable production areas are most impacted, fruit groves somewhat less so and nurseries least of all. If even the lower figure of 73 units per year is used, extending that average out to 2025 gives an additional 1,752 units. With a minimum of five acres required to build a house, this means at least 8,750 acres have been partially urbanized; almost certainly to the detriment of agriculture. Obviously, if the higher unit average is selected, this acreage total would increase substantially. With this information and the crop acreages referred to in footnote #2, an evaluation of each crop's potential is undertaken.

Snap beans show a declining trend over the 20-year period but it is not significant statistically. If the 70 acres per year were accepted it would mean a loss of 1,750 acres. The 20-year average in production is 18,000 but it seems unrealistic that this can be retained even though snap beans have been quite profitable recently. A reduction of 1,750 acres would be about ten percent of the historic average which seems too low given the losses within the UDB and the urbanization pressures anticipated. Also, at some point snap beans will likely be susceptible to competition from off-shore sources and the domestic market is not a rapidly expanding one. Given these factors, at least a 25 percent reduction in snap bean acreage appears likely

The future for tomatoes is not bright, primarily due to foreign imports and sometime between the present and 2025 commercial production will likely cease but perhaps 500 acres will remain to supply the local market. Squash shows an upward trend of 124 acres annually that, if carried out to 2025 would just about duplicate the growth from 1980/81 to 1999/00 which appears unrealistic. The regression result was heavily influenced by the low acreages of the early 1980s and the very high figures of the past three seasons of data (3,900 acres in 1980; 7,350 in 1999). In fact squash acreage has been quite variable, ranging from a low of 3,400 to a high of 7,800. A realistic assumption for 2025 might best be a reversion to the level of 1980, i.e. 3,900 acres. . A similar situation holds for sweet corn with its positive time trend of + 90 acres per year implying an addition of 2,250 acres by 2025. However, compared to the historic trend of 2,800 acres in production, this seems high. The last five years for which data are available (1993-1998) the average jumped to 3,900 but this too may be unsustainable. A compromise between these two figures of about 3,000 acres in the out year may be reasonable. Sweet corn production may also be supported by the growth in the local consumption market. The last of the vegetables in Table 4 are potatoes and a declining trend is calculated. The 20 year average is 4,800 planted but the year 2000 figure was a historic low for the period; only 2,900 acres. Extending the time trend loss of 92 acres annually predicts a decline of 2,300 acres. It is difficult to fault this conclusion, the question being how much acreage will remain to supply the local market. As an approximation 500 acres will be assumed.

If the above assessment is accurate, it gives a total acreage in 2025 for these five vegetables of 21,400 versus 36,640 for the years reported in Table 4. Next, the three fruits included in the table will be discussed.

Starting with the last one, limes, the future seems very problematical. The ravages of Hurricane Andrew coupled with the citrus canker outbreak practically eliminated the lime industry. It is reported that some lime acreage is being replanted with other tree crops. The retention of the current acreage (about 500 acres) is probably the best to be hoped for. The latest data for avocados shows 6,000 acres being harvested. In 1987/88 over 11,000 acres were in production but land in avocado groves was trending down even before Hurricane Andrew wiped out about 2,500 acres. Since then acreage has held steady at about the 6,000 level but some further decline seems likely despite the time trend in Table 4 being positive (not statistically significant) at 38 acres per year. There is almost sure to be further competition from Mexico which will erode the market for the Miami-Dade product. However, even accepting that avocado groves can exist rather well with increasing urbanization, some further decline in commercial acreage is probably a foregone conclusion due to the "one house on five acres" trend. A figure of 4,000 acres for 2025 may be attainable. The mango story is similar to the one for avocados. From just under 1,500 acres in 1980, bearing acreage expanded to 2,500 in 1989 and held steady until raked by Hurricane Andrew in 1992. Since then acreage has held steady at about 1,500, the same as in 1980. Increases in this level are highly unlikely due to strong competition, mostly from Mexico. As with avocado groves, the mango counterpart can also exist with expanding urban growth so a somewhat arbitrary number of 1000 acres is suggested for 2025. Thus, the 2025 total for the three major fruits is 5,500 acres compared to 8,550 listed in Table 4.

Overall, the projected acreage for 2025 for the eight commodities is 27,200 compared to the 45,200 total of Table 4. Given the various pressures being exerted on South Miami-Dade agriculture and the uncertainty regarding their future magnitude and direction, this acreage projection must be considered a best attempt at interpreting the existing evidence. If anything, it may be optimistic. Table 1 shows a drop of almost 10,000 acres for the six years between 1994 and 2000 albeit for total land in agriculture. In so far as possible the figures referred to above are for harvested acres.

There are several other crops that contribute to the totality of Miami-Dade agriculture. These are other traditional vegetables such as cucumbers, eggplant, strawberries, bell peppers, okra and cabbage with a combined acreage of 4,120 in 1997/98, the latest available. Then there are tropical vegetables with boniato and malanga far and away being the most significant with a combined 6,000 acres out of the estimated total for the many tropical vegetables of 6,609 acres (1997/98). Finally, there are the minor tropical fruits, the major ones being lychee, carambola, longan, mamey sapote, banana, guava, and papaya. There are more than a dozen other unique tropical fruits grown in the area but the combined acreage is under 300. The total for all tropical fruits in 1997/98 was 2,424 acres. The most recent estimate of land devoted to these crop groups is 13,153, not a trivial number but projecting these acreages is more difficult for a number of reasons. Principal among these are often a lack of adequate time series data. Many of these products are primarily for specialty markets and often only a very few growers are devoting acreage to them.

Taking them in groups, it appears almost certain that other traditional vegetables will decline in the future. There is strong competition for many of these so the local market may be all that is left by 2025. The assumption is made that the current figure of 4,120 will drop by half by 2025 to a level of 2,060. Tropical vegetables should fare relatively well into the future. Most of this production is for export to niche markets in other areas of Florida and to the Northeast. There is

also a substantial local market which will likely grow as the Hispanic population increases. It is assumed that acreage for this group will stabilize at 6,000 acres. The same conclusion is adopted for the minor tropical fruits; the existing small acreage should stabilize. These fruits all have some local market and export niche markets. Expanding these markets would be difficult but without that any significant increase in production will rapidly drive down prices. But since the acreage required for this collection of tropical fruits is small and the niche markets will probably expand somewhat, future success for these fruits may be assured. A total of 2,500 acres is assigned. Together, these estimates amount to 10,560 acres for these three minor crop groups in 2025.

Lastly, the ornamental horticulture industry has to be examined. The decade of the 1990s witnessed rapid expansion of the nursery industry in Miami-Dade County. In 1992 there were 6,069 acres devoted to nursery and greenhouse crops and by 2001 the estimate was more than 12,000; almost a doubling. Clearly this rate of growth cannot continue and it may even be that there is over capacity presently. The next few years will provide an answer. In the meantime, in the light of evidence of increasing competition from other areas in Florida and some indications that portions of the industry are earning low rates of return it is not expected that significant growth is in the cards.[9] In fact, given that 3,452 acres will be lost when the UDB and UEA buildout, unless these can be relocated further west, total acreage will be below 9,000. Since nurseries will be competing with urban uses for the remaining land, it might not be feasible. An estimate of 8,000 acres is put forth as reasonable for the year 2025.

Accepting that the previous review of the data and conclusions drawn are valid, following is a summary of numeric results.

Total Harvested (Producing) Acres in Year 2025

Traditional Vegetables:	21,400
Major Fruits:	5,500
Other Traditional Veg.:	2,060
Tropical Vegetables:	6,000
Minor Tropical Fruits:	2,500
Ornamental Horticulture:	8,000
Total	45,400

Using this total figure for harvested acres, a total agricultural acreage can be derived by using the ratio of harvested to total acreage in farms from Table 3. This value is .811 and it is higher than the average from the 1974-1997 Agriculture Census figures of .711. This trend seems reasonable since with a reduced amount of agricultural land available and higher land costs, the product mix would most likely be chosen to avoid having much fallow land sitting idle. Using the .811 ratio gives a figure of 10,580 acres for fallow and other less intensive uses. Thus, a somewhat higher ratio of .875 is selected which implies a total of 51,885 acres required for agriculture in 2025.[10] This figure is considerably less than the 79,230 acres resulting from the time trend analysis. This is not unexpected. The trend analysis had as the basis a 23-year period in which local agriculture

[9] Ibid. Appendix B, Section 3, p. 170 addresses the business analysis of ornamental plant nurseries.

[10] This figure includes, in addition to the categories listed, some small amount of acreage for pasture & grazing, aquaculture, bee keeping and miscellaneous activities.

adapted to many changes and yet maintained a strong presence in the County. The next 23 years are undoubtedly to be an even greater challenge and the impacts on agriculture have been assessed, hopefully in a reasonable manner in light of recent events. If so, then it appears that accommodating urban growth will leave just sufficient acreage for agriculture in 2025, with about 52,000 required versus 54,000 available. Of course, these are rather gross estimates and it is an open question with respect to the actual product mix.

The preceding analysis is based on fairly extensive data, some extending back almost as many years as the projection period. Even so, it should be recognized that the final results have a rather high degree of uncertainty, i.e. a range of possible values around the ones shown.

Extending this analysis further out to the year 2050 must be viewed as essentially a hypothetical exercise given the length of time involved. Even so, the following is offered for consideration. Population and employment projections were developed out to the year 2050. The historical relationship between urban land use and the growth in population and employment was then used to project total urban land in 2050. This figure is 336,354 acres; 38,483 more than the amount projected for 2025. If the policy is simply to continue accommodating urban expansion, a good portion of this could come from the remaining undeveloped private land. But not all of this land is useable or it would be too costly to develop so probably about two-thirds of it would be consumed. In that case, over 26,000 acres would have to come from the remaining agricultural land. This still leaves about 27,000 acres of agricultural land and the question is; would this be sufficient to sustain a viable agricultural presence in Miami-Dade County? Certainly the ornamental horticulture industry and some high value vegetables and fruits could exist even given the massive urban growth. Research has shown that significant amounts of "adaptive" farming continues to thrive in and around most of the large metropolitan areas in the United States. If the 52,000 acres is used as another point with the 1985, 1994 and 2000 agriculture land use figures (Table 1) and the regression extended to 2050, a derived value for agriculture is 25,580 acres. This theoretically could be accommodated on the 27,000 acres of agricultural land remaining. What the prospects may be for each commodity group individually is unknown.

Accordingly, the following numbers are provided based on the same shares for each group as they are in 2025.

Total Harvested (Producing) Acres in Year 2050

Traditional Vegetables:	10,614
Major Fruits:	2,688
Other Traditional Veg:	1,008
Tropical Vegetables:	2,687
Minor Tropical Fruits:	1,223
Ornamental Horticulture:	3,918
Total:	22,390

Using a ratio of .90, this harvested acreage converts to 24,880 acres of total agricultural land. This total is 2,120 acres below the projected amount of agricultural land remaining under the urban growth accommodation alternative. It should be possible to maintain this agriculture presence with appropriate development regulations, but it will not be the major economic activity that it presently is in Miami-Dade County.

Source: Prepared by Miami-Dade Department of Planning & Zoning, Sept. 4, 2002. Revised, October 9, 2002.