Southwest Florida Agriculture and Water Supply Management

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Economic Overview

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Importance of Agriculture to Southwest Florida

1. Economic Engine
   - Citrus, Vegetables, Sugarcane, Cattle, Ornamentals
   - $1 Billion annual farm-gate sales
   - 75% from citrus and vegetables
2. Ecological Services

   AG land: 40% SWFla area
   - groundwater recharge
   - wildlife habitat
   - carbon sequestration
3. Source of Biofuels – future energy

High Values-High Cost-High Risk

Average annual costs of production (inc harvest):

- Oranges for juice: $ 3,000/ac
- Fresh market tomatoes: $12,000/ac
- Fresh market bell peppers: $16,000/ac
- Sugarcane: $ 1,000/ac

(Iowa field corn: $650/ac)

Economic Impact

- Total Economic Impact = $1.6 Billion (farm-gate)
- Processing Plants supplied by regional citrus fruit and raw sugarcane.
- >90% of total farm products (raw or processed) exported – “new dollars.”

The Future

- South FL sunshine and “relatively” warm winter temps.
- Unique growing areas within U.S.A.
- Rising national demand for fresh vegetables and increasing interest in “ethnic” foods
- Investment in new technology
  - citrus mechanical harvesting
  - HLB research
- Diversification of crops – food & biofuels

Citrus Water Allocation

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Importance of the Florida Citrus Industry

- The total economic impact of the Florida Citrus Industry exceeds 9 billion dollars.
- More than 80,000 people work in Florida's citrus industry.
- Citrus groves occupy about 570,000 acres in Florida contributing to aquifer recharge and wildlife habitat.

SW Florida Citrus Acreage and Tree Numbers

	1970	2000		2009	
	Acres	Acres	Trees (million)	Acres	Trees (million)
SW FL Total	43,244	178,595	27.053	129,733	19.158
State of Florida	941,471	832,275	106.679	568,814	74.090
SW FL (%)	4.6	21.5	25.4	22.8	25.9

Water Management

- Over 98% of citrus growers are using low volume irrigation systems (micro-sprinklers & drippers).
- Water savings with micro-irrigation systems can amount to as much as 80% compared with other irrigation systems.
- Citrus growers are using new technologies and more accurate tools for irrigation scheduling.
- Growers water only when needed with only the needed amount.

Fertigation

- Fertigation (timely application of small amounts of fertilizer through irrigation systems directly to the root zone) has been widely adopted by citrus growers.
- **Water and fertilizer use efficiencies are increased and water, fertilizer, leaching of chemicals, and negative environmental impact are significantly reduced.**

BMPs

- Gulf citrus growers are adopting Best Management Practices (BMPs) in SW Florida.

Gulf Citrus BMP Manual

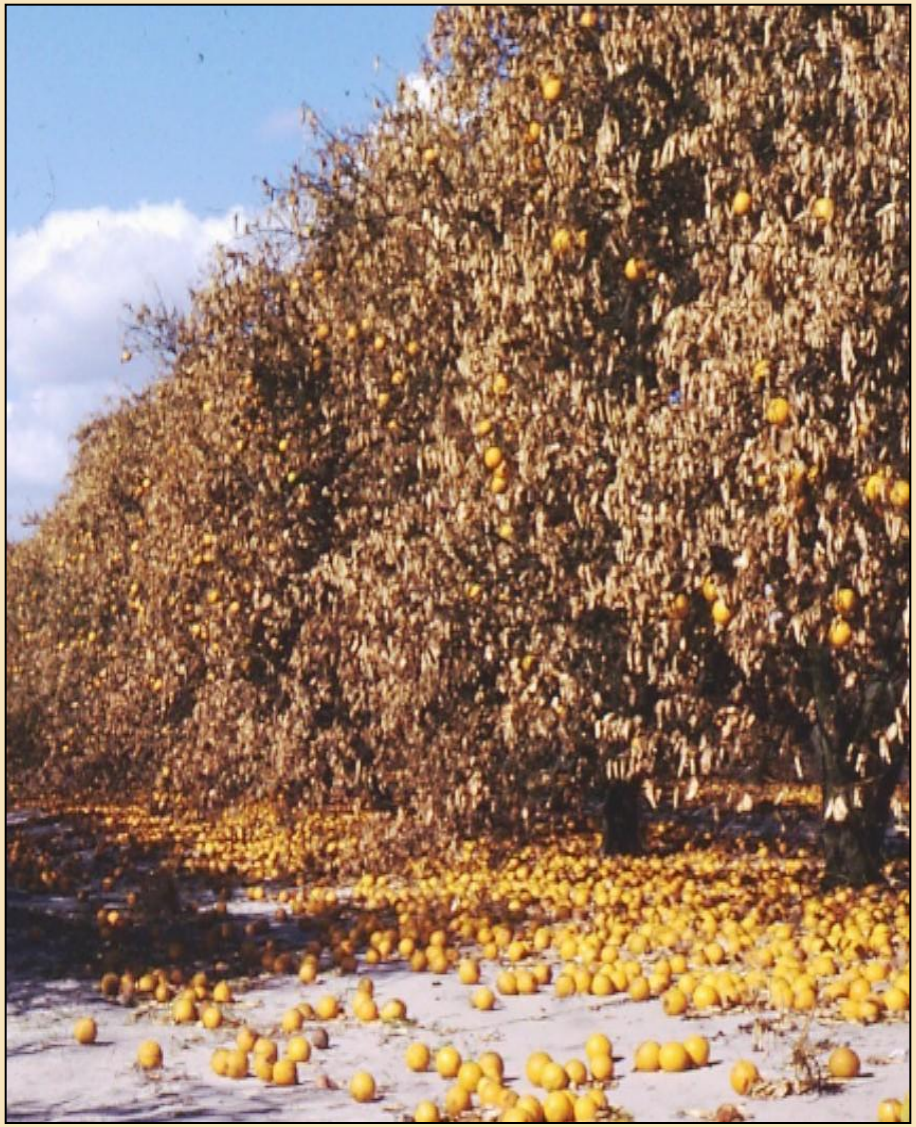
Lack of Supplemental Irrigation

Lack of Supplemental Irrigation

Challenges for Sustainability

- Freezes
- Hurricanes
- Droughts
- Exotic Diseases
- Competition

Freezes



Freeze protection with microsprinkler irrigation

Hurricanes

Droughts

Diseases

Citrus Canker

Diseases

Citrus Greening

Citrus Research

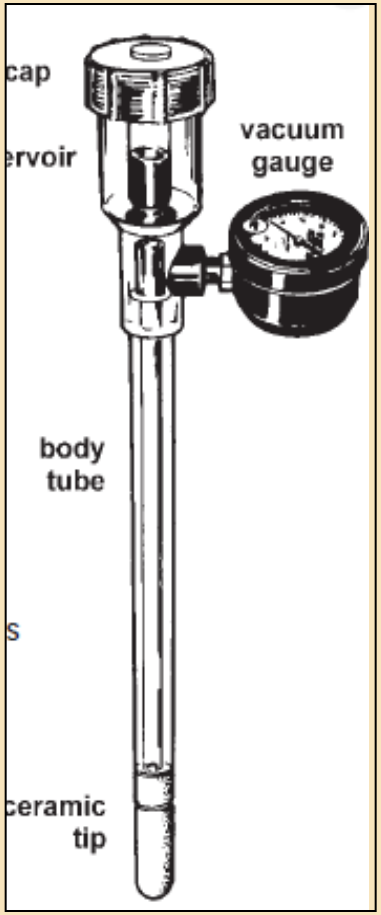
- Over 20 million dollars a year are raised to solve greening and canker problems.
  - State and Federal Funding
  - Florida Citrus Production Research Advisory Council (FCPRAC), Box tax
  - Formation of the Citrus Research and Development Foundation (CRDF) to increase research dollars

Technology

- To stay sustainable, competitive, and environmentally friendly, citrus growers are using new technology:
  - Precision Ag
  - Low volume sprayers
  - Water monitoring devices for irrigation scheduling
  - Mechanical harvesting

Precision Agriculture

Water monitoring devices for optimum, more efficient irrigation scheduling and maximum water conservation

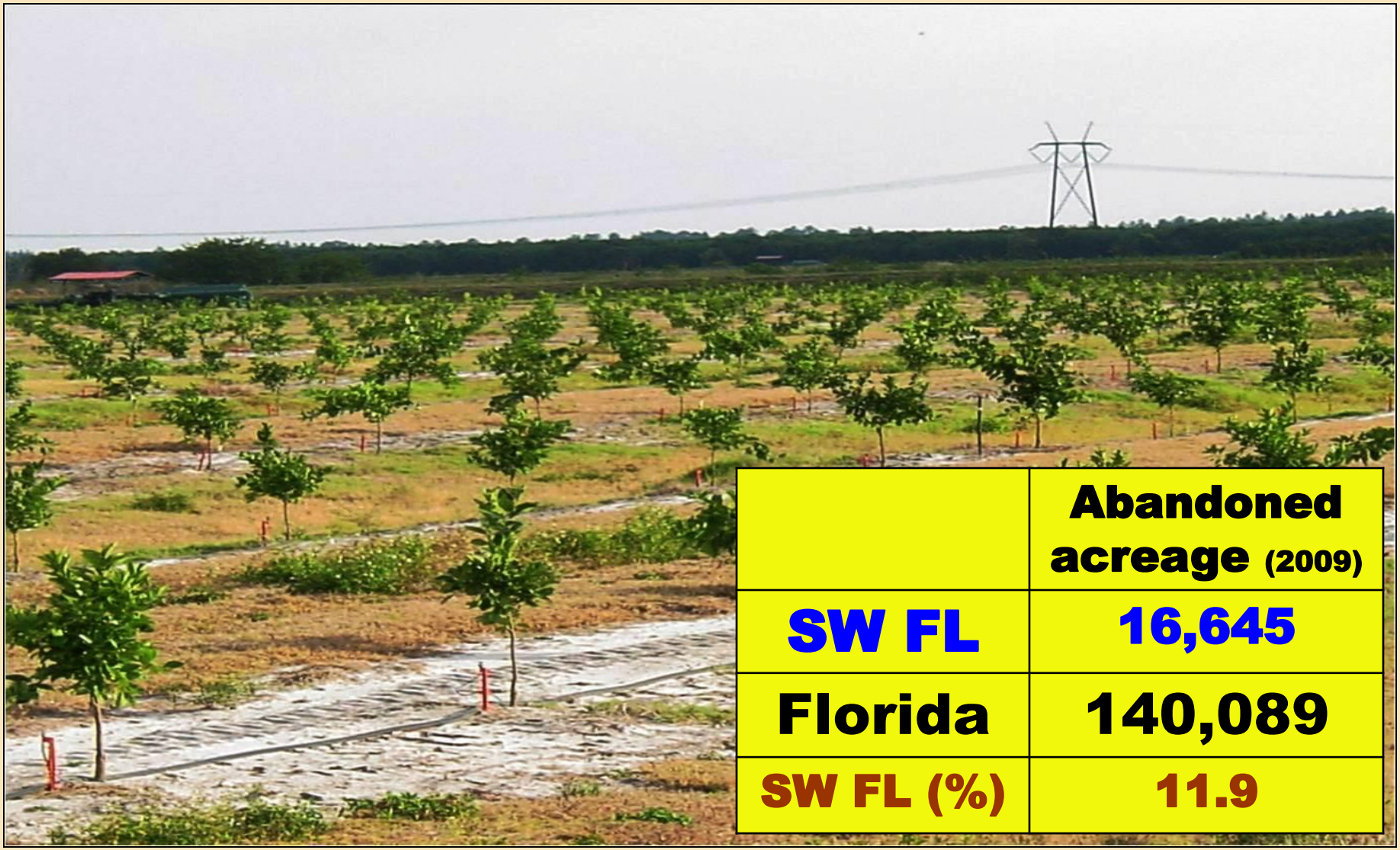


Mechanical Harvesting

Foliar Nutrition and Water are Essential to Disease Management

Growers Have Been Replanting

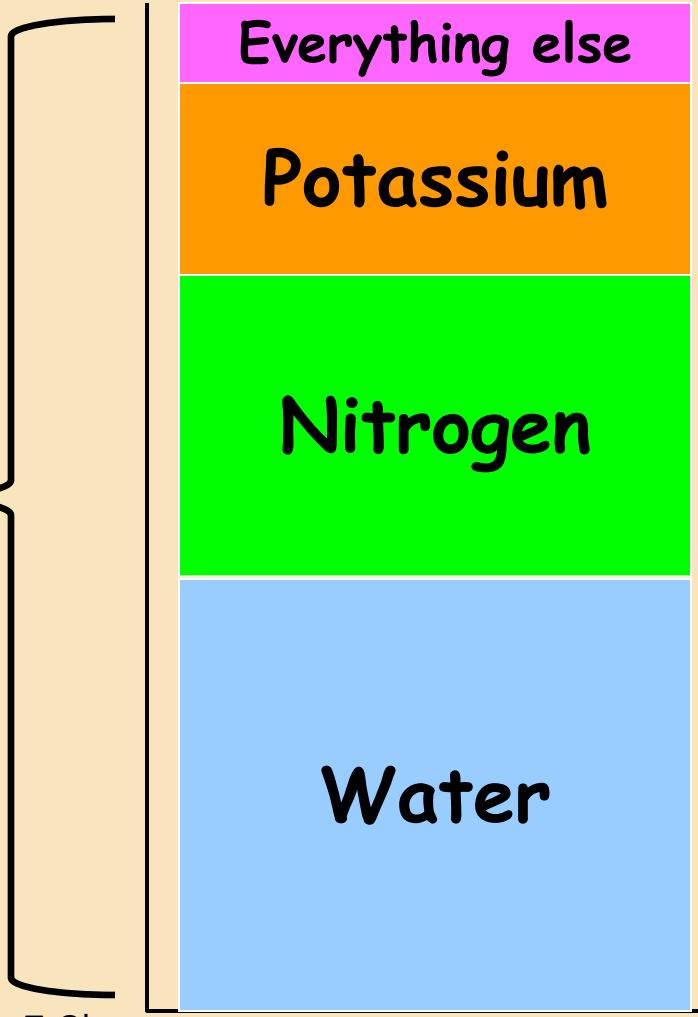
Growers are Replanting



	Abandoned acreage (2009)
SW FL	16,645
Florida	140,089
SW FL (%)	11.9

Relative importance of nutritional factors that affect yield of mature citrus trees in Florida

- Water is the most important need for citrus trees



Citrus Water Requirement or Evapotranspiration (ET)

Daily average ET for citrus varies from 0.1 to 0.2 inch/day from winter to summer. On some clear, high radiation, hot days, ET can be as high as 0.25 inch/day.

0.1 – 0.2 acre-inch x 27,154 gal/acre-inch =

ET = 2,715 – 5,431 gal/ac

Large citrus trees may use 60 gal/day in July and August.

Vegetables, Sugarcane and Beef Cattle

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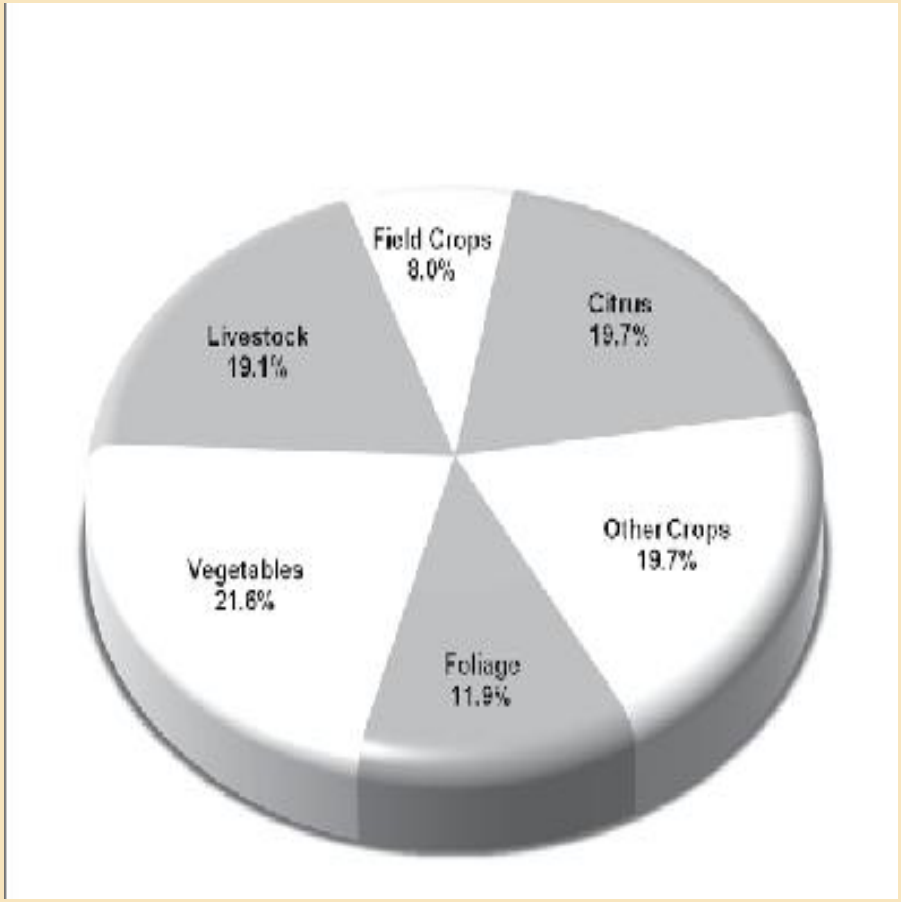
Vegetable Production in SW Florida

- Vegetables are a major economic crop in Florida
- Florida is number one in the nation in the production of fresh market tomatoes, cucumbers, bell peppers, eggplants, green beans, squash, sweet corn and watermelons and second in many others

Vegetable Production



- Recently, vegetables have passed citrus as the number one commodity in the state accounting for over 21% of all agricultural sales
- South Florida is the winter garden of the US supplying approximately 70% of the vegetables consumed in the US between November and May

Vegetable Production in SW Florida

- Vegetable production has grown significantly over the past two decades from 35,000 acres in 1995 to over 75,000 acres in 2010
- A- Z - over 60 different vegetables produced in SW FL - arugula to zucchini

Vegetable Acreage in SW Florida

Crop	Acres
tomatoes	20,000
watermelon	13,000
green beans	12,000
bell pepper	7,000
potatoes	4,500
hot peppers	3,500
sweet corn	3,000
squash	2,500
cantaloupe	2,000
cucumbers	1,500
Misc	7,500
Total Vegetables	**76,500**

Factors in the Growth in Vegetable Industry in SW Florida

- Diversification and changing demographics
- Greater consumption of fruits and vegetables
- Migration of farms from east and west coast production areas
- SW Florida has the largest remaining acreage of open relatively warm land in Florida
- Cost of land
- Large land owners opening up leases
- Growth is likely to continue

Water and Vegetables

- Water management including timely irrigation is critical for successful vegetable production
- Short Term crops
- Vegetables must have adequate irrigation to produce economical yields and quality
- Any check in growth from inadequate soil moisture will severely impact yields and quality
- Crop requirement, frost protection, harvest aid
- Drainage is equally important

BMPs

- UF/IFAS, FDACS, DEP have worked closely with growers on adoption of BMP's
- Conversion to more efficient irrigation systems
  - micro furrows
  - drip irrigation
- Plastic mulches
- Fertigation
- Water monitoring devices for irrigation scheduling
- Water retention
- CRF

Sugarcane

- Acreage in Hendry and Glades is primarily sand land production
- Approximately 60,000 acres in Hendry County and 25,000 acres in Glades County
- Acreage could increase if muck soils are removed from production

Bio-Fuels

- Future production could increase demand for water and conversion of pasture acreage
- Economics - incentives
- Perfection of technology
- High biomass crops
  - Sugarcane
  - Sweet sorghum
  - Switch grass
  - Elephant grass
  - others

Beef Cattle

- Livestock constitutes the largest agricultural land use in SW Florida
- 1,176,500 acres of pasture
- Approximately 124,000 brood cows

Cow Calf

- The SW Florida beef cattle industry consists primarily of cow calf operations
- Cheaper to send a 500 lb calf to grain than to ship tons of grain to Florida
- Both large and small operators – small producers are heavily dependent on leased land

Beef Cattle

- The livestock industry is critical in providing a number of ecological services:
  - Aquifer recharge
  - Net contributor of water
  - Open space
  - Wildlife habitat
- The industry could play a increased role in water storage and water quality improvement efforts

Livestock

- Margins are small
  - 8 acres per cow calf pair
  - Cost of production ~ $350
  - Returns $0.80 - $1.00 per lb
- Economic pressure can easily push land owners to other more intense higher return agricultural uses
- For example, C-139 Basin

Challenges

- Pests and diseases
- Increasing regulation
- Foreign competition – free vs fair trade
- Water quality and quantity
- Food safety concerns – Mexican producers seeking land in S Florida
- Rising costs
- Labor

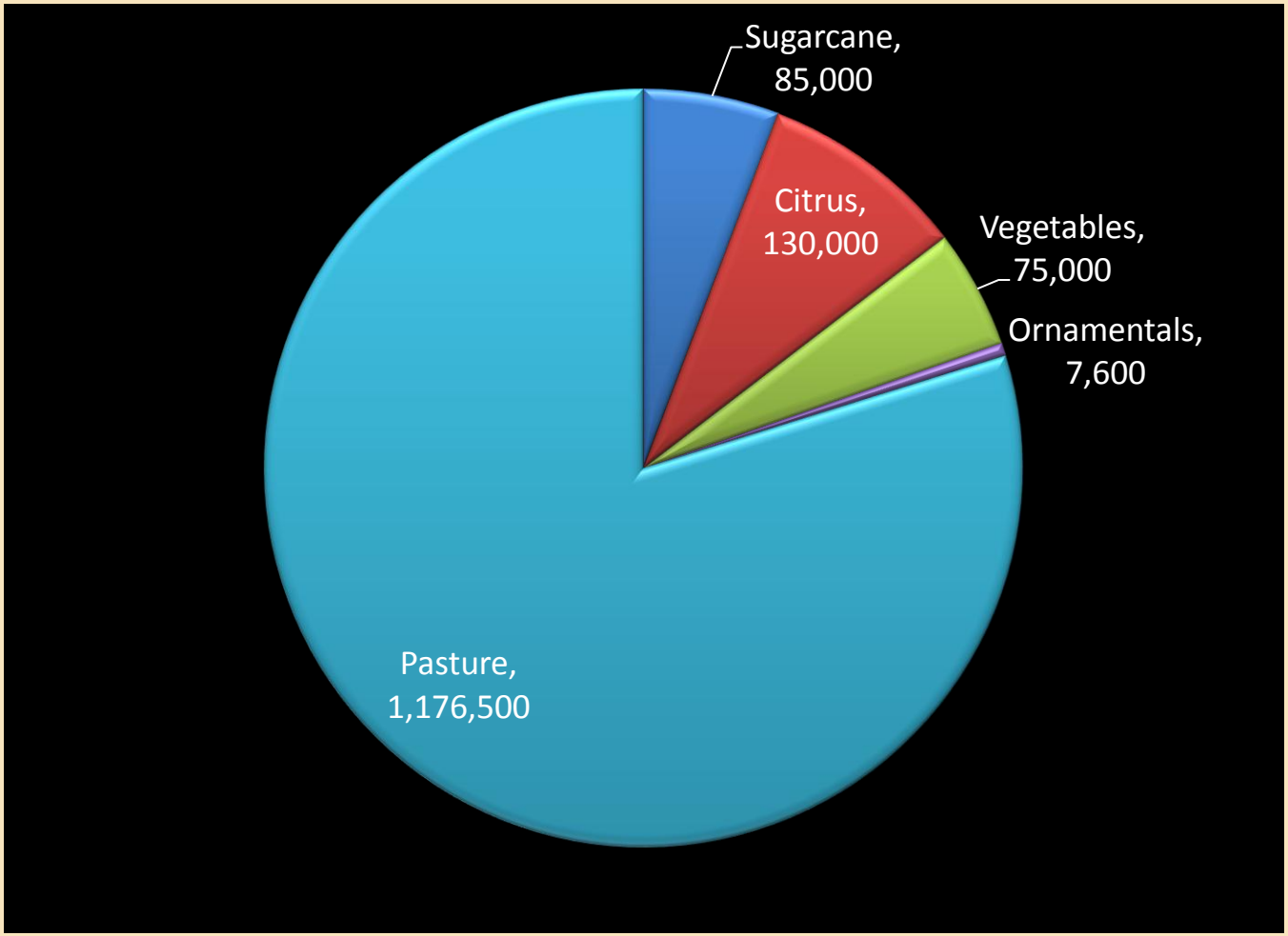
Dynamics

- Cropping systems are dynamic – growers can rapidly cycle between crops as dictated by economics and market demand
- Pasture – vegetables – ornamentals
- Ornamentals are flat – declining in acreage – this sector is highly dependent on the building and to a lesser extent the tourism industry and levels of disposable income

Future

- Primary production is the basis of a solid economic foundation
- Land for winter production is limited and much of the remaining land for such purposes is in interior SW Florida
- Building unlikely to move inland for some time
- FGCU study
- Agriculture will remain vibrant for the foreseeable future

Southwest Florida Acreage by Commodity Group



Total Ag in SWFla: 1.5M acres

Southwest Florida: Charlotte, Collier, Glades, Hendry, and Lee Counties.

Thank You!

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