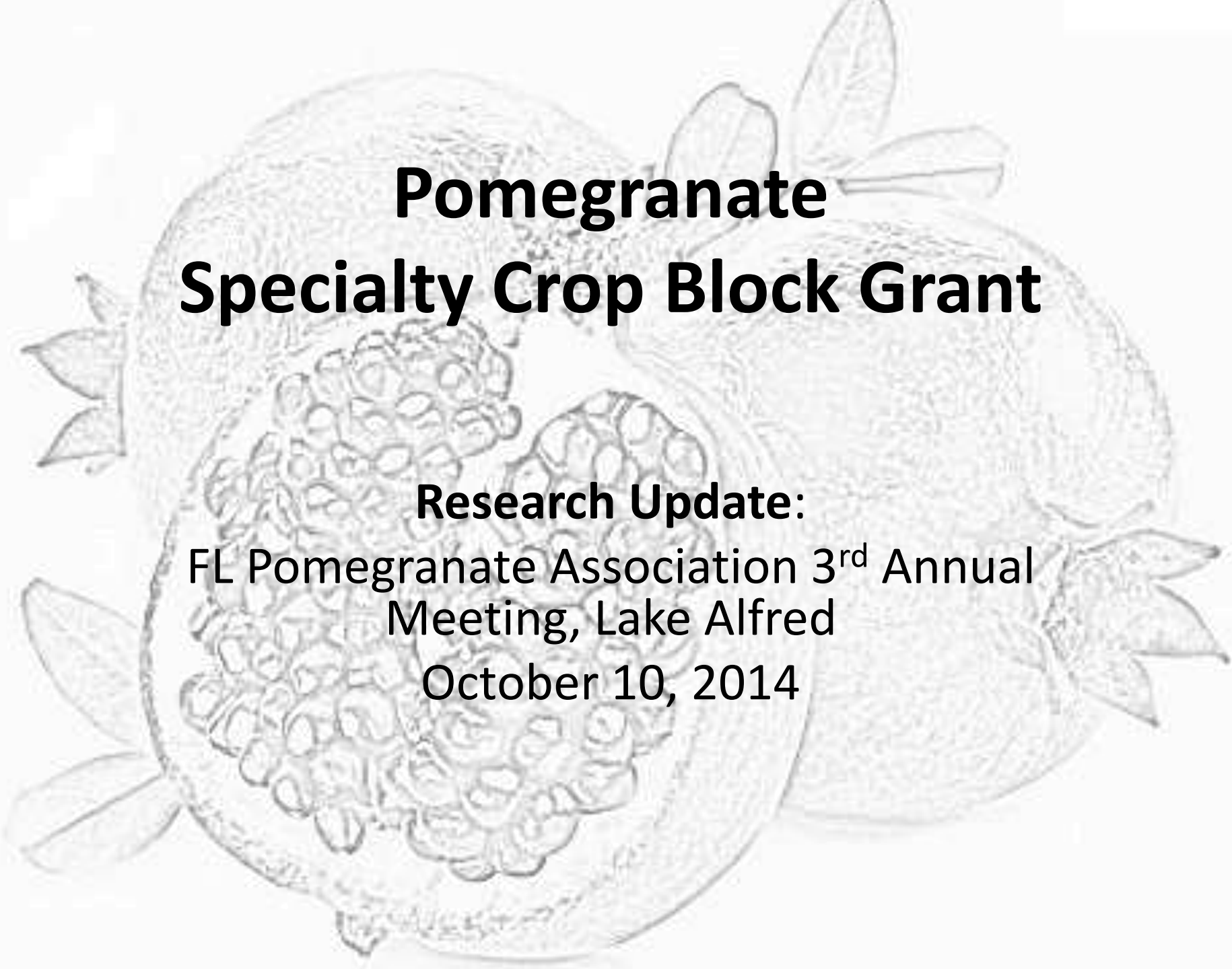


Pomegranate Specialty Crop Block Grant

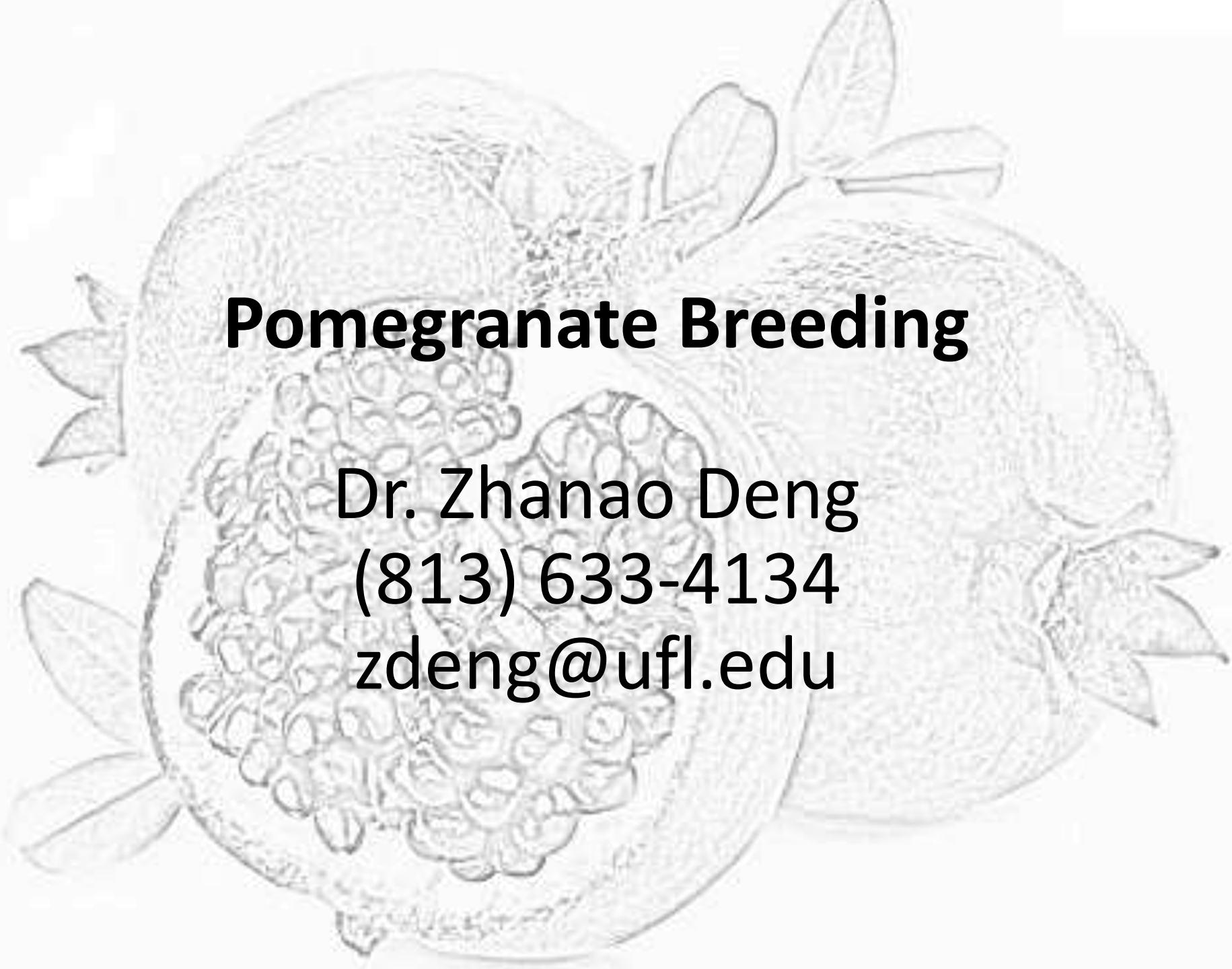
Research Update:

FL Pomegranate Association 3rd Annual Meeting, Lake Alfred

October 10, 2014

Main Focus Areas

- Breeding – improved varieties
  - Dr. Deng
- Pathology – Disease survey & management strategies
  - Dr. Nepal KC & Dr. Vallad
- Entomology – Pest survey
  - Dr. Nepal KC & Dr. Smith
- Economics – Consumer survey & production economics
  - Dr. Guan & Dr. House



Pomegranate Breeding

Dr. Zhanao Deng
(813) 633-4134
zdeng@ufl.edu

Breeding for New Pomegranate Varieties

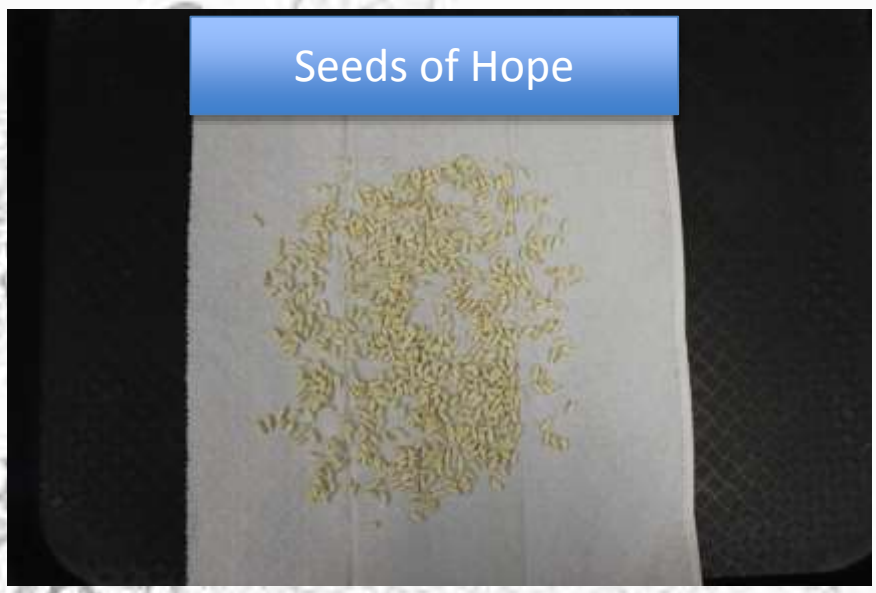
- Selected 15 varieties as breeding parents
- Designed 60 crosses
- Flowers collected from Water Conserv II & the Green Sea
- Attempted to collect flowers from Cee-Bee's Citrus & Lisa
- Pollen available for 11 varieties

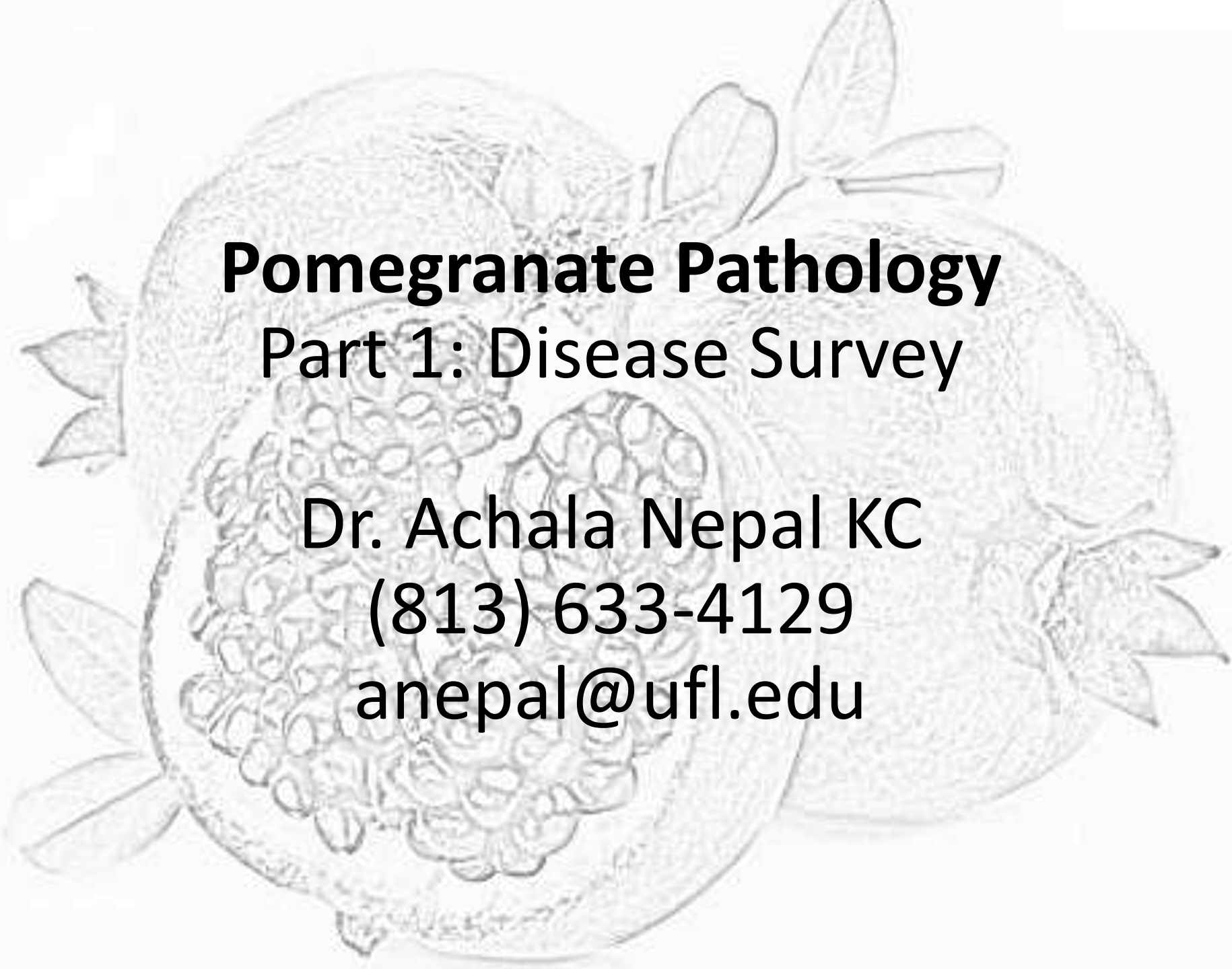

Cat. No. 09-016 Fisher Scientific Company

Pollination & Fruiting

- **Pollinated 262 female flowers on trees at the Water Conserv II in April & May**
- **109 young fruit for 41 crosses in June**
- **Harvested about 30 fruit in late August**
- **Fruit drops and fruit rotting caused fruit losses**

- More than 8,000 seeds for 16 crosses
- Seeds sown in 2 batches
- More than 700 seedlings from 1st batch
- Will likely have 700-1000 more seedlings
- Where to grow these progeny?





Pomegranate Pathology

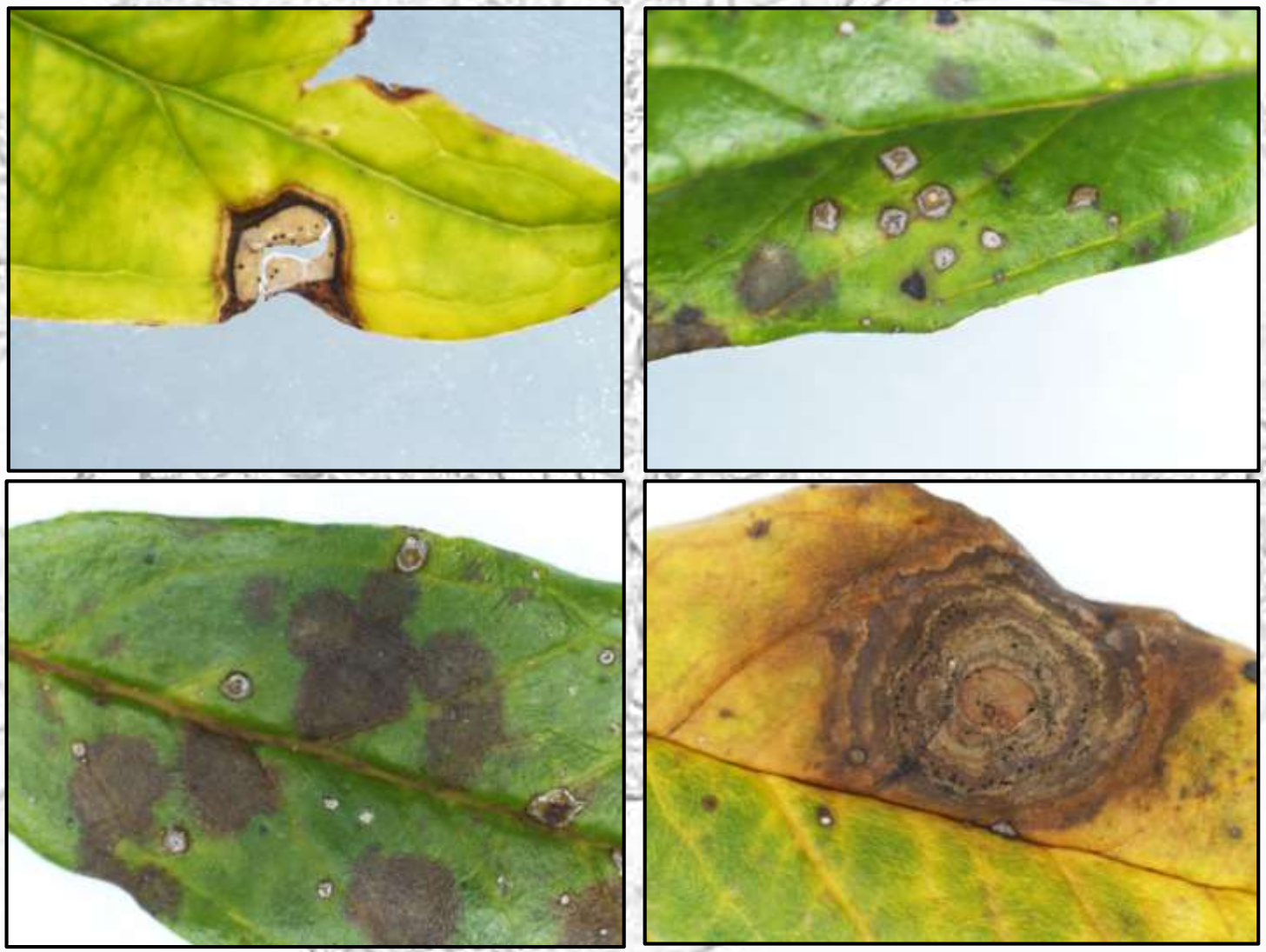
Part 1: Disease Survey

Dr. Achala Nepal KC
(813) 633-4129
anepal@ufl.edu

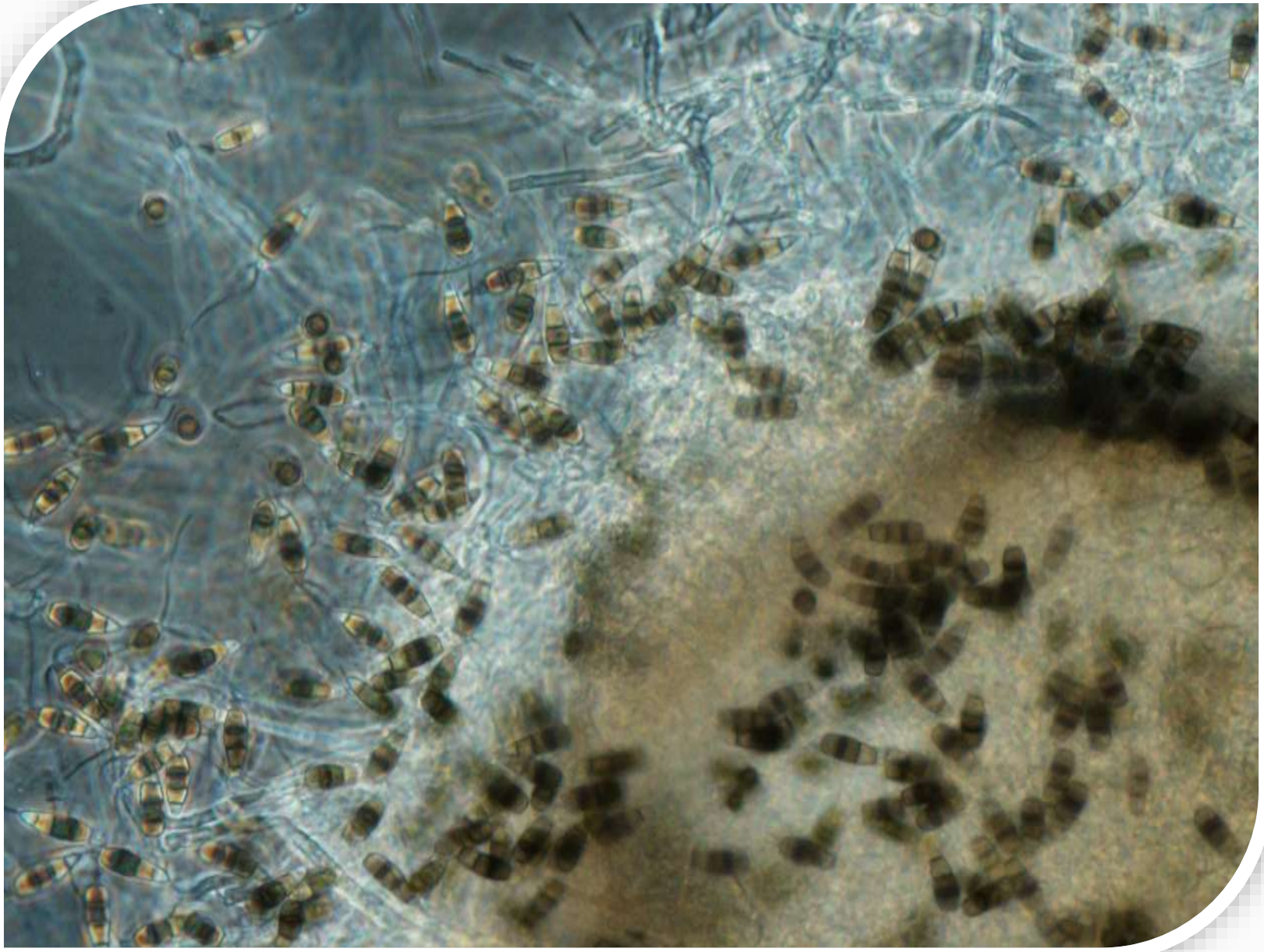
Disease Survey

- Field survey in four locations:
  - Boy Scout Rd, Odessa, FL
  - Edith Delaney Ln, Plant City, FL
  - Hatchineha Rd, Haines City, FL
  - Johnston Rd, Zolfo Springs, FL
- Disease samples collected from leaf, stem, flower, and fruit

Disease Survey
(Leaf Symptoms)



Disease Survey
(Fruit Symptoms)



Pathogen Identification

- Pathogens were isolated from samples; preliminary ID based on available morphological features (spores/spore-bearing structures).
- Pathogenicity tests were carried out on leaves (attached and detached) and fruits (detached)
- Cultivar Azadi was used for attached leaf assays (three trees per isolate) and Don Somner North, Desertnyi, and Vietnam (four leaves per cultivar per isolate) were used for detached leaf assays
- Fruits were obtained from a local market for detached fruit assays (two fruits per isolate)

Pathogen Identification

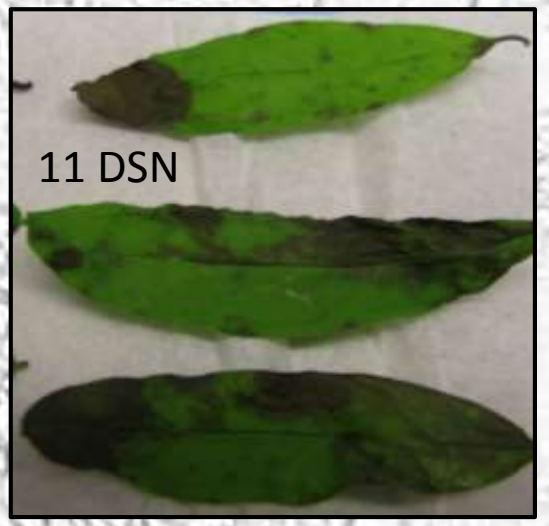
- Genomic DNA was extracted from all isolations and the ITS region was amplified with ITS1 and ITS4 primers for sequencing.
- Sequences were compared with those in NCBI database and the pathogen was identified based on % identity

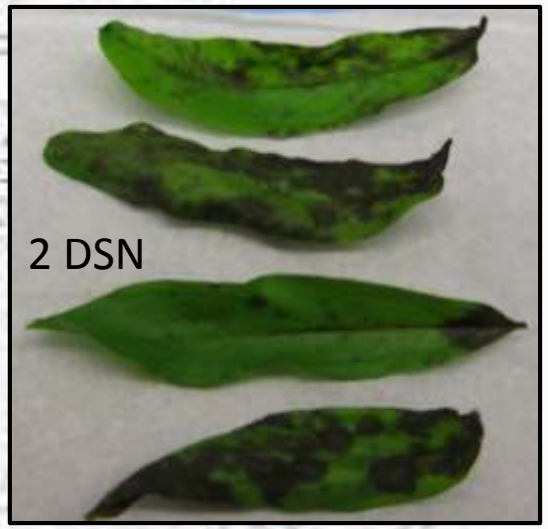
Pathogen Identification (Results)

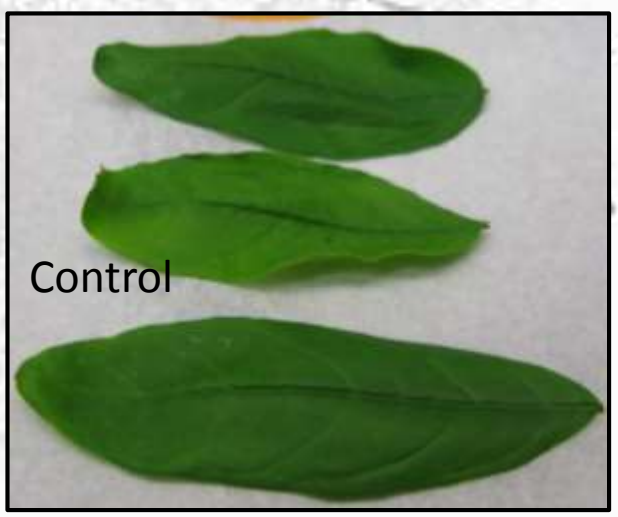
ID	Pathogen	Plant Part	% Isolation	Pathogenicity[a]
2	*Colletotrichum sp.*	Leaf, Stem, Flower, Fruit	29	+ + **
11	*Neofusicoccum parvum*	Leaf	6	+ + **
3	*Amphilogia sp.*	Leaf, Stem	6	+ + **
21	*Alternaria sp.*	Leaf	3	+ **
14	*Pilidiella granati*	Stem	3	+ **
26	*Lasiodiplodia sp.*	Leaf & Fruit	9	+
22	*Nigrospora sphaerica*	Leaf, Fruit	6	+
29	*Corynespora casiicola*	Leaf	3	+
5	*Epicoccum nigrum*	Stem	6	- -
1	*Phyllosticta elongata*	Leaf	3	- -
8	*Pestalotiopsis clavispora*	Leaf	18	-
6	*Fusarium sp.*	Fruit	6	-
15	*Nectria Mauritiicola*	Stem	3	-

[a] + positive on leaves; + positive on fruits; ** aggressive

Pathogenicity test (Detached leaf assays)

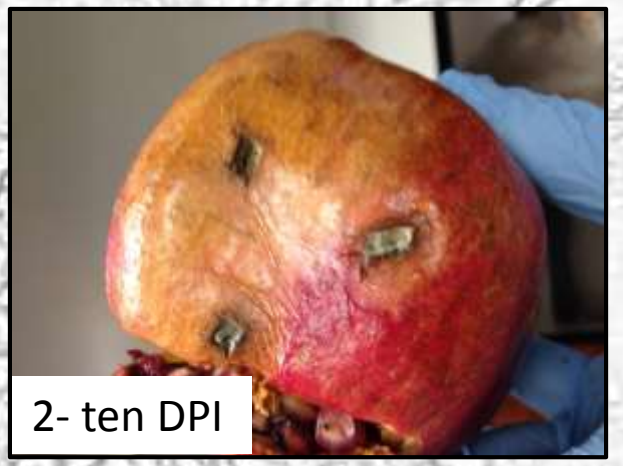


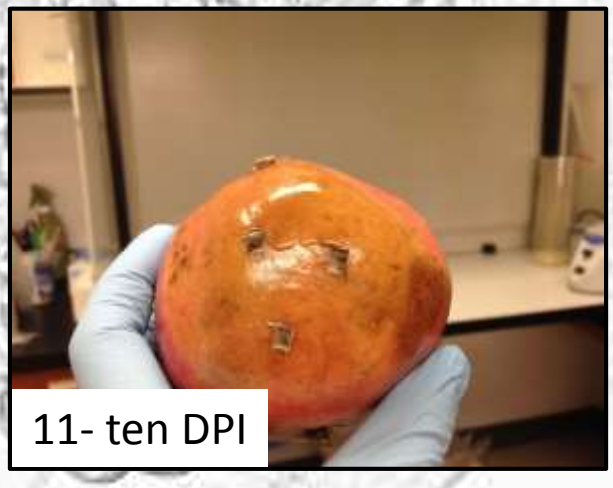


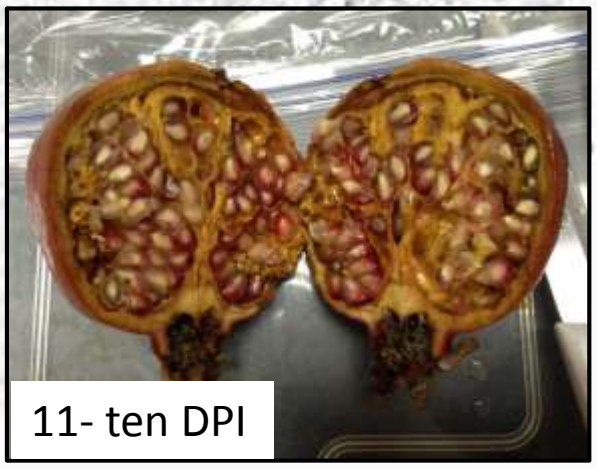


3- *Amphilogia* sp; 11- *Neofusicoccum parvum*; 2- *Colletotrichum* sp.; 1- *Phyllosticta elongata* ; 8- *Pestalotiopsis clavispora*

Pathogenicity test (Detached fruit assays)

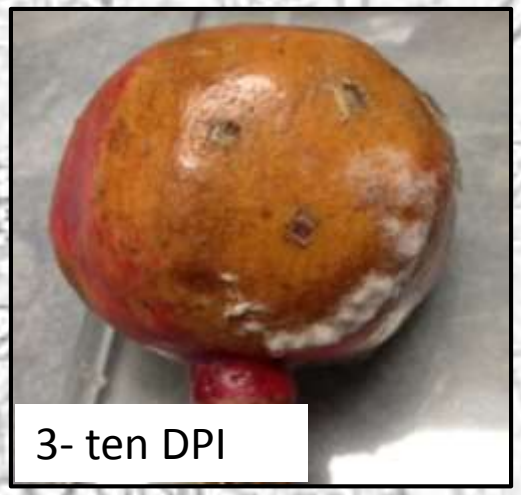


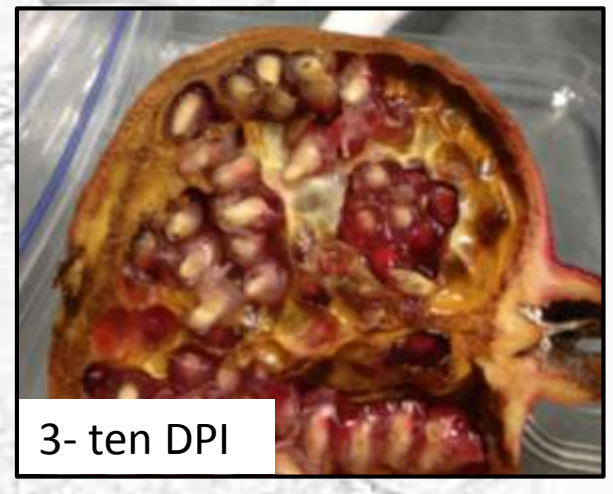


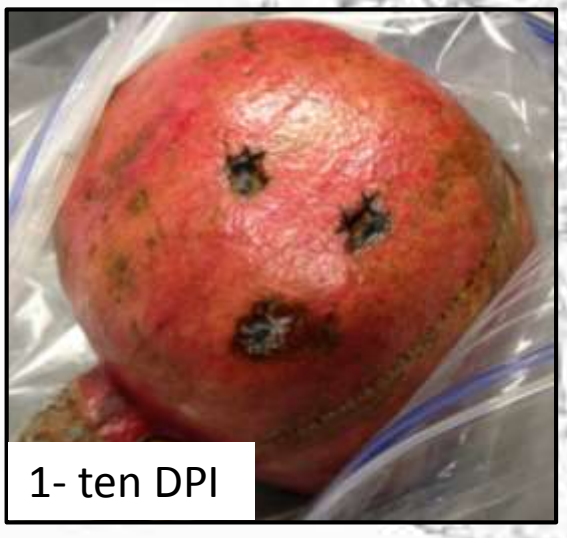


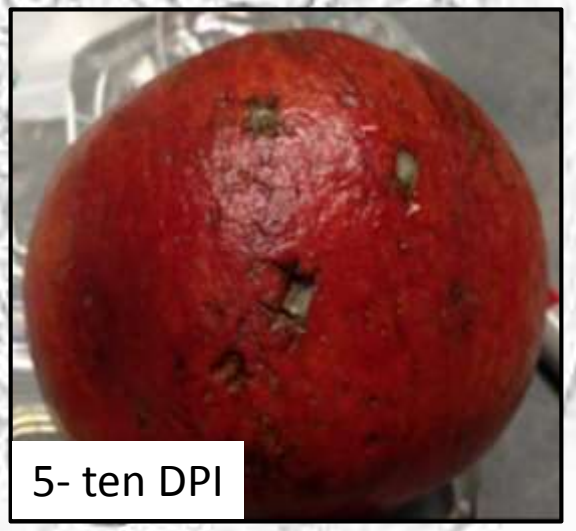
2- *Colletotrichum* sp.; 11- *Neofusicoccum parvum*; DPI – # of Days Post Inoculation

Pathogenicity test (Detached fruit assays)

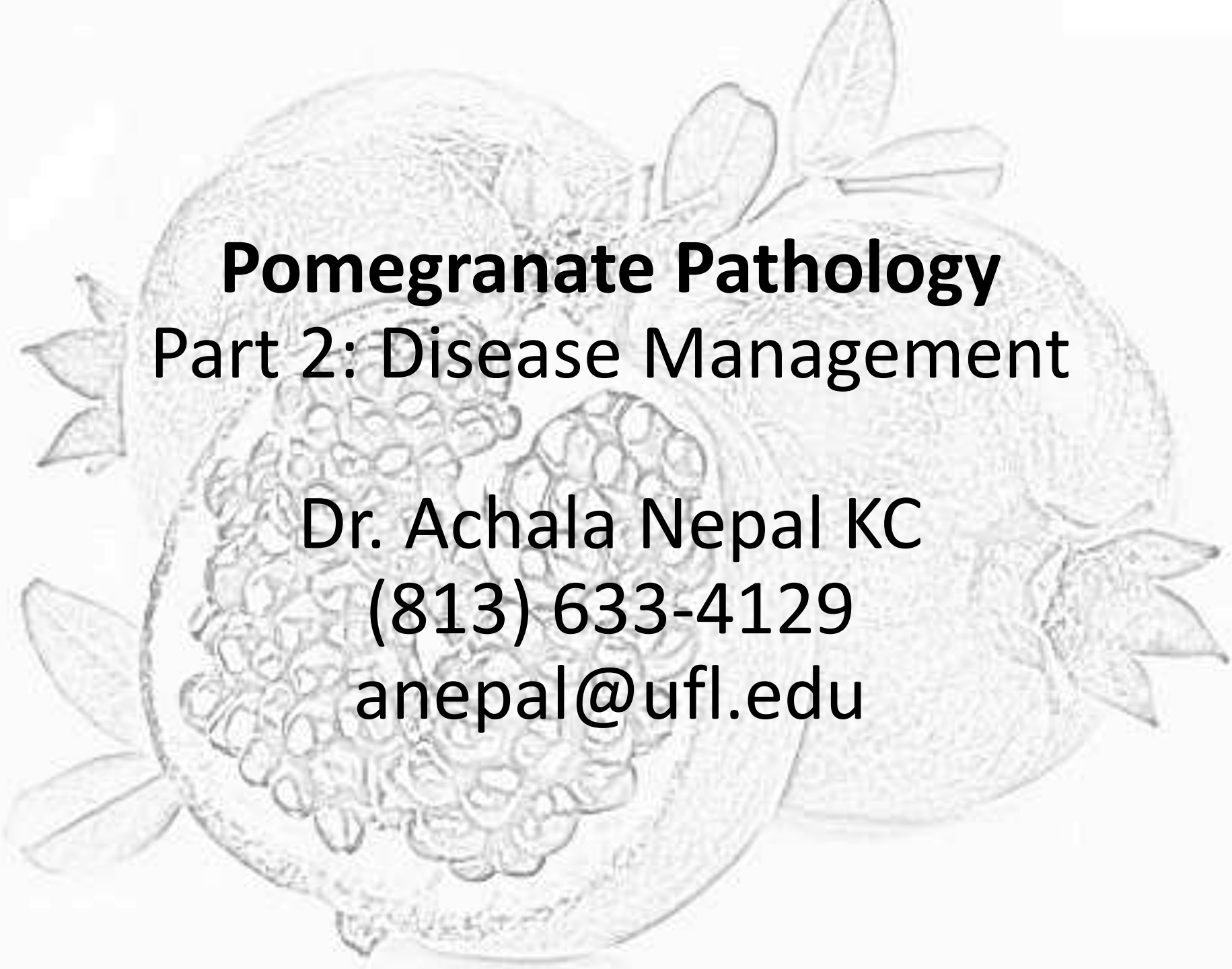








3- *Amphilogia* sp; 1- *Phyllosticta elongata* ; 5-*Epicoccum nigrum*



Pomegranate Pathology

Part 2: Disease Management

Dr. Achala Nepal KC
(813) 633-4129
anepal@ufl.edu

Fungicide Trials

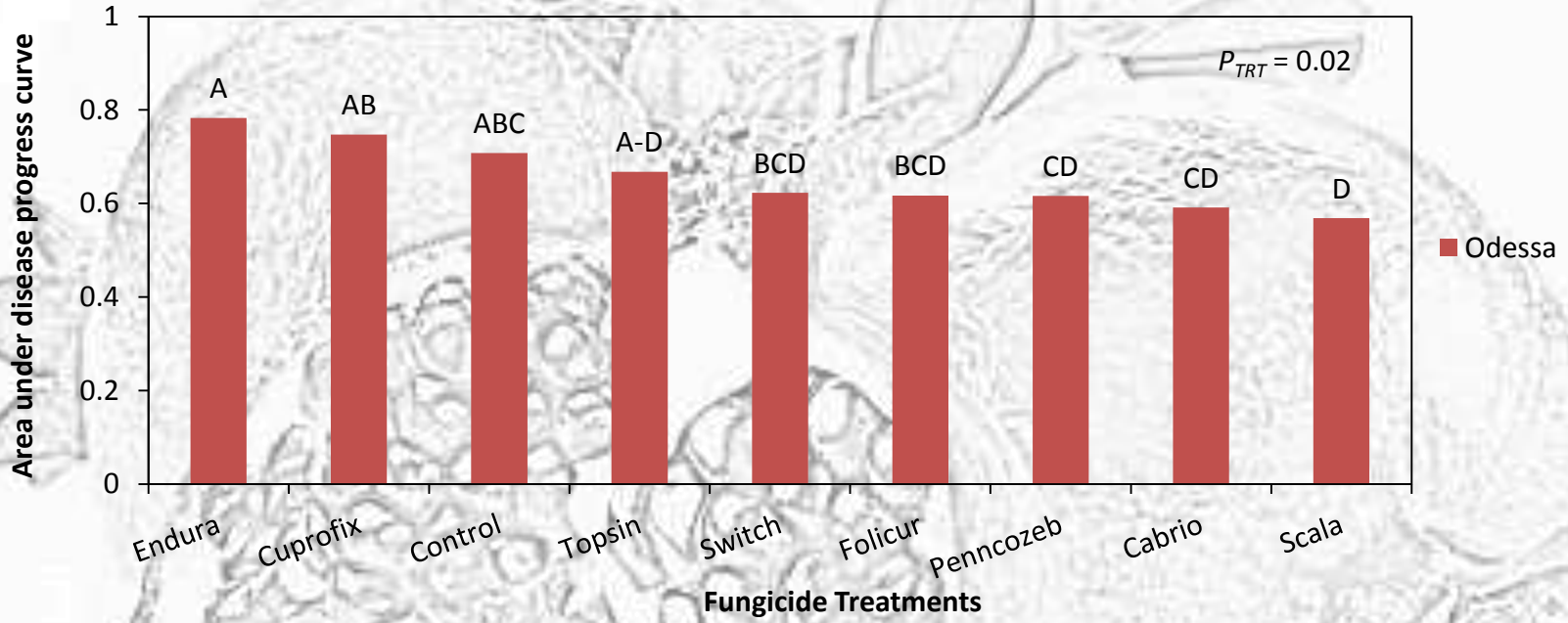
- Fungicide trials at two locations:
  - Boy Scout Rd, Odessa, FL
  - Edith Delaney Ln, Plant City, FL
- Sprayed two times with eight different compounds at three weeks interval

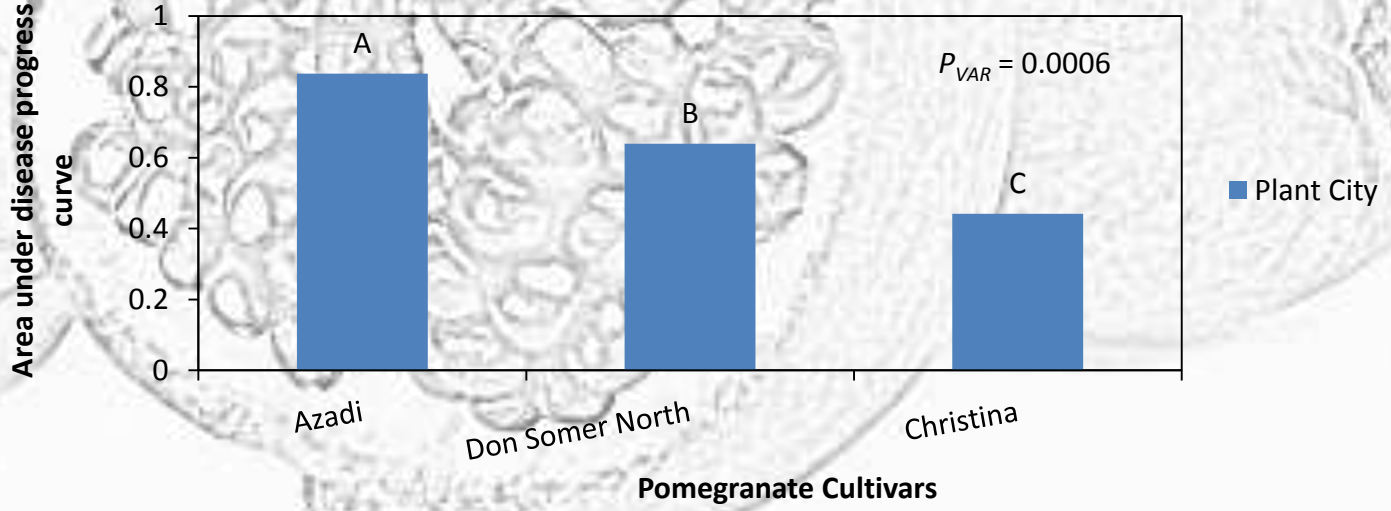
Trt	Trade Name	Rate (per acre)	Trt	Trade Name	Rate (per acre)
1	Cabrio	16 oz	5	Endura	12.5 oz
2	Switch	11 oz	6	Penncozeb	1.5 lb
3	Scala	18 fl oz	7	Cuprofix	3 lb
4	Topsin	1.5 lb	8	Folicur	8 fl oz

Fungicide Trials

- Two cultivars were sprayed in Odessa, FL
  - Granada, and Gissarki Rozovyi
  - Three replications per treatment per cultivar
  - Two trees per replication
- Three cultivars were sprayed in Plant City, FL
  - Azadi, Christina, and Don Somner North
  - Two replications per treatment per cultivar
- Trees were rated weekly for six weeks using The Horsfall-Barratt Scale

Fungicide Trials





Pomegranate Entomology

Hugh Smith
813-633-4124
hughasmith@ufl.edu

Rotten or damage fruit will be infested by fruit flies and sap beetles. These are secondary invaders, not primary pests.

Sap beetle adult

Fruit fly larva

Hugh Smith GCREC

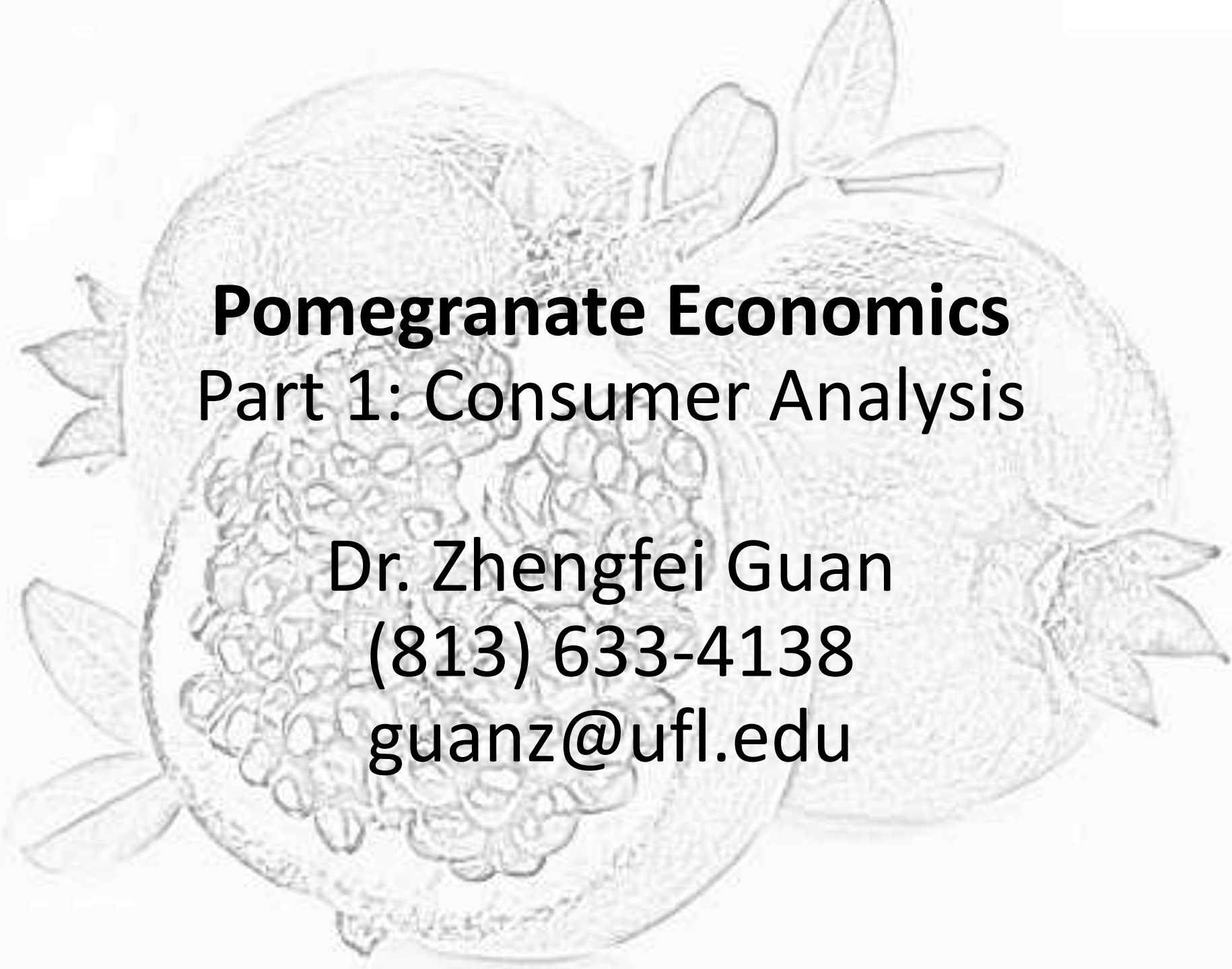
Beetles and weevils can cause notching of leaves.

Hugh Smith GCREC

Soft scale on pomegranate

Scale egg mass underneath female

Hugh Smith GCREC



Pomegranate Economics

Part 1: Consumer Analysis

Dr. Zhengfei Guan
(813) 633-4138
guanz@ufl.edu

Consumer analysis

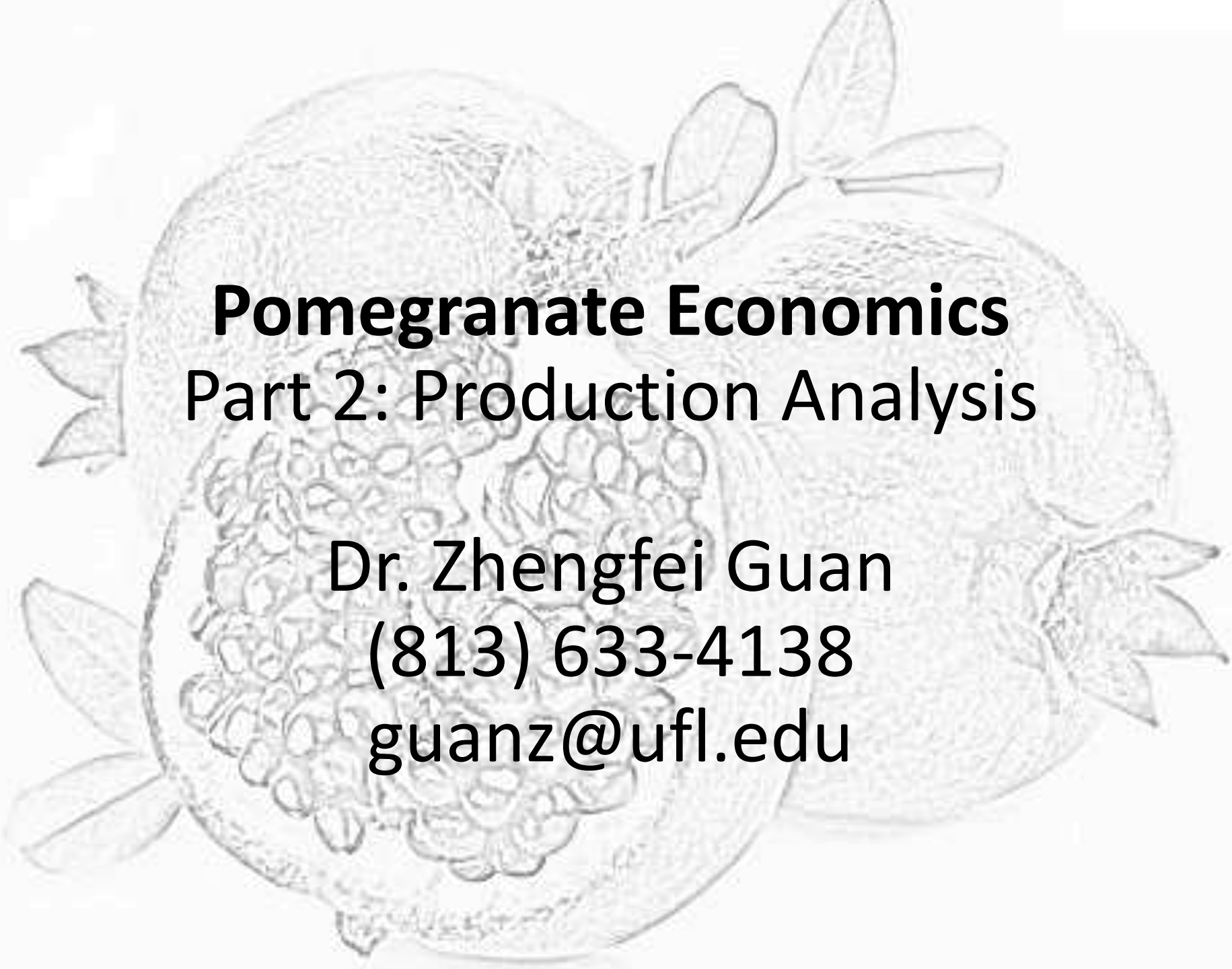
- Tasting Test: ongoing
  - Location: Gainesville
  - Date: Oct 10 & 13
- General Consumer Preference Analysis will start later

Varieties to test

- Salavatski (Large; sweet/tart, med-hard, pink/white)
- Jimmy (medium-large; sweet; soft seed; yellow/pink/red)
- Al-sinar-nar (medium-large; sweet/tart; hard; yellow/orange/red)
- Lester (medium-large? sweet,; fairly soft; yellow/pink/red)
- Afganski (medium; flavor? soft; color?)
- Ambrosia (extra large; sweet; soft; pink)
- Sweet (medium-large; sweet; soft; clear)
- Name not known, need to find out (large; sweet/tart? soft; red)
- Wonderful

Changes made

- Initially proposed to recruit survey participants using mall intercepts. (Tampa and Atlanta discussed)
- Now testing at the UF sensory testing lab in Gainesville
- Reason: FPA wants to test more varieties, for which using mall intercepts would be too costly. budget not enough.
- Dr. Zhengfei Guan and his team attended FPA September board meeting and discussed the options. FPA agreed on the changes



Pomegranate Economics

Part 2: Production Analysis

Dr. Zhengfei Guan
(813) 633-4138
guanz@ufl.edu

Production Analysis

- Cost and yield survey ongoing.

- Some preliminary establishment costs:
  - Tree spacing:18 feet×18 feet
  - Cost trees (one-gallon pot):~$8-$12, varying depending on varieties
  - Trees (three-gallon pot): ~$20-25
  - Trees/acre:134
  - Drip tape/acre: $200

- Production Practices
  - Irrigation: depending on soil type and tree age
    - 2-3 times/week for ~1 hr (from one grower)
    - No irrigation (clay)
  - Fertilizer:
    - Cottonseed meal—organic farm
  - Weeds: Roundup or removed by hand/ mower

Acknowledgements

- Dr. Bill Castle
- Ms. Cindy Weistein, Ms. Lisa Strange
- Water Conserv II, GreenSea, Cee-Bee's Citrus, Heart of Florida
- FDACS Specialty Crop Block Grant Program
- GCREC Staff