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### PROGRAM OVERVIEW

#### Salinity Meeting

#### August 21, 2012

#### Flagler County Extension Office



# **Potential Implications on Yield**

Irrigation water salinity tolerances for different crops.				
Сгор	Yield potential, ECiw			
	100%	90%	75%	50%
Cabbage	1.2	1.9	2.9	4.6
Cantaloupe	1.5	2.4	3.8	6.1
Carrot	0.7	1.1	1.9	3.1
Cucumber	1.7	2.2	2.9	4.2
Lettuce	0.9	1.4	2.1	3.4
Onion	0.8	1.2	1.8	2.9
Pepper	1.0	1.5	2.2	3.4
Potato	1.1	1.7	2.5	3.9
Radish	0.8	1.3	2.1	3.4
Spinach	1.3	2.2	3.5	5.7
Sweet Corn	1.1	1.7	2.5	3.9
Sweet potato	1.0	1.6	2.5	4.0
Tomato	1.7	2.3	3.4	5.0

### SALINITY

WATER AND SOIL SALINITY HAVE BEEN PROBLEMS IN THE TCAA AND OTHER PARTS OF FLORIDA FOR OVER 50 YEARS.

IN COASTAL AREAS SALT INTRUDES INTO THE FRESH WATER SUPPLY AS A RESULT OF LOW RAIN FALL AND/OR DRAW DOWN OVER AN UNDERLYING SALT (WATER) DEPOSIT.

 OVER 100 WELLS WERE TESTED ON 20 FARMS IN 2011-2012 BY UF/IFAS EXTENSION PERSONNEL IN THE TCAA.

### TCAA IRRIGATION WELLS



#### TCAA SOIL SALINITY: POTENTIAL EFFECTS ON YIELD – CAUTION!



1969 FLAGLER COUNTY EXTENSION RECOMMENDATIONS TO ALLEVIATE SALTS IN IRRIGATION WATER AND SOIL

- Maintain proper pH
- Ca/Mg ratio 5:1; not over 8:1
- Decrease fertilizer applied
- Mulch to reduce fertilizer use
- Use low salt index fertilizers-Potassium sulfate, ammonium sulfate, organics, superphosphate

- Split applications of fertilizer
- Band fertilizer to increase use efficiency
- Use cover crops to increase organic matter
- Level fields-laser plane
- Plug bad wells
- Do not drill deep wells and maintain good salt records for well
- Use closed irrigation pipes, underground, from pump to lateral ditches

# Effects of drip and furrow saline irrigation on growth of tomato



# Effects of drip and sprinkler irrigation with saline water on growth of watermelon



FIG. 2. Effects of irrigation systems (sprinkler and drip) on marketable yield of watermelon under different salinity levels of irrigation water (following Romic *et al.*, 2008).

### POTATO AND SALINITY

- Moderately salt sensitive to salt tolerant
- Growth and yield are considerably affected by salts
- All growth stages are affected by salt stress
- Salt stress significantly alters molecular responses of the plant
- There are salt tolerant cultivars, thus a chance for a breeding program