

**INFLUENCE OF BAHIA GRASS  
(*PASPALUM NOTATUM* FLUEGGE)  
ROTATION IN THE SUPPRESSION OF  
TOMATO SPOTTED WILT (TSW) OF  
PEANUT IN QUINCY, FL**


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# Introduction

- **Increasing costs in peanut production call for sustainable production methods.**
  - **TSW of peanut is a major constraint in production of the crop.**
  - **Management of TSW on peanut has become bewildering.**
  - **Hence the need to develop sustainable management methods.**
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# Introduction Contd.

- **Rotating peanut with bahiagrass has been used to manage root-knot nematodes, stem rot, and leaf spots on the crop.**
- **No consistent report on the effect of rotating peanut with bahiagrass rotation on TSW is available.**




# Objectives

- **Investigate the ability of bahiagrass rotation to suppress TSW on peanut.**
- **Study the possible mechanisms of disease suppression during the rotation.**



# Methodology

- **Rotations: (i) Bahiagrass was grown for two consecutive years after cotton, then planted to peanut (CBBP), (ii) Conventional (PCCP) rotation consist of peanut first year followed by two years of cotton and then peanut.**
  - **Bahiagrass was killed in the fall of each year.**
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## **Methodology contd.**

- **The conventional rotation was planted to winter oats after harvesting cotton and was killed with glyphosate herbicide during spring.**
- **Both rotations were strip tilled before seeding.**
- **In 2003 and 2004 peanut cv Georgia Green (GA Green) was planted, whereas in 2005, cv AP3 was planted in twin rows.**



# Methodology contd.

- Each plot measured 23 m by 18 m (20 peanut rows).
- TSW incidence and severity on a scale of 1-3 was assessed on 20 plants periodically.
- During 2005 thrips feeding injury as well as population on peanut seedlings were assessed 14 and 45 DAP.

The background features several large, stylized, overlapping swirls in shades of purple, green, and light blue. Interspersed among these swirls are numerous small, yellow, starburst or triangular shapes, some pointing towards the center and others pointing outwards, creating a dynamic and celebratory feel.

**RESULTS FROM  
2003-2006**

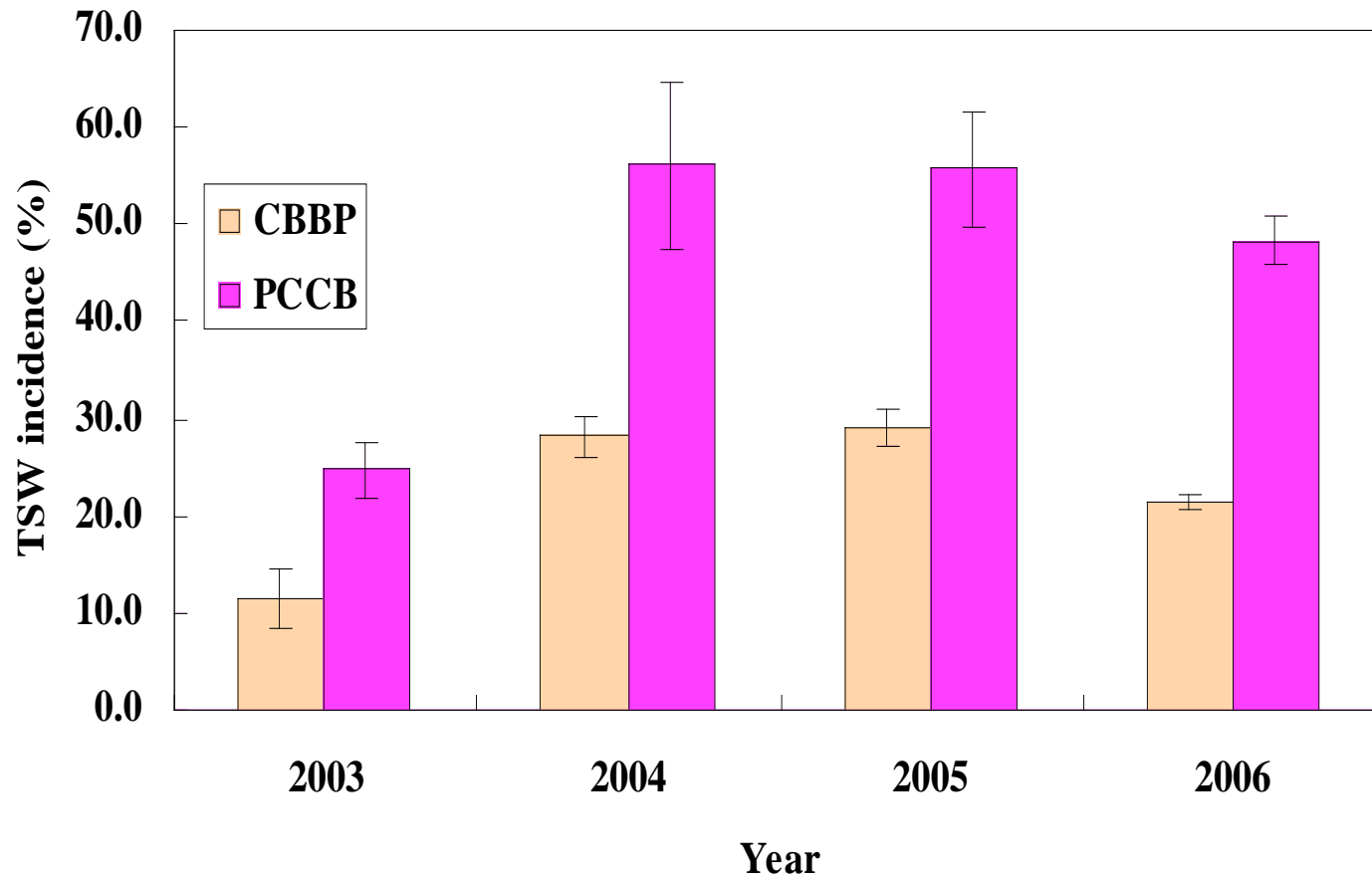


A decorative graphic on the left side of the slide features three balloons: a light green one at the top, a light blue one in the middle, and a light purple one at the bottom. Each balloon is attached to a thin, wavy streamer. Small yellow triangular shapes are scattered around the balloons, resembling confetti or streamer details.

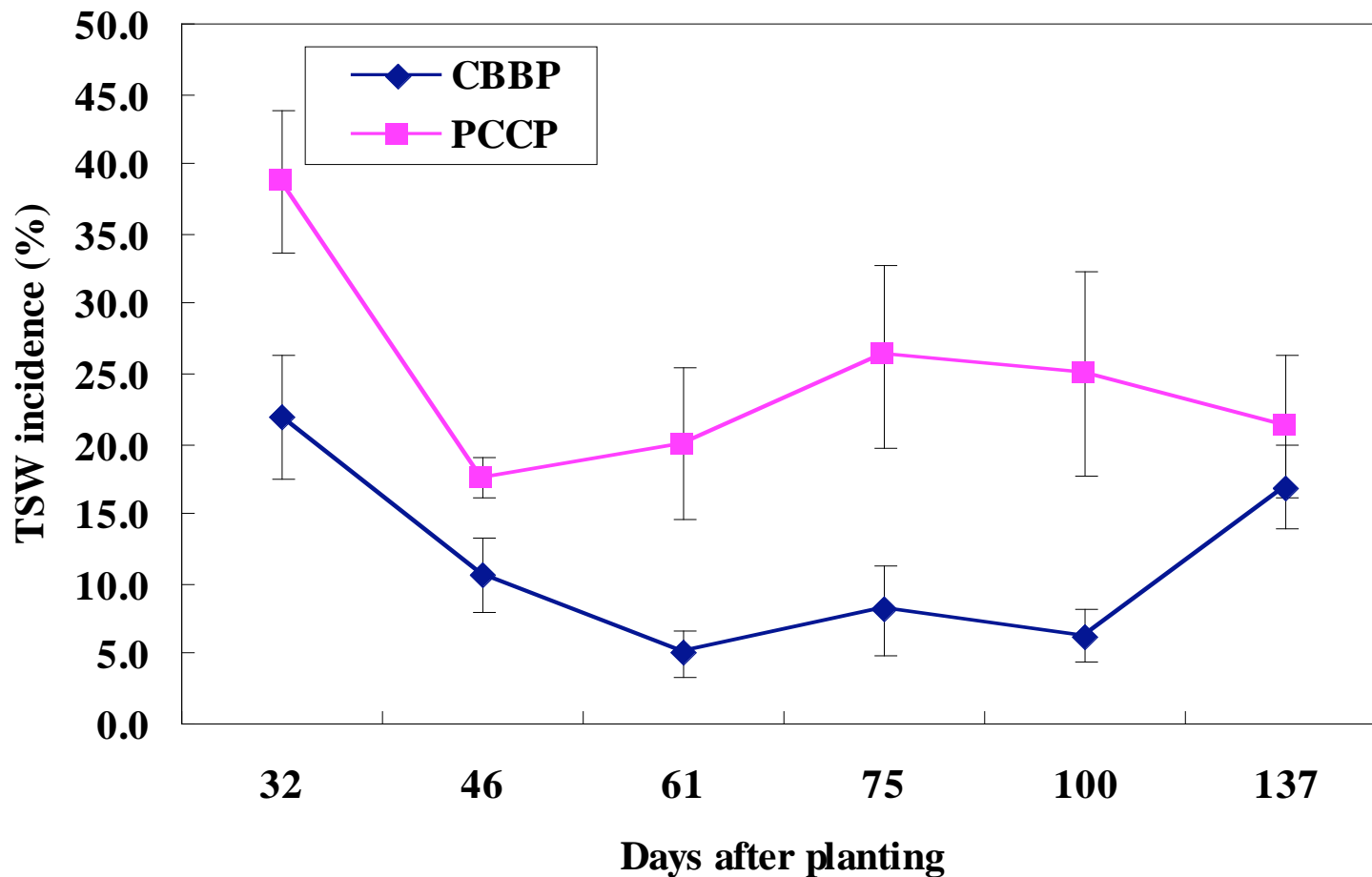
# Effect of rotations on TSW

- **In all four years, TSW incidence and severity was lower on the bahiagrass (CBBP) than the conventional (PCCP) rotation.**

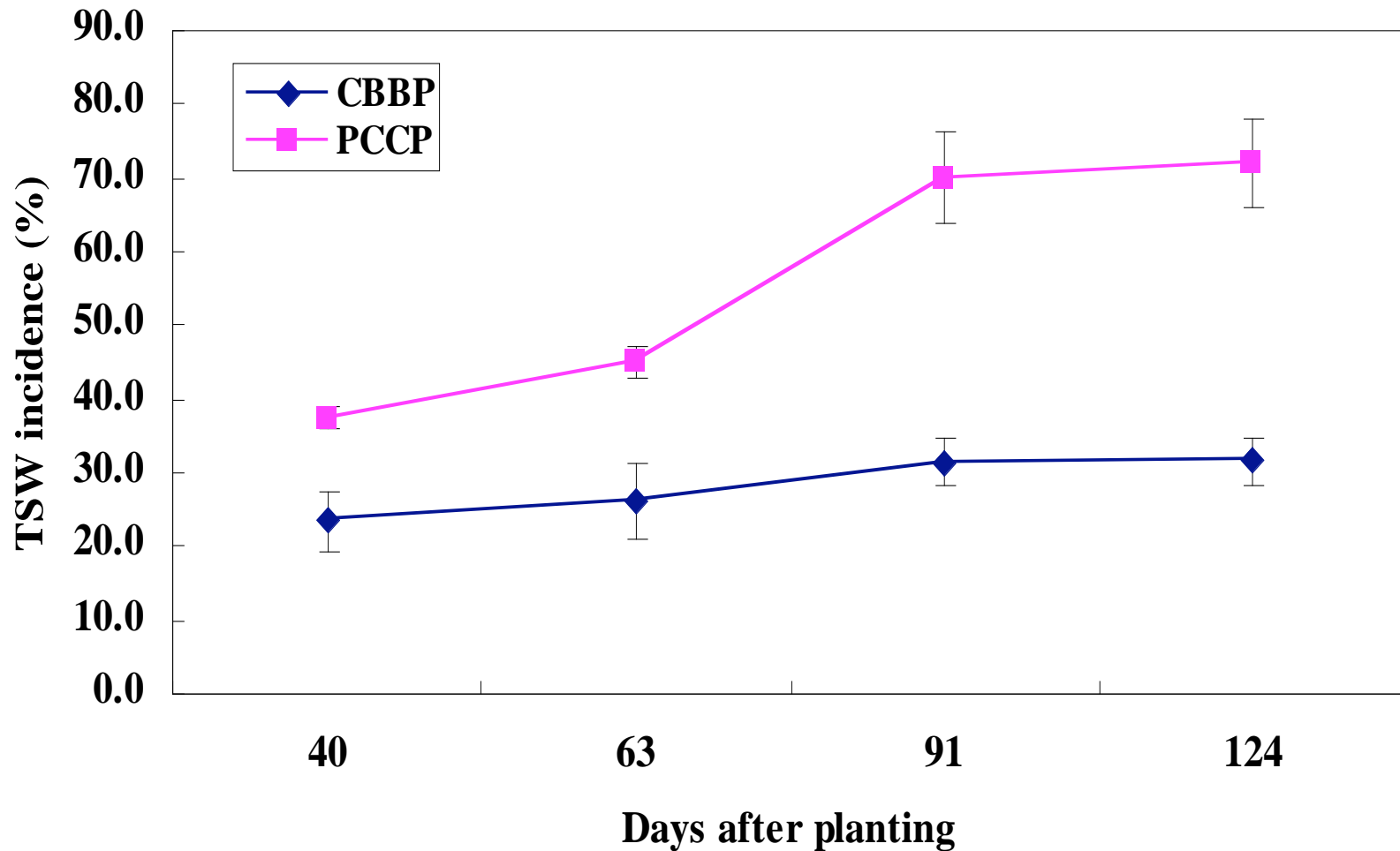
# Effect of rotations on the incidence of TSW on peanut in Quincy, FL across years



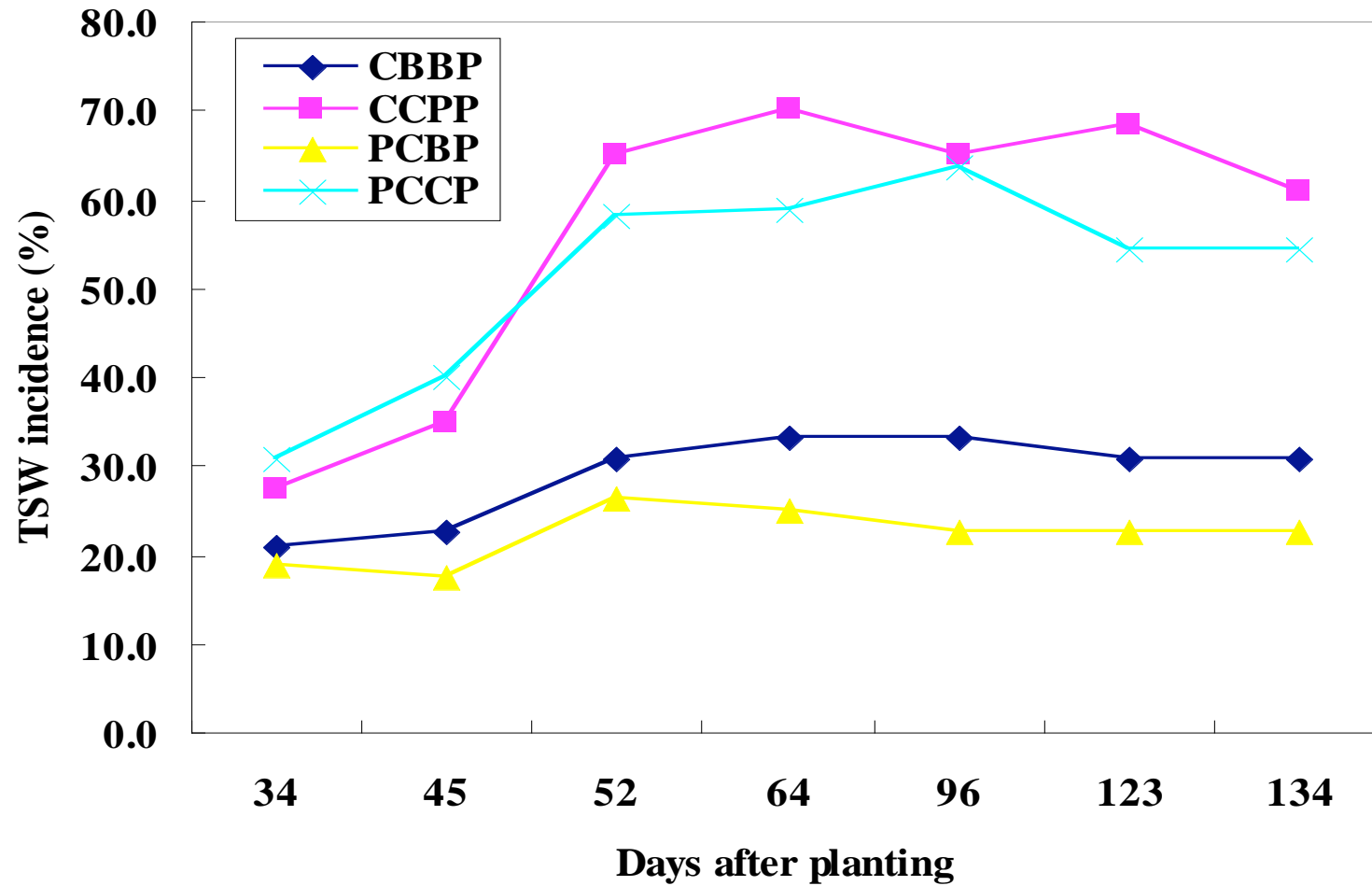
# Effect of bahiagrass (CBBP) and conventional (PCCP) rotation on progression of TSW on Georgia Green peanut during 2003 in Quincy, FL



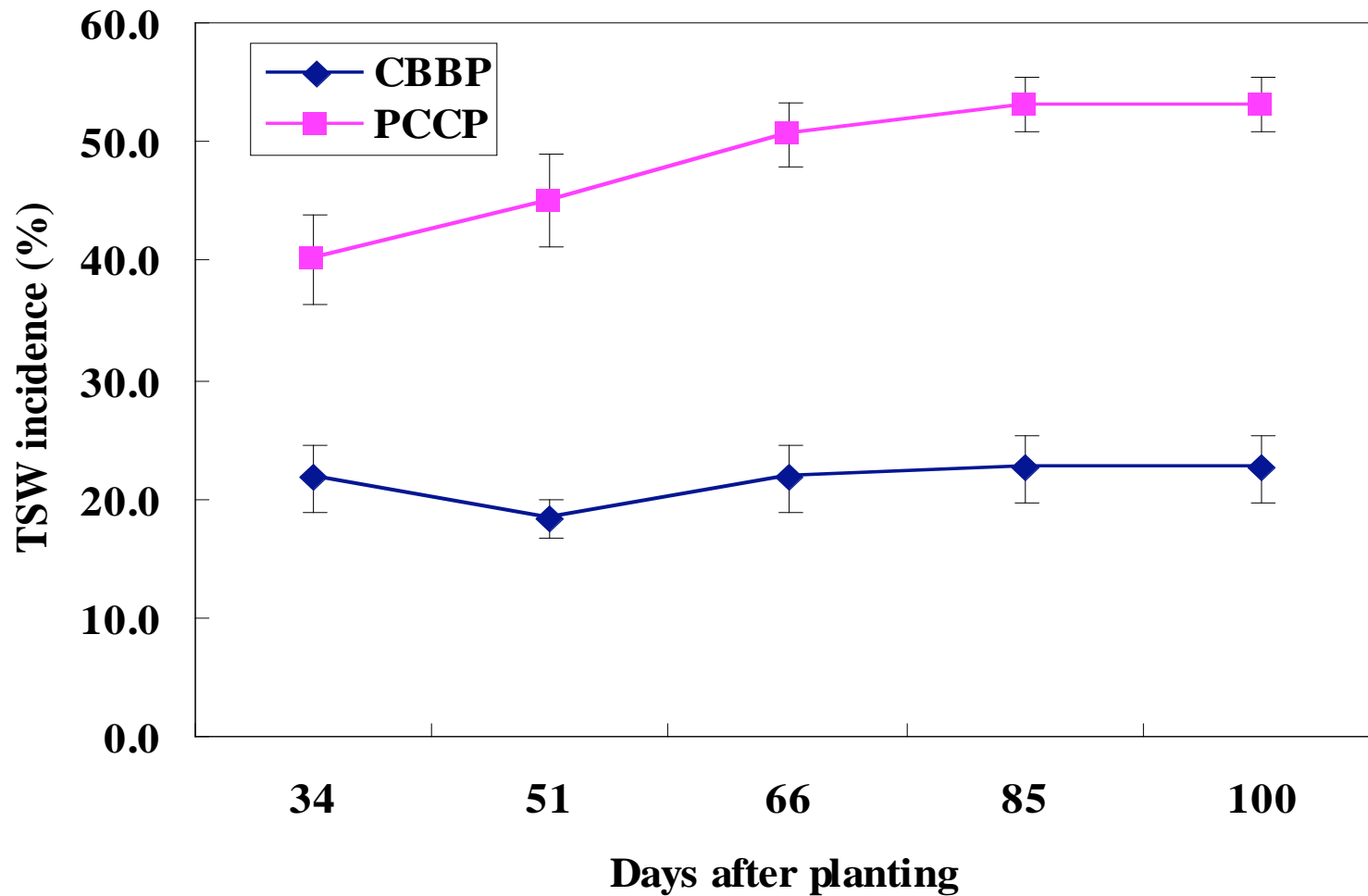
# Effect of bahiagrass (CBBP) and conventional (PCCP) rotation on progression of TSW on Georgia Green peanut during 2004 in Quincy, FL



# Effect of different cropping sequences on progression of TSW incidence on AP3 peanut during 2005 in Quincy, FL



# Effect of bahiagrass (CBBP) and conventional (PCCP) rotation on progression of TSW on AP3 peanut during 2006 in Quincy, FL





# Symptoms of TSW on conventional rotations

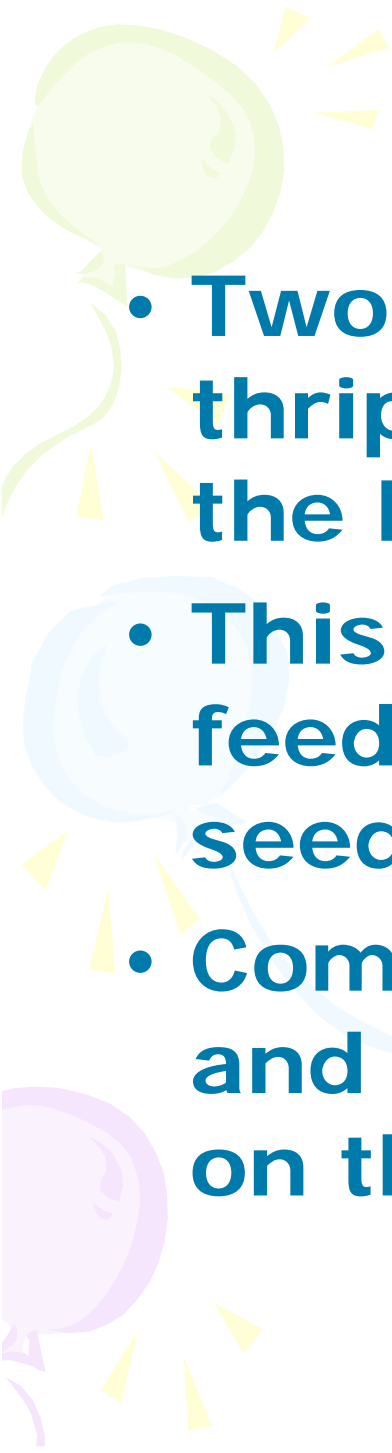




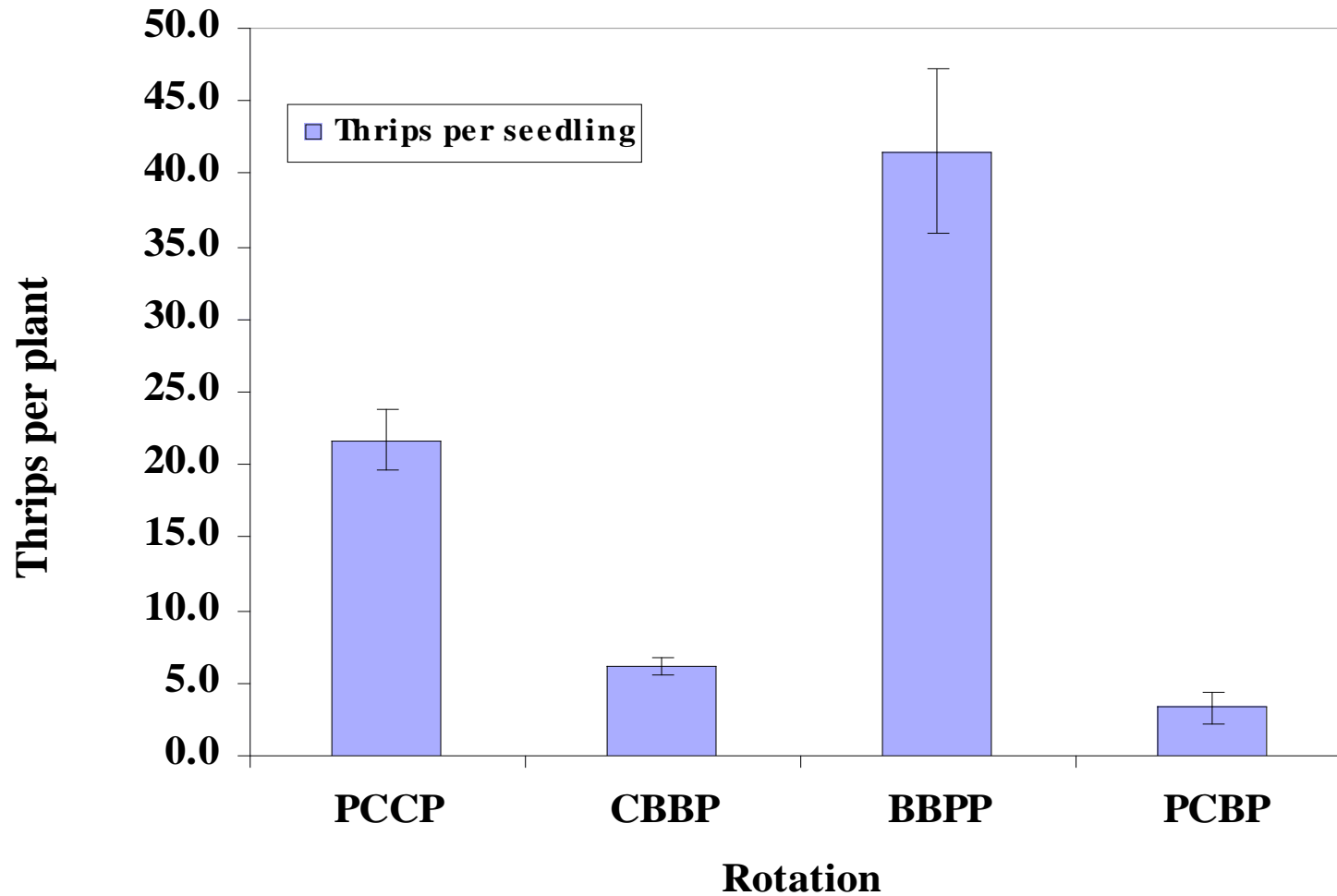
An aerial photograph showing a vast, dense field of green peanut plants. The plants are arranged in a regular, grid-like pattern, indicating a well-maintained agricultural field. The leaves are small and vibrant green. A semi-transparent blue rectangular box is centered over the middle of the image, containing white text.

**Peanut crop after two years of  
bahiagrass**



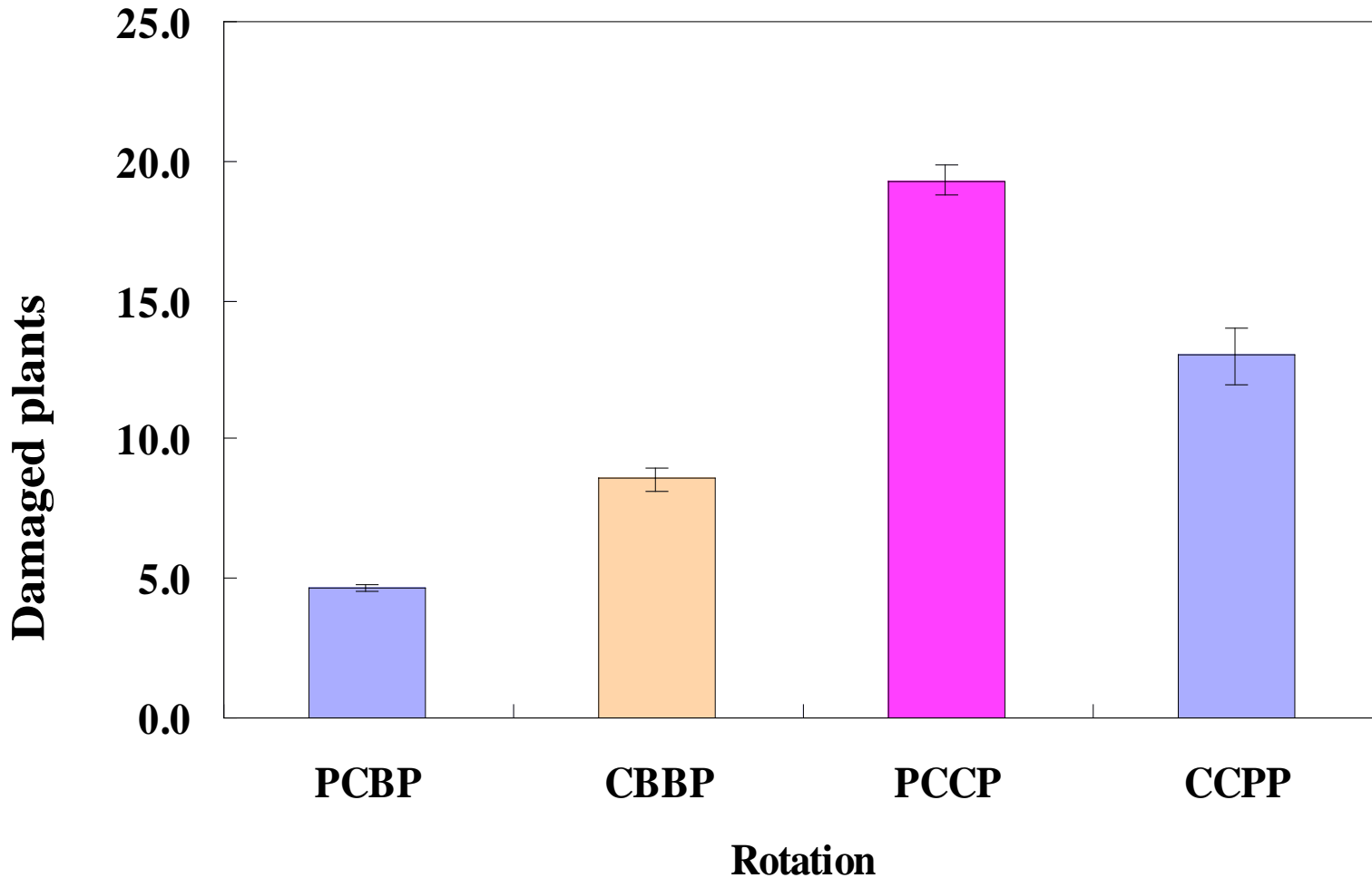
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- **Two weeks after seeding, high thrips population was observed on the PCCP rotation.**
  - **This resulted in severe thrips feeding damage on peanut seedlings.**
  - **Comparatively, lower population and feeding damage was observed on the CBBP rotations.**

# Effect of different cropping sequences on thrips population on AP3 peanut seedlings during 2005 in Quincy, FL





## Effects of rotations on thrips feeding damage on peanut seedlings in Quincy FL during 2005



## Thrips infestation and feeding damage on volunteer peanut seedling



# Thrips feeding damage









# Effect of rotations on peanut yield

- **Bahiagrass (CBBP) rotations significantly increased yield of peanut over the conventional (PCCP) rotations in all three years.**

# Effect of rotation on peanut yield (kg/ha) in Quincy, FL

Year	Variety	Rotation	No Fungicide	Fungicide
2003	GA Green	CBBP	2,935 a	3,299 a
2003	GA Green	PCCP	2,229 b	2,160 b
2004	GA Green	CBBP	3,053 a	4,302 a
2004	GA Green	PCCP	2,297 b	3,114 b
2005	AP3	CBBP	2,250 a	3,048 a
2005	AP3	PCCP	1,703 b	2,865 b
2006	AP3	CBBP	4,866 a	4,504 a
2006	AP3	PCCP	3,278 b	4,216 b



# Conclusions

- Bahiagrass rotation significantly reduced TSW incidence and severity of peanut in all four years.
- Bahiagrass rotation reduced number of thrips per peanut seedling and number of damaged peanut seedlings.
- Thrips population and damage data suggest thrips activity at the seedling stage could be one of the most important factors in determining the incidence and severity of TSW over time.

## Conclusions cont.

- This reduction in TSW may have contributed to the observed increase in peanut yield and quality.

# Suggestions for future research

- Investigate the suitability of winter cover crops as host to thrips and their subsequent influence on TSW of peanut.
- Investigate the relevant stage of peanut at which thrips feeding is critical in TSWV transmission.
- Establish the mechanism employed by bahiagrass in suppression of TSW.