

# **Impact of Tillage and Herbicides on Tropical Spiderwort**

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# Tropical spiderwort

## *Commelina benghalensis*



- noxious and invasive
- annual or perennial
- seeds and rhizomes
- above and below ground flowers
- 1,600 seeds/plant
- alternate host of southern root-knot nematode
- problem weed in other countries (*Holm's*)

# **Tropical Spiderwort Observations WFREC, Jay, FL**

- First appeared in strip-till peanut study
- Infestations worse in reduced tillage
- Germinates and emerges throughout the growing season
- Roundup not effective
- Many other peanut and cotton herbicides do not provide long-term control

# Long-Term Peanut-Cotton Rotation Study

- Funded by Southeastern Peanut Research Initiative
  - GA, AL, FL
- BMP under
  - Conventional Tillage
  - Strip-Tillage
- Plot size: 32 rows by 200'
  - Test site = 15.4 A
- Crops rotated yearly
- Tillage **not rotated**.
  - Continuous Conventional Tillage
  - Continuous Strip-Tillage

# Conventional Tillage

- Winter cover crop killed in April
- Moldboard plow (12" depth)
- Disk-Harrow
- Field Cultivate prior to planting



# Strip-Tillage



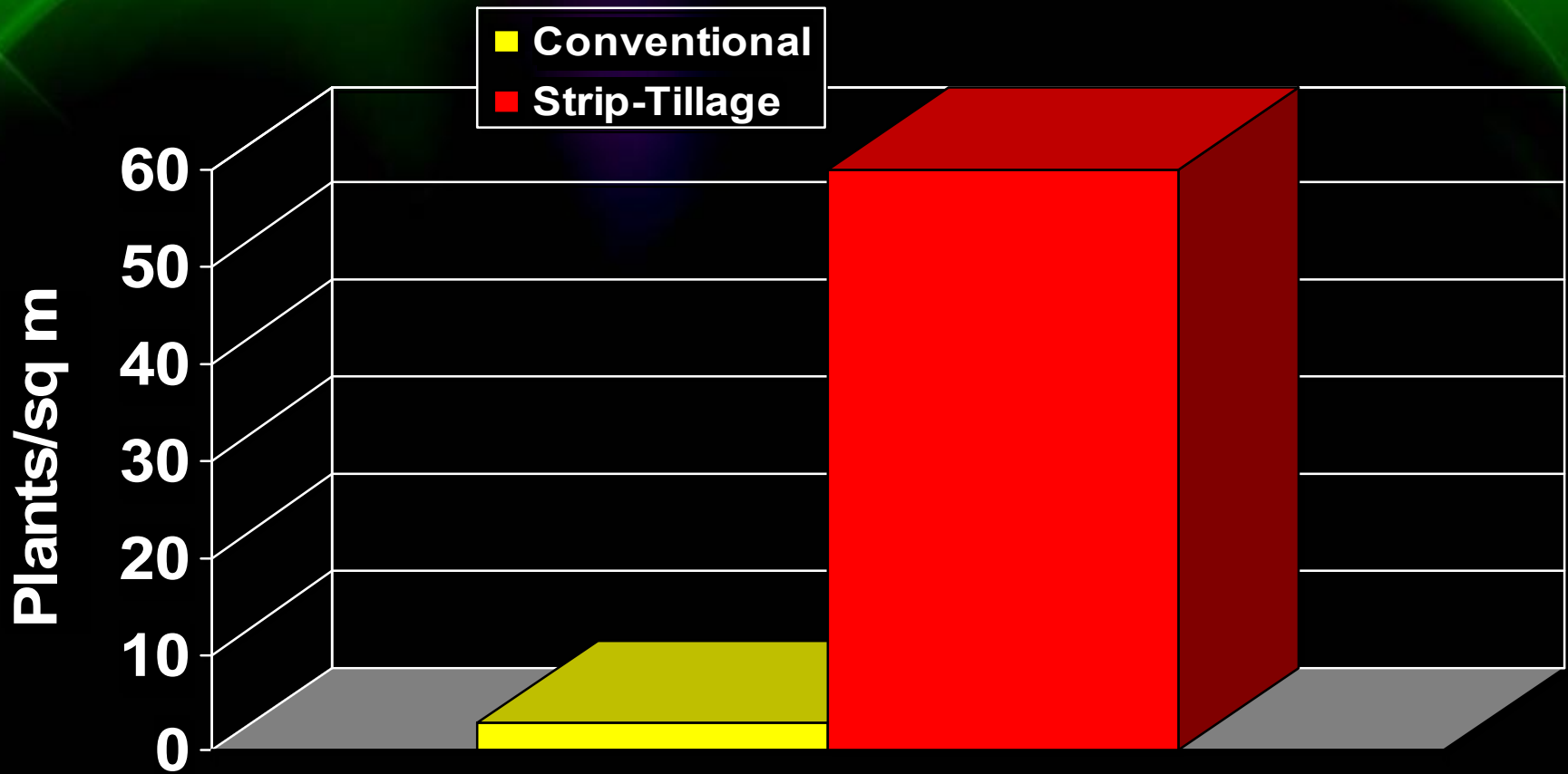
Brecke

Tropical Spiderwort Symposium

# Long-Term Rotation

- Initiated 2001
- During 2002 tropical spiderwort appeared
- By 2003 infested entire test site
- Appeared to be differences in level of infestation between conventional and strip-tillage by 2004.
- Initiated more detailed data collection in 2005

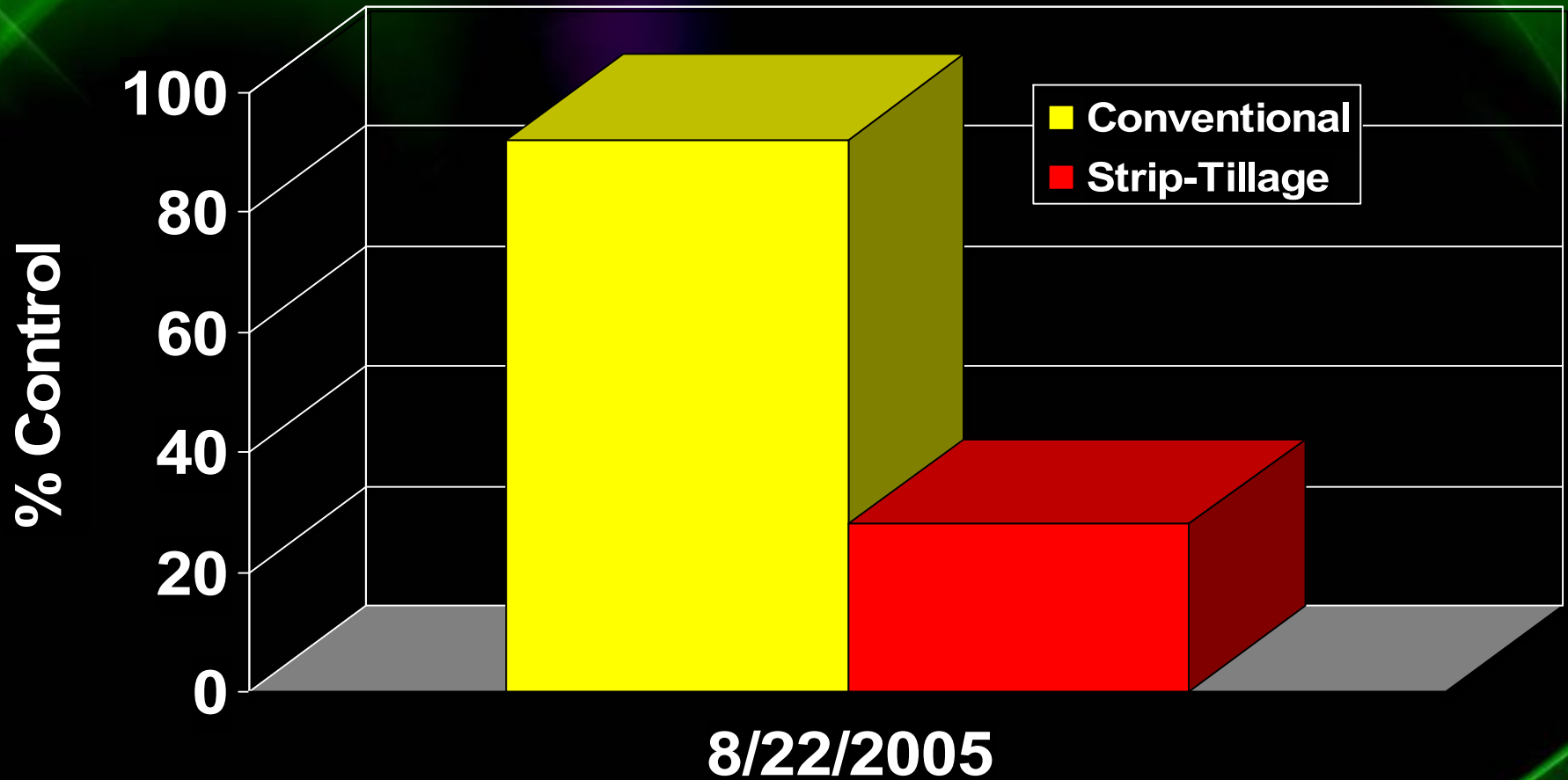
# Tillage Impact on Tropical Spiderwort Cotton & Peanut



7/20/2005



# Tillage Impact on Tropical Spiderwort Cotton & Peanut



A photograph of a seedling of Tropical Spiderwort growing in a sandy, cracked soil. The seedling is a small, dark, fuzzy patch in the center of the frame. The soil is light brown and has several deep, irregular cracks running across it. There are many small, green, oval-shaped leaves scattered across the soil, some of which are likely the seedlings of other plants. The overall scene is a close-up of the ground, showing the texture of the soil and the early stages of plant growth.

**Seedling Tropical Spiderwort**



A high-angle, close-up photograph of a lush, green peanut field. The plants are densely packed, with many trifoliate leaves visible. The lighting is bright, creating a vibrant green color and some shadows within the foliage. The text "Strip-Tillage Peanut" is overlaid in the lower-middle section of the image.

**Strip-Tillage Peanut**



A photograph of a peanut field. The plants are green and leafy, growing in rows. A dirt path runs down the center of the field. The text "Conventional Tillage Peanut" is overlaid in yellow at the bottom center.

**Conventional Tillage Peanut**



A photograph of a cotton field under strip-tillage. The cotton plants are in the foreground, showing green leaves and some pinkish-red flowers. The background is a dense field of similar plants. The text "Strip-Tillage Cotton" is overlaid in yellow.

**Strip-Tillage Cotton**



A photograph showing young cotton plants (seedlings) growing in a field. The plants are small, green, and have two leaves each. They are arranged in rows, with bare soil visible between them. The plants are surrounded by larger, mature green leaves, likely from the same cotton plants. The text "Strip-Tillage Cotton" is overlaid in yellow at the bottom center of the image.

**Strip-Tillage Cotton**



A photograph of a cotton field under bright sunlight. The cotton plants are in the middle of the field, showing dense green foliage. The leaves are large and have a characteristic lobed shape. The ground in the foreground is light brown, sandy soil, which appears to be the result of tillage. The background shows a vast expanse of similar cotton plants stretching towards the horizon.

**Conventional Tillage Cotton**





**Conventional Tillage Cotton**



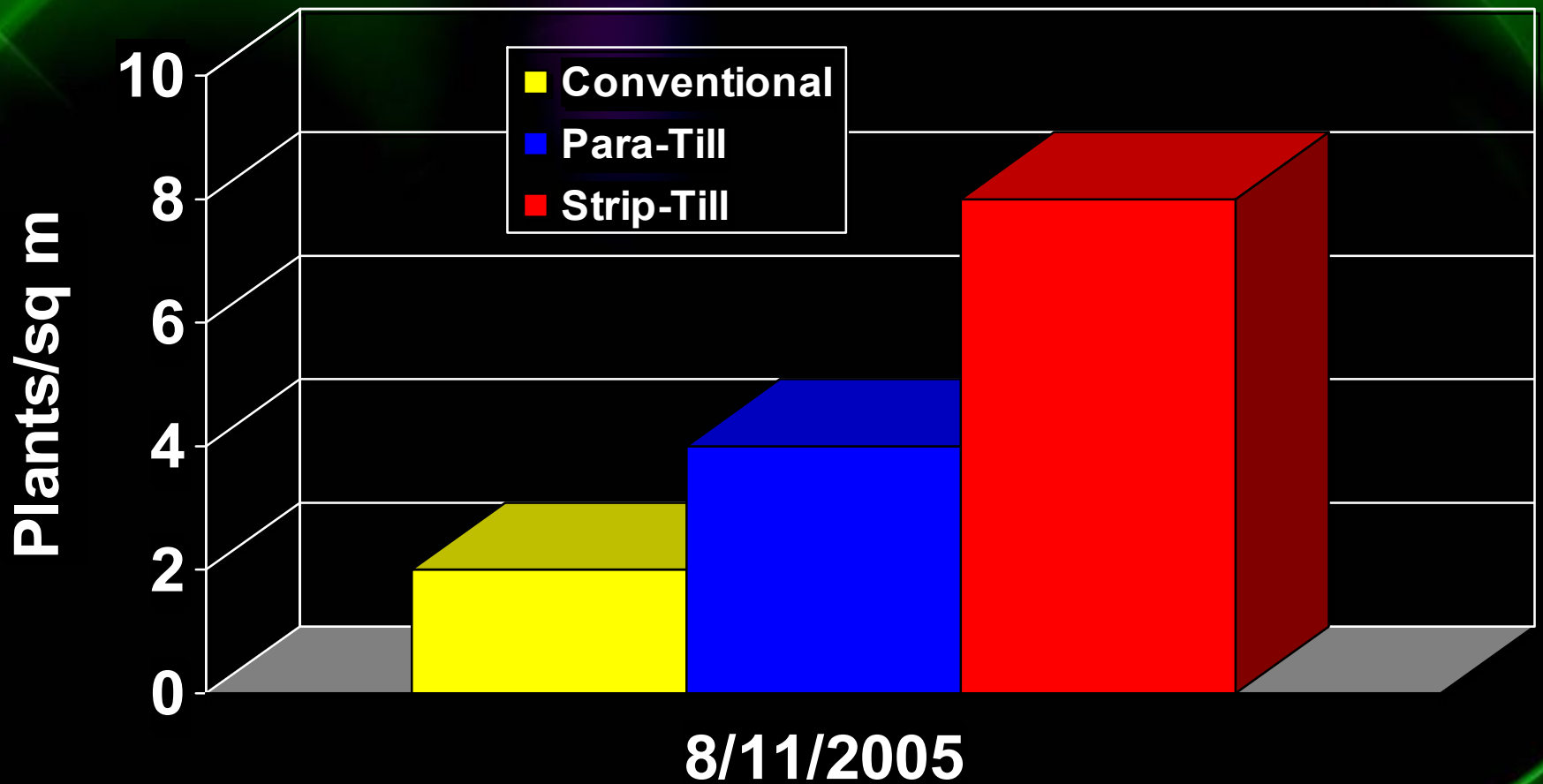
# Tillage X Herbicide Cotton Study

- Initiated in 2005
- Tillage
  - Conventional
  - Strip-Till
  - Para-Till
- Selected herbicide treatments

# Para-Till



# Tillage Impact on Tropical Spiderwort Cotton





# Tropical Spiderwort Control

## Herbicides and Tillage

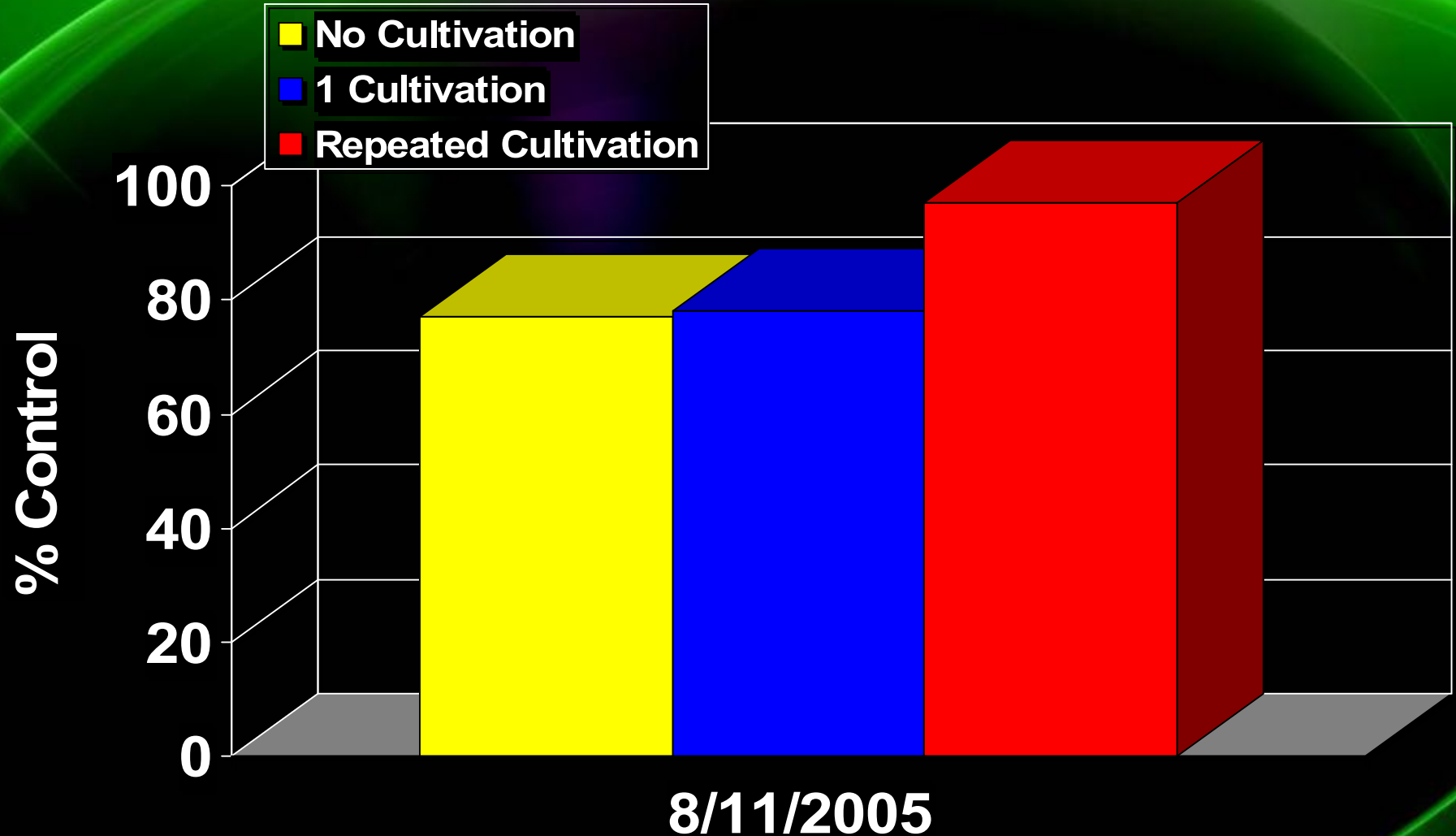
### Cotton

Treatment	Conv	Para	Strip
Rup fb Rup	76	45	38
R+D fb Rup	96	80	75
R+D fb R+Dir	96	85	85
Cot fb R+D fb R+Dir	94	92	88

**R=Roundup, D=Dual, Cot = Cotoran, Dir = Direx**



# Cultivation Impact on Tropical Spiderwort - Cotton



# Future Research

- SPRI Project
  - Tillage comparison
    - Look at seed distribution in soil profile
- Depth of emergence
- Seed longevity
- Seed predation

**Questions ???**

**Discussion ???**