Welcome to Florida Small Farms and Alternative Enterprises Conference

The Power of Sunglight
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For more information on Small Farms, visit our website at: http://smallfarms.ifas.ufl.edu/ or contact your local County Extension Agent.

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The Power of Sunlight
by Frank Giglia Jr
The Photoelectric Effect

Waves or particles?
Each wavelength in PAR has a different effect on photosynthesis
First There Was Black Shade...

Advantages:

👍 Decreases sunlight

👍 Wind protection

👎 Poor light volume control
Shade Factor

- The amount of photosynthetic light that creates growth in the plants over all daylight hours
Sunlight Blocking Technology

- Any material that simply blocks sunlight intensity from reaching the plants.
- Black - Colored - Reflective

- Shade Factor is always higher than Shade Protection
- 30% Protection = 55% Shade Factor
- 50% Protection = 70% Shade Factor
Sunlight Managing Technology

• Materials that manage the photons or wavelengths that reach the plants.

• Reflective and Colored

• Shade Protection is always higher than Shade Factor

• Depends on product

• Can be as high as full sun photosynthetic light
What can we manage

Control

• Intensity
• Temperature
• Spectrum

Effect

• Photons the particles of sunlight
• Wavelength in PAR
Temperature range is most important.
The sunlight is filtered and emanates from different directions to the plant.
- Used inside or outside
- Micro-Climate control
- More light for photosynthesis
- Less heat
- Disperses light
- Blocks IR
- Light & flexible
Mirrors at Work
The Influence of Aluminet® 50% on Temperature

Greenhouse with Aluminet®

Greenhouse without Aluminet®

Open Field
Anti frost radiation
Silver Fabric

- Protects plants against frost radiation (up to 28°F)
- More light for photosynthesis
- Defuses light
- Less heat
Popular anti-insect control systems

1. Anti-insects nets
2. Chemical pesticides
3. Organic pesticidas
4. Biologic suppress
Light managing anti-insect control system

OptiNet
Dual Thrips Control

Optic protection

Physical protection

Shade protection
50%
Spider mites population

Orange is for OptiNet 50

OptiNet
Dual Thrips Control

Spider mites

OptiNet 50
Mesh 50

4\6 Date 16\6
Black is for OptiNet 50

Test No.

Thrips population

OptiNet 50
68 mesh

50 mesh

Thrips

1 2 3 4 5 6 7 8 9 10 11
Pearl Fabric

• Causes higher light diffusion
• Provides higher light quality
• Provides higher light volume
Blue Fabric

• Results in delayed flowering in certain plants

• Slows growth rate

• Produces shorter stems and compact plants

Blue 50%  Full Sun
Red Fabric

- Increases rooting percentage.
- Results in a high growth rate in many plants.
- Enhances development of the root system

Banana plants under Red

Banana plants under black net
Florida Crop Tunnel IFAS MFREC Balm
Aluminet over veggie towers
Silver over Verti-Gro Towers
Aluminet plus OptiNet
Red MREC tomato breeder house
Create Production Zones
The ultimate light is picked by the Grower

• What characteristics do you want from your plants?
  – Quality
  – Marketability
  – Color
  – Bloom
  – Yield
Thank You

Any questions?