Economics of BMP's

Luis Girado
Environmental Manager

Sept 2014

The Best Cotton in the World

Early Agriculture Civilizations

* 6,000 BC Mesopotamia: Euphrates and Tigris (Sumarians)
* 4,000 BC China: Yellow River (Fu-Hsi, Shen-Nung, Yellow Emperor: Huang-Ti)
* 3,500 BC Pakistan: Indus River (Mohenjo-Daro)
* 3,000 BC Egypt: Nile

The Best Cotton in the World

Early Agriculture Civilizations

* 2,400 BC Mesopotamia:
* Salinization

* Ongoing China: Yellow River
* Flooding

* 1,800 BC Pakistan:
* Salinization Flooding

* Egypt: Nile
* Uninterrupted

The Best Cotton in the World

Early Agriculture Civilizations

* Egypt: Nile
* The annual flood of the Nile
* Sediment Management

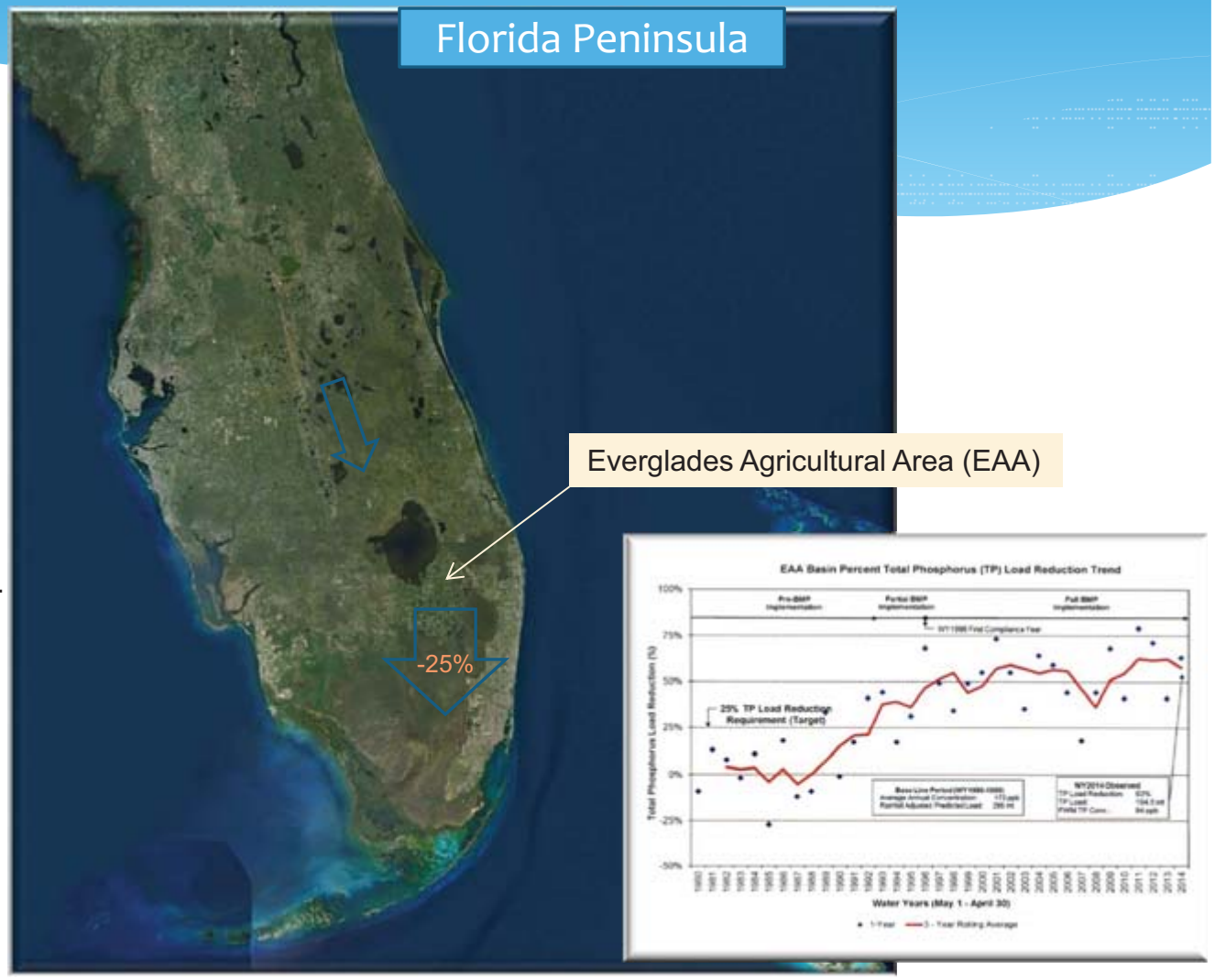
How does the BMP Program work?

Water moves South
through the Peninsula, enriching
the everglades.

The SFWMD requires Producers
in the EAA to monitor their Water
Quality and follow BMP's.

Producers must achieve
25% reduction in P loads
Since the beginning of the program.

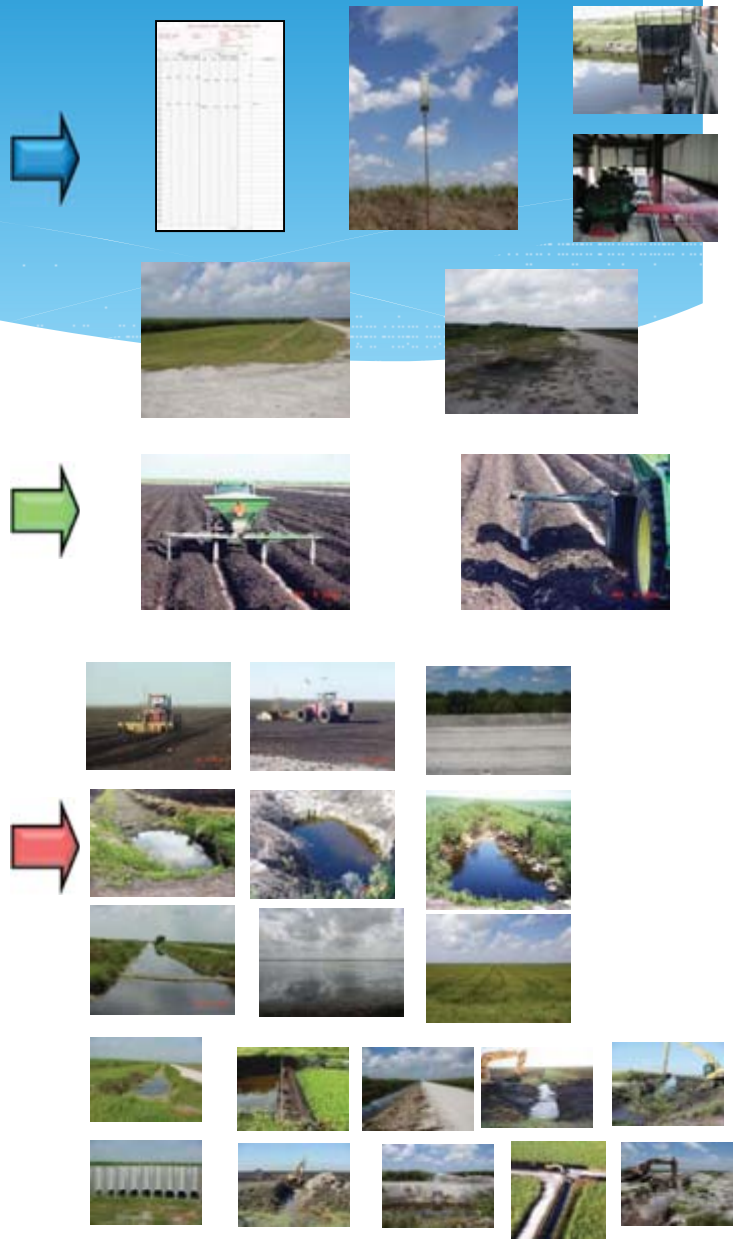
Producers have achieved
Over 50% reduction in P loads
Since the beginning of the program.



The BMP Point System

Table 3 – Best Management Practices Summary and "BMP Equivalent" Points

BMP	PTS	DESCRIPTION
WATER DETENTION ½ Inch Detained 1 Inch Detained	 5 10	• water table management by controlling levels in canals, field ditches, soil profile, fallow fields, aquatic cover crop fields, prolonged crop flood; • measured on a per event basis – rainfall vs. runoff
FERTILIZER APPLICATION CONTROL	2 ½	uniform and controlled boundary fertilizer application (e.g. direct application to plant roots by banding or side-dressing; pneumatic controlled-edge application such as AIRMAX)
FERTILIZER CONTENT CONTROLS		
Fertilizer Spill Prevention	2 ½	• formal spill prevention protocols (handling and transfer) • side-throw broadcast spreading near ditch banks
Soil Testing	5	avoid excess application by determining P levels needed
Plant Tissue Analysis	2 ½	avoid excess application by determining P levels needed
Split P Application	5	apply small P portions at various times during the growing season vs. entire application at beginning to prevent excess P from washing into canals (rarely used on cane in EAA)
Slow Release P Fertilizer	5	avoid flushing excess P from soil by using specially treated fertilizer which breaks down slowly thus releasing P to the plant over time (rarely used in EAA)
SEDIMENT CONTROLS		EACH SEDIMENT CONTROL MUST BE CONSISTENTLY IMPLEMENTED OVER THE ENTIRE ACREAGE
Any 2	2 ½	• leveling fields • cover crops • ditch bank berm • raised culvert bottoms • sediment sump in canal • veg. on ditch banks
Any 4	5	• strong canal cleaning program • other BMP • field ditch drainage sump
Any 6	10	• slow field ditch drainage near pumps • sump upstream of drainage pump intake
OTHER Pasture Management	5	reduce cattle waste nutrients in surface water runoff by "hot spot" fencing, provide watering holes, low cattle density, shade, pasture rotation, feed & supplement rotation, etc.
Improved Infrastructure	5	uniform drainage by increased on-farm control structures
Urban Xeriscape	5	lower runoff & P by using plants that require less of each
Det. Pond Littoral Zone	5	vegetative filtering area for property stormwater runoff
Other BMP Proposed	TBD	proposed by permittee and accepted by SFWMD

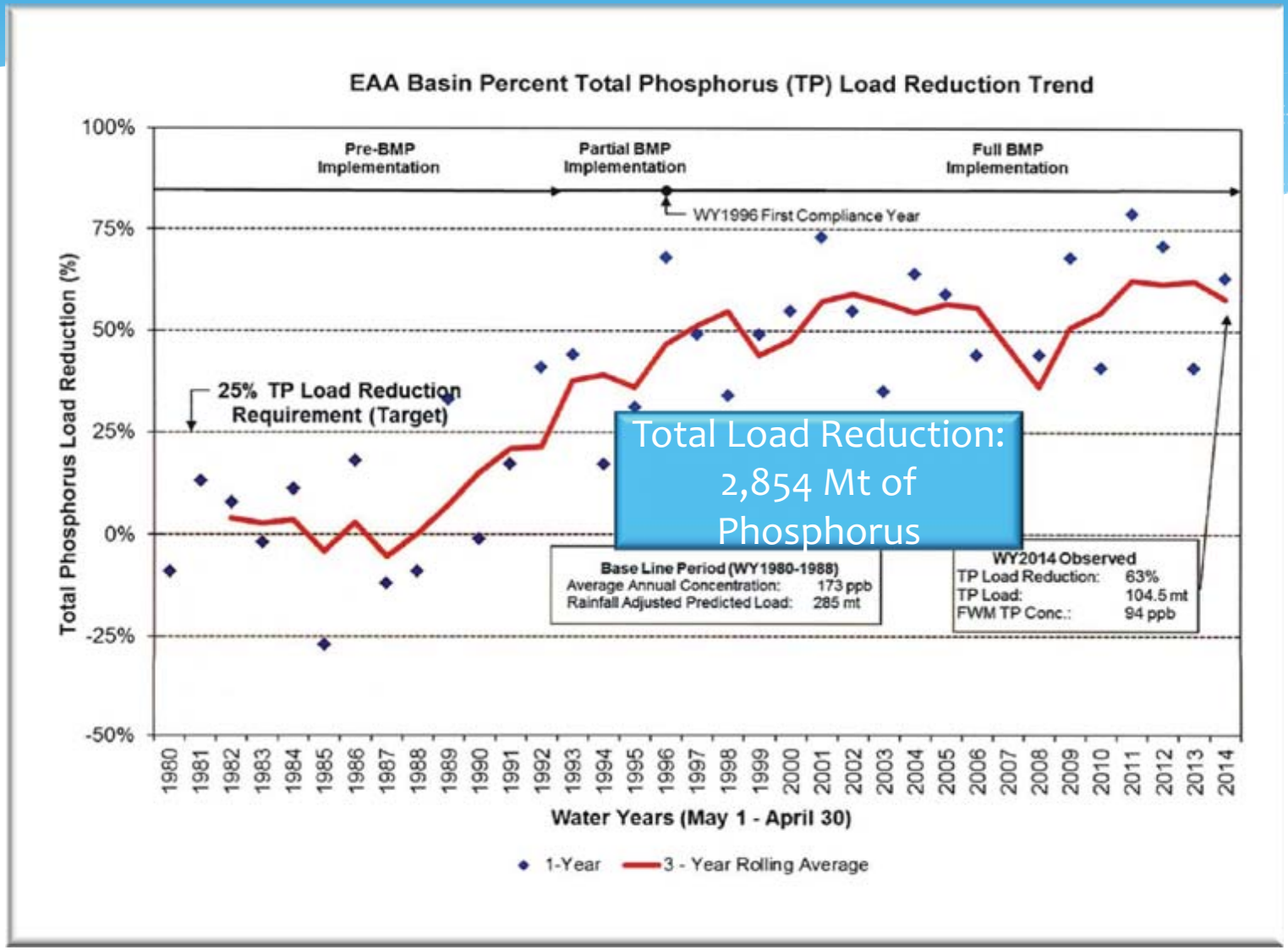


What is a BMP?

BMP's are essentially

Soil Conservation Practices

How much have we Achieved so far?



Economics of BMP's

Total Load Reduction: 2,854 Mt of Phosphorus

* **Fertilizer**
* 2,854 tons of P Equals to
* 12,752 tons of MAP Fertilizer*
* At an average rate of 60 lbs/acre/year, we have saved the fertilizer of
* **240,077 acres**
* $7.1 Million

* Reference: Dr. R. Mikkelsen, IPNI, Fertilizer Calculations, 2011

* **Soil**
* We need an average of 644 MT of soil to obtain 1 MT of P*.
* At an average density of 0.4 Tons/M3, we have saved
* **40,098 acres of 1 foot deep soil.**
* $320.8 Million

* Reference, Janardhanan and Daroub, 2010, Soil Science Society of America Journal.
* Muck Soils Average: for Dania, Luderhill and Pahokee soils.
* Sandy Soils, Mucky Sand and Sandy Muck have different ratios that need investigation.

Economics of BMP's
As of 2014, the program has yielded

* **Fertilizer**
* Enough to fertilize **240,077 acres $6.6 M.**
* **Soil**
* We have saved **40,098 acres of 1 foot deep soil $225.3 M.**

Thank you

Luis Girado, Sept 2014