

2009 GCSAA EDUCATION CONFERENCE AND THE GOLF INDUSTRY SHOW

## Creative and Affordable Environmental Stewardship Programs

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## Creative and Affordable Environmental Stewardship Programs

Christopher S. Gray, Sr.  
Marvel Golf Club

### Christopher S. Gray, Sr.

- WAY TOO MANY OF "ME"
  - Chris Gray – PGA Tour Designs Golf Course Architect
  - Chris Gray – PGA Tournament Player
  - Chris Gray – NFL Player – Seattle Seahawks – OL
  - Chris Gray – Scotland National Rugby Team
  - Chris Gray – Country Music Singer

### Christopher S. Gray, Sr.

- Environmental Leaders in Golf Awards (ELGA)
  - Two-time National Public and Overall Winner
  - 2003 - Lost Marsh Golf Course
  - 2007 – Marvel Golf Club
- Rain Bird's "Intelligent Use of Water" Award
  - 2008 Winner
  - Not a "Golf Industry" award
- Golfdom Magazine
  - Contributing Editor
  - Editorial Advisory Board Member

### "Crazy Guy Who Puts Vegetable Oil in My Diesel Equipment"



### Creative & Affordable Environmental Stewardship Programs

All the environmental stewardship programs I am showcasing here are ones that I have implemented throughout my career that helped me win these awards

Put simply...I know they work.

### Creative & Affordable Environmental Stewardship Programs

- Environmental Programs can be broke down into both "Creative" and "Affordable" categories
- "Creative" refers to relatively unique programs
- "Affordable" refers to mostly cost effective and money saving programs
- Use a "rapid fire" approach to illustrate numerous programs that you can go back and easily implement at your facility

### Affordable Programs



### Affordable Programs

- MOTION SENSORS ON LIGHT SWITCHES
  - Completely replace traditional switches with sensors that turn on and off your lights
  - Eliminates unnecessary energy use
  - Cost is approx. \$20 each



### Affordable Programs

- SITE SPECIFIC HEATERS
  - When work is confined in one area there is no need to heat an entire shop
  - Newer models are much more efficient than older ones
  - Wall mounted, pole mounted and sitting units
  - Cost is approx. \$100 per unit



### Affordable Programs

- SKY LIGHT LIGHTING
  - Use a sky light as the primary light source in maintenance facility rooms
  - Can be easily retro-fitted to existing buildings
  - Cost will vary from \$500 - \$750 per sky light depending on size



### Affordable Programs

- WILDLIFE BRUSH PILES
  - Simple way to attract birds and small mammals
  - Creating new habitat while conserving what is already existing
  - Use fallen limbs and branches to construct



## Affordable Programs

- BRUSH PILE CONSTRUCTION
  - Use a "Grid System" design
  - Use limbs that are 6' long and 6-8" in diameter as the base
  - Bottom layer should have gaps approximately 12" apart
  - Add same number of limbs perpendicular to first ones
  - Then add brush on top
  - Larger pieces first, then smaller ones
  - Structure should be 4-6' in height and diameter when done



## Affordable Programs

- FINISHED BRUSH PILES
  - Varying sizes are a good thing as they create more diversity



## Affordable Programs

- NATIVE AREAS
  - Dedicating areas with native plant species
  - Different than simply letting turf grow tall
  - Research native species
  - Encourage native seed bed to germinate
  - Controlled burns are excellent methods to encourage seed beds



## Affordable Programs

- LEAVE CLIPPINGS – DO NOT COLLECT THEM
  - By leaving clippings, you will return approx 1# N per year
  - Bob Brame, USGA
  - Any clipping debris can be blown off if necessary



## Affordable Programs

- GROWTH REGULATORS
  - Use of PGRs will help reduce the amount of "inputs" necessary to provide a quality playing surface
  - Expand the use of PGRs into the roughs, which will decrease the mowing frequency
  - Typically the largest amount of time spent mowing



## Affordable Programs

- DRAGGING FAIRWAYS
  - Removing the dew and guttation water from fairways on days you're not mowing will decrease disease pressure
  - Use an old irrigation hose, large chain, rope or specialty dragging product.




## Affordable Programs

- WETTING AGENTS
  - These products will become more important as water availability continues to decrease
  - These products allow us to irrigate less often saving us on water use and energy use to operate our irrigation system
  - Also help in the fight against LSDs





## Affordable Programs

- OFF-PEAK ENERGY USE
  - Know when your energy company determines "off-peak" times
  - Schedule irrigation cycles to take advantage of these cost saving times
  - Last season, I saved over \$5,000 with this simple program



## Affordable Programs

- TREE PLANTINGS
  - Plant a certain number of trees each year
  - Excellent opportunity to bring the community in on the project
  - Help promote your golf facility and our industry at the same time



## Creative Programs

**cre·a·tiv·i·ty**  
[kree-ey-tyo-i-tee, kree-uh-lee]-  
-noun

1. the state or quality of being creative.
2. the ability to transcend traditional ideas, rules, patterns, relationships, or the like, and to create meaningful new ideas, forms, methods, interpretations, etc.; originality, progressiveness, or imagination; the need for creativity in modern industry; creativity in the performing arts.
3. the process by which one utilizes creative ability: Extensive reading stimulated his creativity.

[Origin: 1670-75; creative + -ity]




## Creative Programs

- SOLAR CELLS FOR LIGHTS
  - Re-wire the building lights to run off of solar panels
  - You can also implement a battery storage system
  - Lights are the largest user with the smallest watt usage, which makes it ideal for solar panels cells
  - Costs approximately \$7-9 per watt installed
  - Battery system – add 20%




## Creative Programs

- MICRO-IRRIGATION
  - Low pressure system with smaller heads that spray, mist or drip at lower volumes with a decreased coverage area
  - Retro-fit a block system that will reduce the pressure from standard golf course high pressure
  - Site specific heads
  - "Fingers" in bunkers
  - Small tee boxes
  - Significantly reduces irrigating non-target areas




### Creative Programs



- **HOMEMADE BIODIESEL**
  - Requires no equipment modification to use
  - Relatively simple production method
  - Price per gallon is approximately \$1.15 to \$1.35 to produce
  - Last year I saved \$6000 with biodiesel
  - Warranty issues with newer equipment

### Creative Programs



- **VEGETABLE OIL**
  - Readily available and easy to obtain
  - Filtering is the only required production cost
  - Can be blended with petroleum diesel or be used by itself
  - Some equipment modifications should be done
  - Last year I saved \$5200 with vegetable oil

### Creative Programs



- **HARVESTING RAIN WATER**
  - Capture surface runoff water during rain events for irrigation
  - This will become critical in the next decade
  - Depending on the topography of your golf course, this may be easy or extremely difficult
  - Make gravity work for you
  - Necessary infrastructure costs could be expensive
  - Tap into existing infrastructure to maximize efficiency

### Creative Programs



- **DRAINAGE WATERWAY**
  - Construct a waterway that accepts drainage from surrounding roads and ditches
  - Need permission from the proper authority
  - Will result in a huge amount of water during rain events

### Creative Programs



- **CORN GLUTEN MEAL**
  - Fine yellow powder that is usually pelletized
  - By-product of corn processing
  - Natural "Weed-N-Feed"
  - Fertilizer (10-0-0)
  - Patented organic pre-emergent herbicide by Dr. Nick Christians
  - Not a registered pesticide because the EPA granted it an exemption as a herbicide

### Creative Programs



- **CORN GLUTEN MEAL**
  - Pre-emergent grass and weed control
  - Controls 23 species, including: Crabgrass, Foxtail, Barnyardgrass, Dandelion, Lambsquarter, Pigweed, Purslane & Smartweed
  - Inhibits root formation during germination
  - Lasts 5-6 weeks in soil

### Creative Programs



- CORN GLUTEN MEAL
  - Application rate is 20# per 1000 sq. ft. (single application)
  - OR Two split applications of 12# per 1000 sq. ft.
  - These two applications will provide 2.5# Nitrogen (slow release)



### Creative Programs




- CORN GLUTEN MEAL
  - Bulk quantity cost is approximately \$400 per ton (UNDELIVERED)
  - 20 cents per pound
  - \$4.80 per 1000 sq. ft.
  - \$209.00 per acre
  - Pre-emergent crabgrass & dandelion control
  - 2.5# Nitrogen per 1000 sq. ft.
  - \$2.00 per pound of Nitrogen

### Creative & Affordable Environmental Stewardship Programs

- SUMMARY
  - Affordable Programs
    - Motion Sensors on Light Switches
    - Site Specific Heaters
    - Sky Light Lighting
    - Wildlife Brush Piles
    - Leave Clippings
    - Growth Regulators
    - Dragging Fairways
    - Wetting Agents
    - Off-Peak Energy Use
    - Tree Plantings

### Creative & Affordable Environmental Stewardship Programs

- SUMMARY
  - Creative Programs
    - Solar Cells for Lights
    - Micro Irrigation
    - Home Made Biodiesel
    - Vegetable Oil
    - Harvesting Rain Water
    - Drainage Waterway
    - Corn Gluten Meal

### Creative & Affordable Environmental Stewardship Programs



**Thank You**

If you have any questions, please feel free to contact me at:

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