

*Dole Fresh Fruit International Ltd.*



# Agricultural Practices and Environmental Footprint – Dole Latin America



**January 2009**

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**Director, Environmental Affairs**



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# Agenda

- Company Background
- Environmental Management Approach
- Environmental Indicators
- GAP Examples
- Carbon Program







- Founded in Hawaii in 1851
- Revenues of \$6 billion
- World's largest producer and marketer of fresh fruit and vegetables
- Does business in more than 90 countries
- Employs 89,000 permanent employees and 24,000 seasonal or temporary employees.

■ Source  
● Marketing  
■ Markets  
■ Corporate



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# Current Latin American Operations



**Honduras**  
(Bananas-Pineapple-Organics)

● **Dole Latin America employs more than 14,000 employees.**

**Gua**  
(Bananas & Pineapples)

**DFFI**  
(Regional Headquarters)

Nicaragua

Panama

**Colombia**  
(Bananas, Organics)

Venezuela

**Ecuador**  
(Bananas & Pineapple, Organics)

**Peru**  
(Organic Bananas)

Peru

Brazil

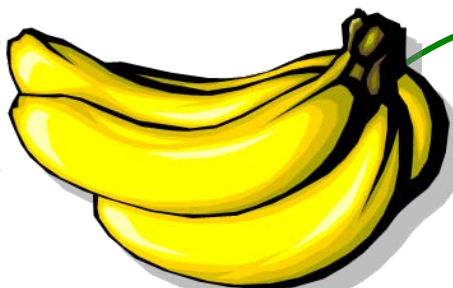


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# Business Units in Latin America

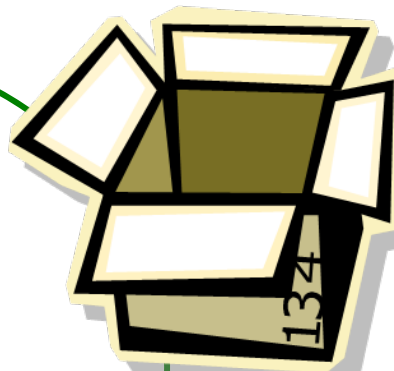
## Banana

- Guatemala
- Honduras\*
- Costa Rica
- Ecuador\*
- Colombia\*
- Perú\*



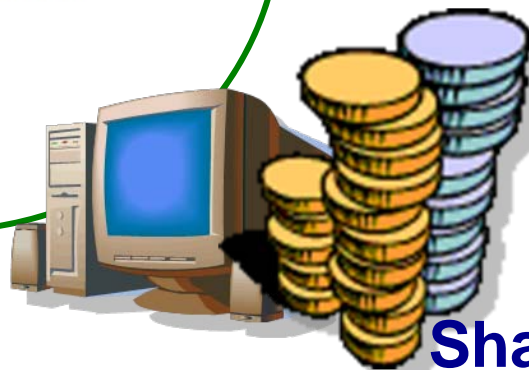
## Box Plants

- Costa Rica
- Honduras
- Ecuador
- Colombia



## Pineapple

- Guatemala
- Honduras
- Costa Rica\*
- Ecuador



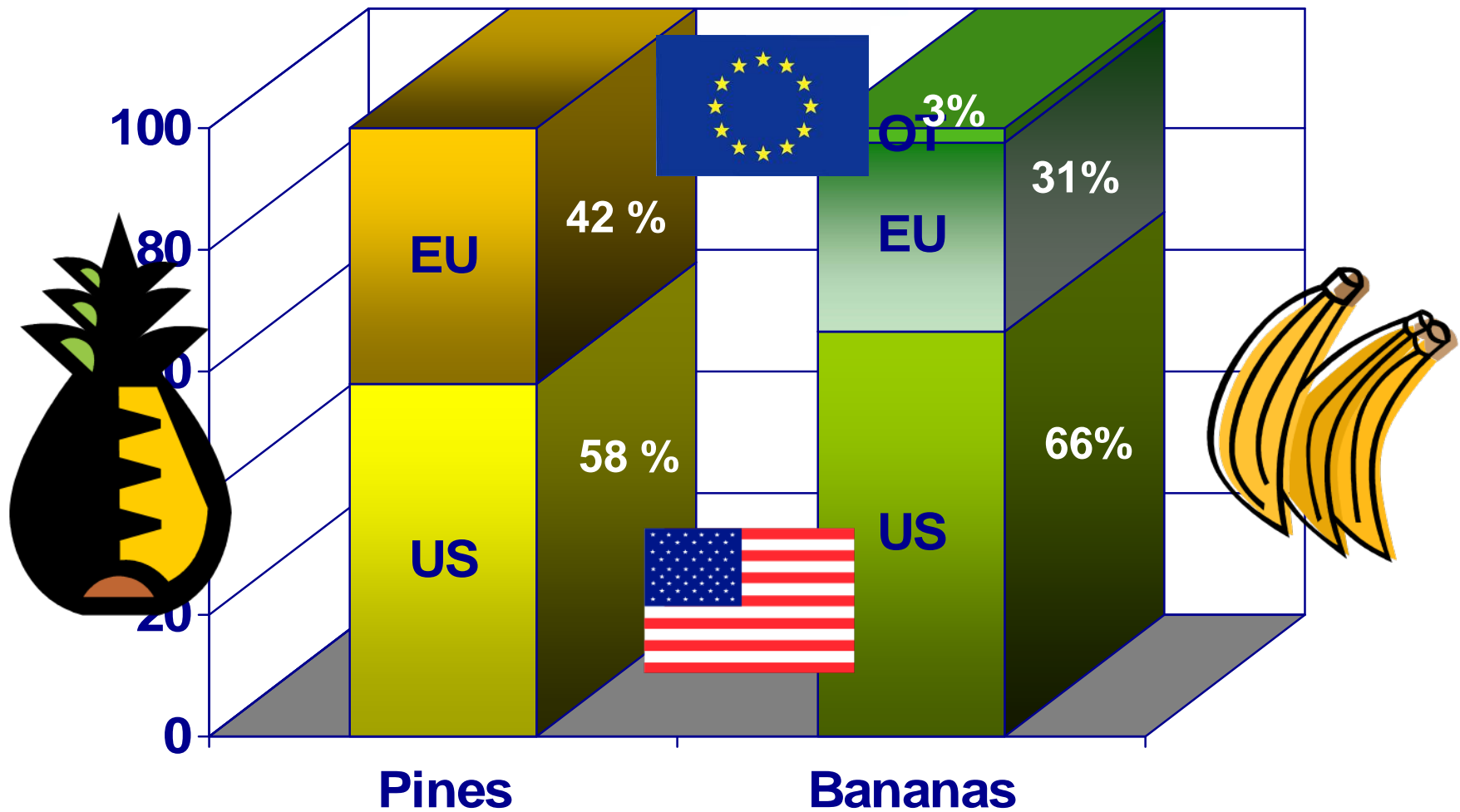
## Shared Services

- Information Tech.
- Accounts Payable
- Payroll
- Purchasing

\*Organics



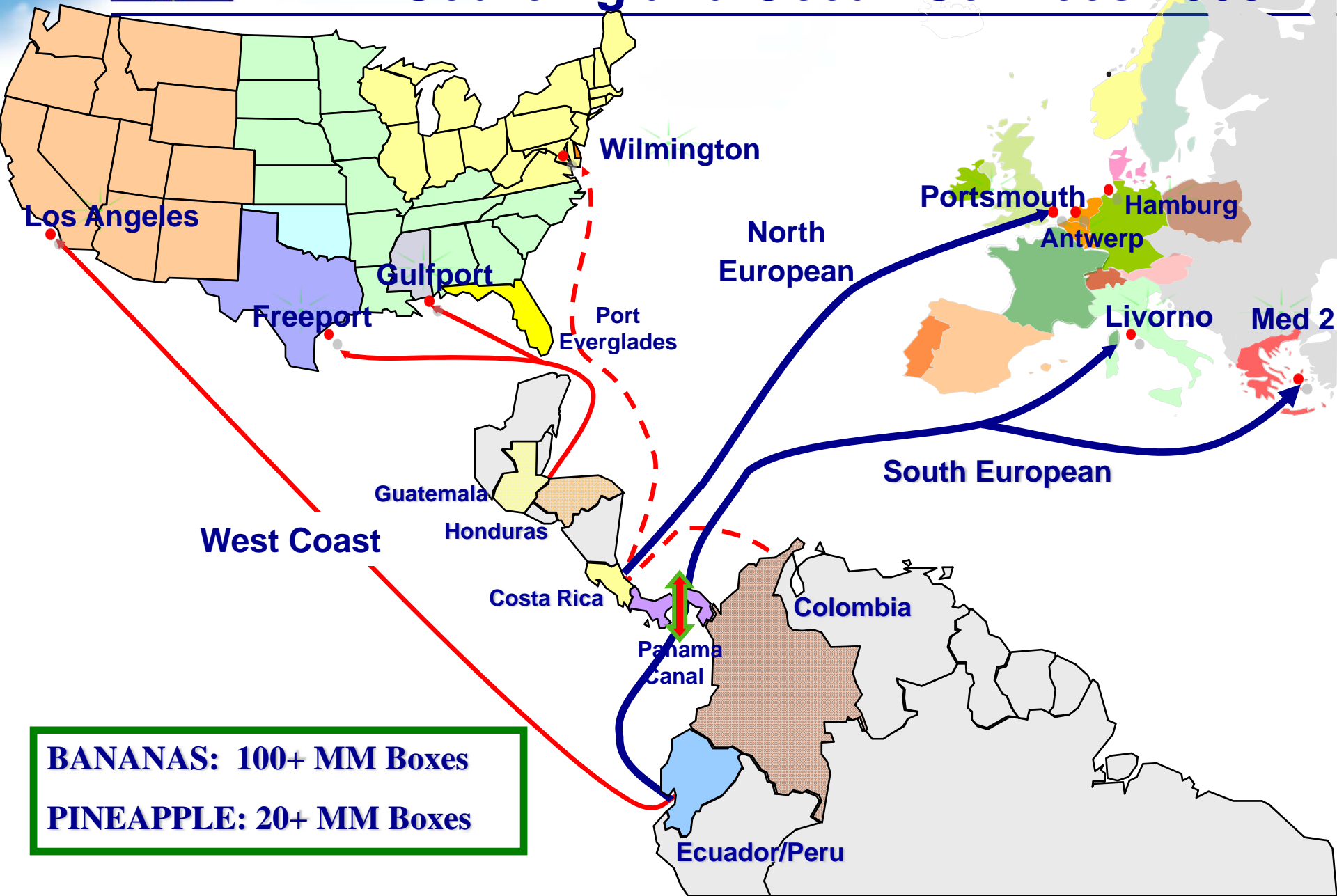
# Products and Markets





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# Sourcing and Ocean Services 2008



**BANANAS: 100+ MM Boxes**

**PINEAPPLE: 20+ MM Boxes**







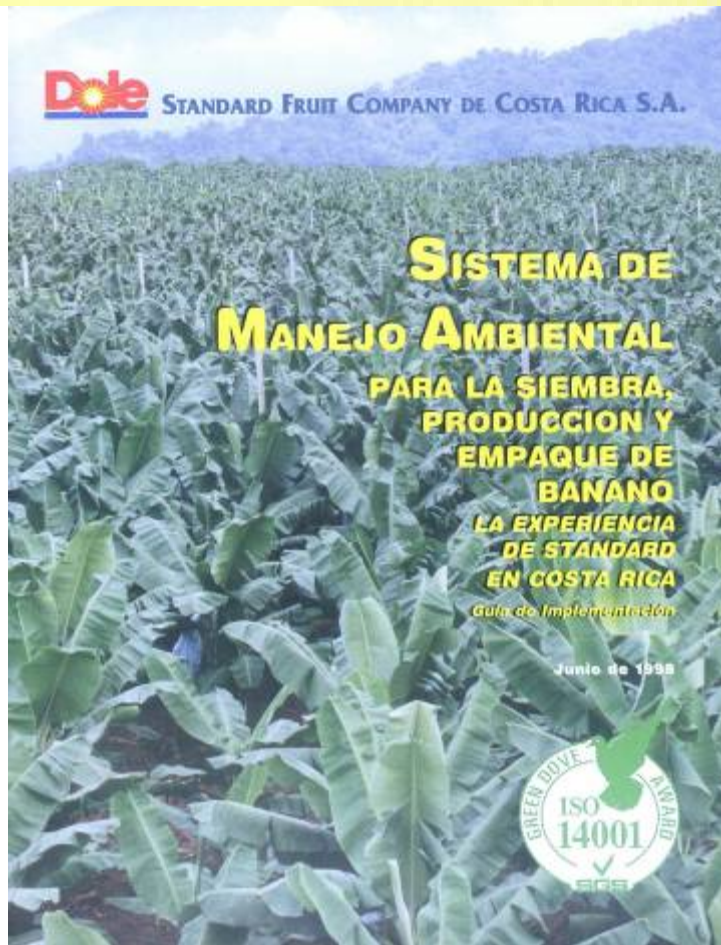


- Agricultural inputs: fertilizer, water, crop protection products
- Resource Conservation—soil, water, energy
- Biodiversity and habitat protection
- Waste and pollution
- Worker safety
- Food Safety and Security
- Wages, Hours, Working Conditions
- Climate Change

HOW TO MANAGE ALL THESE ISSUES TO EVERYONE'S  
SATISFACTION??!!

¡Lo logramos!

ISO 14001



- Dole Costa Rica was the first agricultural producer in the world to receive the 14001 Certificate for its environmental management system (1998).
- Management systems were implemented in all Dole operating units.



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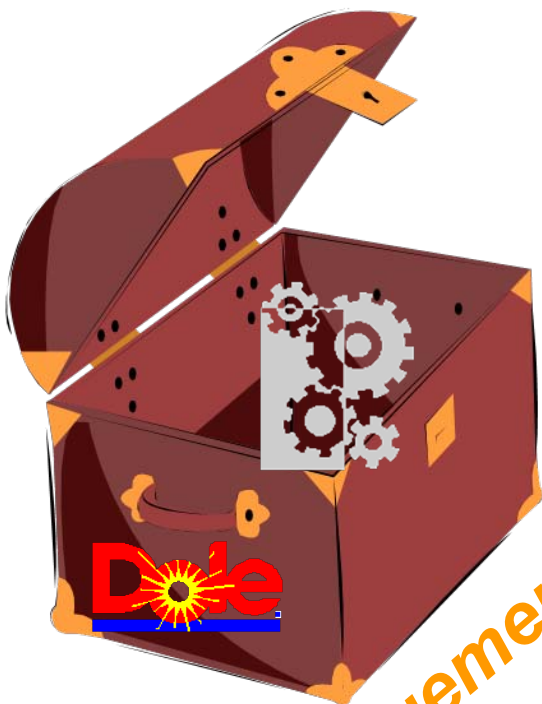
# Integrated Management Systems



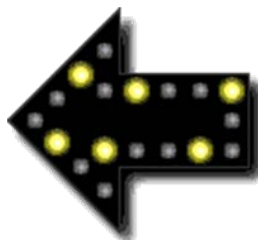
External Verification

SCOPE:

FARMS  
BOX PLANTS  
CONTAINERS  
GROWERS



ISO Management System



Dole Standards



Food Safety



Worker Safety



Agricultural  
Practices



Environmental  
Protection



Legal Compliance





# Ag. Operation Impact Examples

Then and Now; A few examples illustrating changing perspectives

• <u>Impact On</u>	• <u>10 Years Ago</u>	• <u>Today</u>
• Air	• None	• Fertilizer GHGs*
• Soil	• Solid Waste (Plastic)	• Soil Health/Erosion
• Water	• Contaminants	• Conservation
• Flora/Fauna	• Forest Protection	• Ecosystem Mgt.
• People	• Pesticides	• Working Hours

\*Greenhouse gas emissions from nitrous oxide coming from applied fertilizers



# Dole's approach

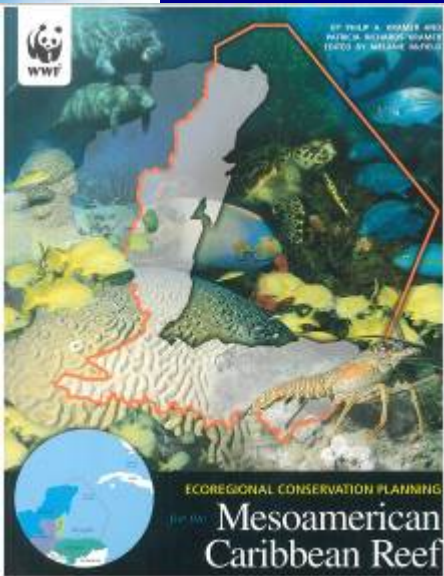
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- Develop and implement better management practices
- Meet legal requirements and internationally accepted standards
- Achieve 3<sup>rd</sup> party certification where necessary and helpful
- Meet customer expectations & requirements
- Participate with stakeholders in defining new areas of improvement



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# Dole and WWF Collaboration

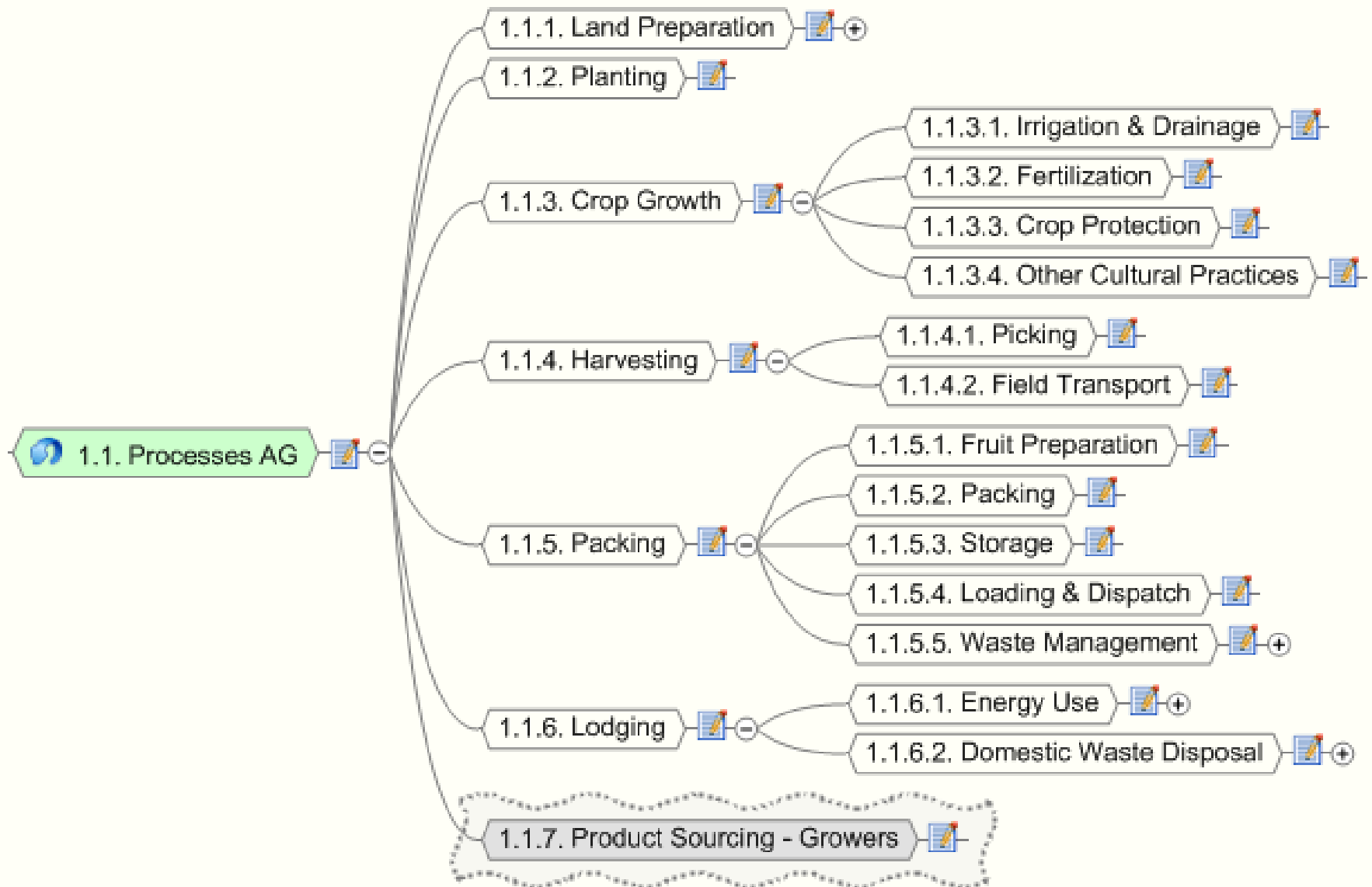


- Memo of Understanding since 2005.
- Initial work focused on Better Management Practices in Agriculture to reduce potential effects on Mesoamerican Reef (MAR) system from Mexico to Honduras.
- WWF has participated in Dole-organized seminars in Honduras and Costa Rica on soil conservation and erosion control
- Current discussions include joint work on climate change issues, from WWF participation Carbon Neutral Stakeholder Visit in Costa Rica (June '08).
- WWF has spearheaded the implementation of an automated weather station network for coastal areas in Belize, Guatemala, and Honduras.... Including installation of stations at Dole facilities.
- On-line weather data will be essential for managing agricultural practices (irrigation, pest control, NDF) to further reduce environmental impact.
- A revised MOU to extend the one expiring in April 2009 and incorporating new areas of collaboration is in the review process.





## Main Agricultural Processes





# Environmental Indicators

Area	Activity	Operation	Measurement	Indicator
<b>Water</b>	Irrigation/Packing	Farming	cubic meters/lts	m3/ha.; lts/kg product
<b>Agricultural Inputs</b>	Agriculture	Crop Protection & Nutrition	kgs. active ingredient	kgs ia./ha
<b>Machinery Use</b>	Agriculture	Planes/Equipment/Vehicles	liters	lts/hrs. of operation
<b>Energy Use</b>	Agriculture/Packing	Offices/Packing Plants	KwH	KwH/ha; KwH/ kg product
<b>Plastic Use</b>	Agriculture/Packing	Farming/Packing	kilograms	kgs/ha.; grs/box
<b>Waste Management</b>	Agriculture/Packing	Recycling/Reuse/Disposal	kilograms	kgs/ha.
<b>Environmental Protection</b>	Agriculture	Protected Forest/Reforestation	hectares/no. of trees	forest/total has.
<b>Transportation Fuel Use</b>	Transport to Port	Road/Rail	kilometers and liters	lts/kg of product; lts/km
<b>Ocean Transportation</b>				
-vessel fuel	Ocean Transport	Vessel Logistics	metric tons (MT)	n. miles/MT or MT/day
-terminal fuel & electricity	Operations	Terminal	liters; kwh	liters/hr; kwh/container
-refrigerant use	Operations/Vessels	Terminal	kgs	kgs/kg product; GWP total
<b>Box Plants: Energy Use</b>	Manufacturing	Fruit Box Plant	kwh/liters	kwh/MT paper; lts/MT
<b>Carbon Footprint</b>	Production to Distrib.	Supply Chain	tonnes of CO2 equiv.	grs CO2 per kg of product

**It's very difficult to control or improve what is not measured!**



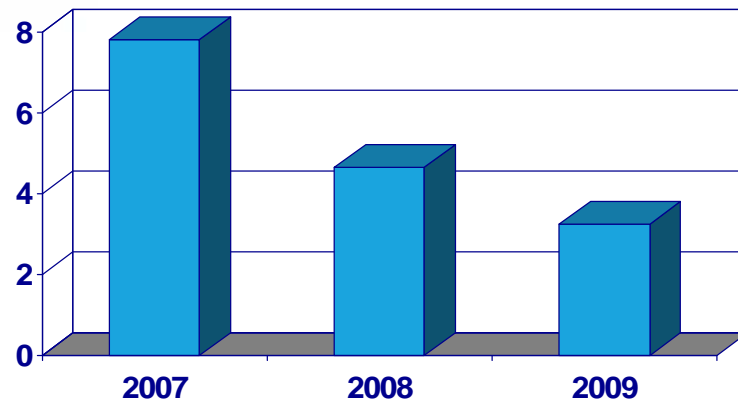
# Herbicide Reduction Example

## Eco-Weeder



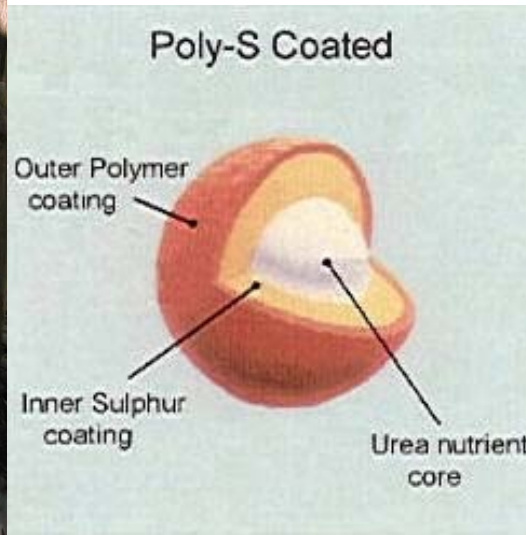
- Rationalize herbicide use
- Promote of low-lying native cover crops
- Reduction of active ingredient use of between 40% and 60%

EcoWeeder: Herbicide Use per Hectare



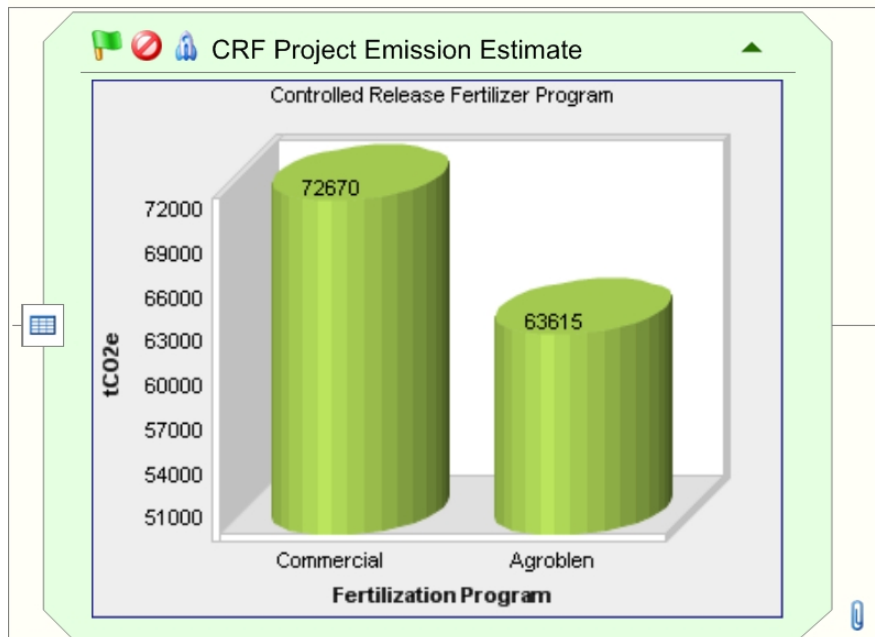


# Fertilizer Reduction Example



## • Fertilizer Use Optimization

- Use of less nitrogen through precision farming techniques and the use of controlled release fertilizers.
- Reduction of GHGs with this program is 12% versus traditional fertilizer.
- Decreased volatilization and leaching
- Applications down from an avg. of 12 to 3 per year.



\*approximately 1% of applied N converts to N<sub>2</sub>O a potent GHG with a global warming potential of 310.



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# Water Use Reduction Example

## *Water reuse systems*

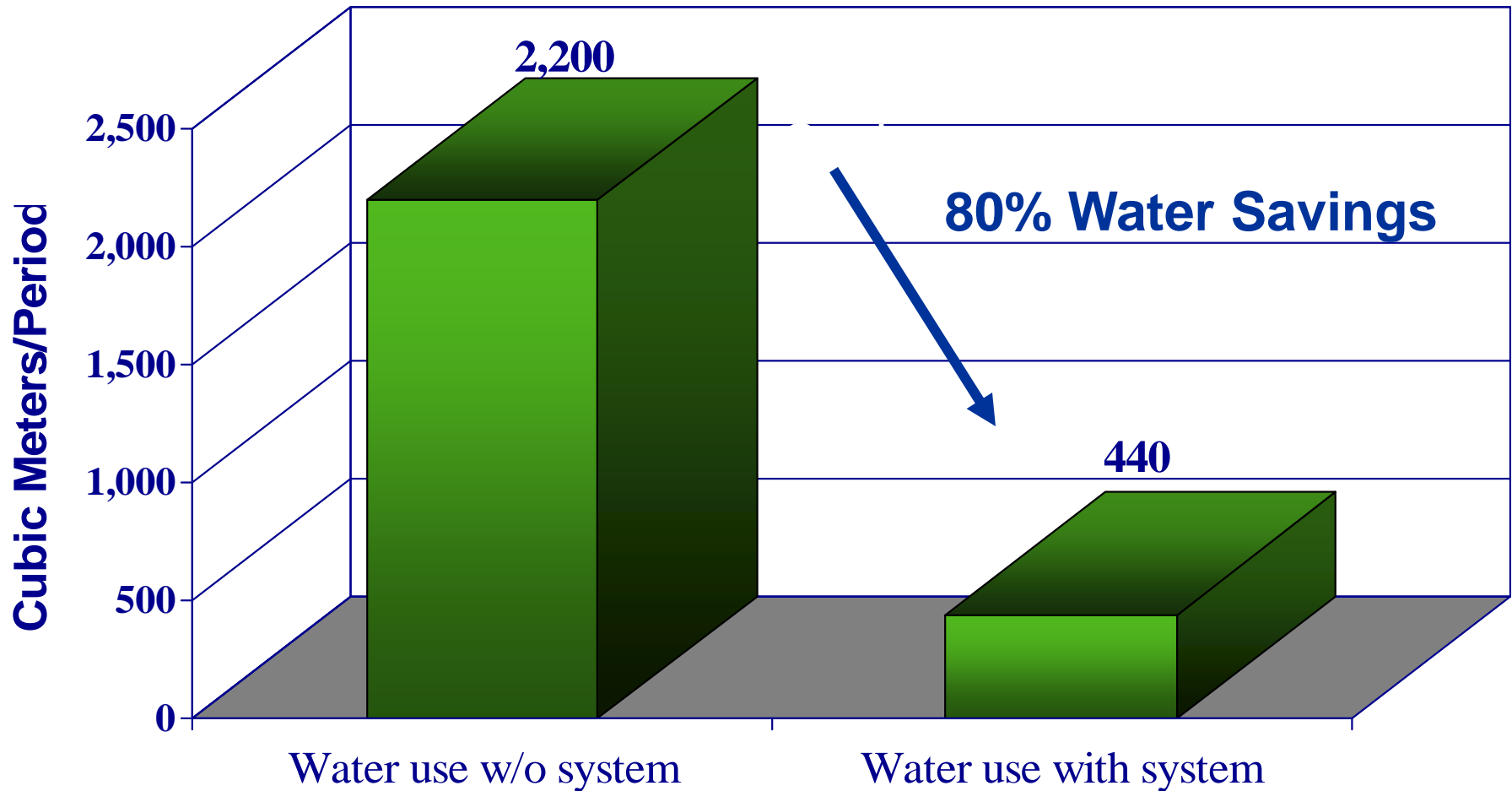


Full recirculation system includes treatment which permits reuse of water for several days

Partial recirculation conserves 30% water



# Water Use Reduction Example







# Soil Conservation Examples

- **Minimum Tillage** (planting over ratoon crop with no tillage)





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*Pineapple Production*

# Soil Conservation Examples

- Use of plastic mulch (significantly reduces erosion when used following contours; also diminishes use of pesticides)







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# Soil Conservation Examples

- Crop Rotation, Cover Crops  
(nitrogen-fixing “green manure”)







# Soil Conservation Examples

- Ditch Stabilization using plant cover in the canals



- Mechanical barriers (bamboo stakes to capture soil and reduce speed of water in ditches)

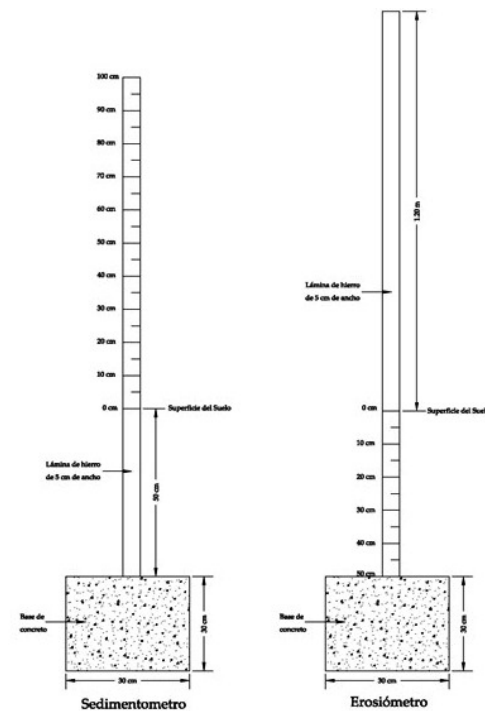






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# Soil Erosion Measurement







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# Composting Program Example





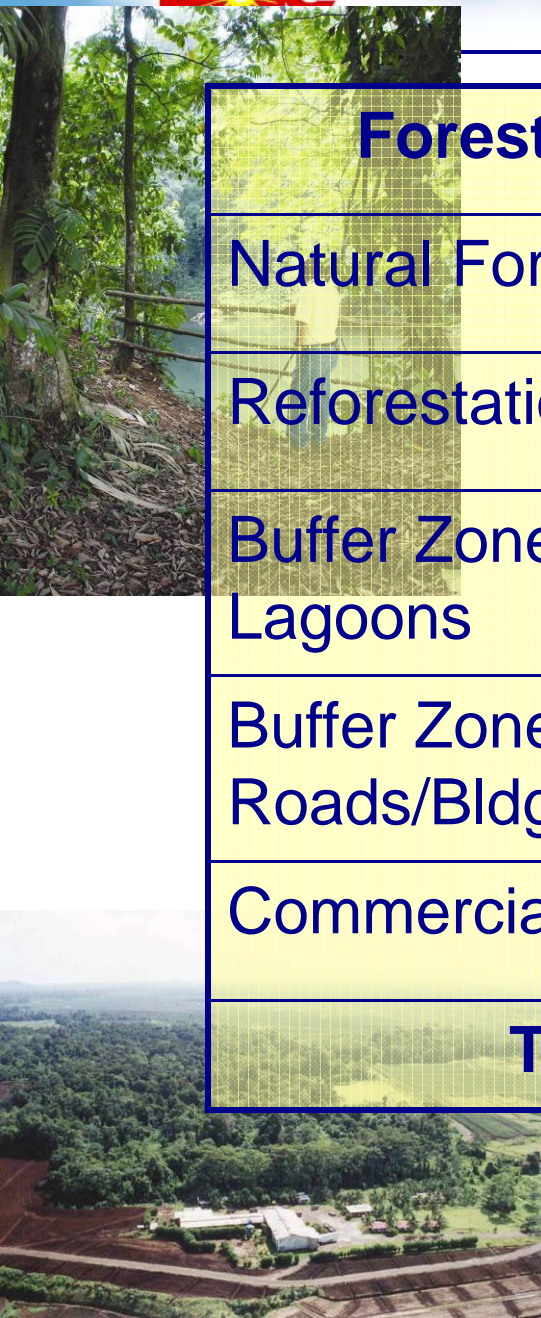


# Forestry Program CR Example

Forestry Types	Hectares
Natural Forest	893
Reforestation	697
Buffer Zones: Rivers & Lagoons	305
Buffer Zones: Roads/Bldgs	425
Commercial Forest	168
<b>Total</b>	<b>2,488 has.</b>

## • Company Forest Program

- CO2 Capture
- Biodiveristy
- Erosion Control







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# Live Tree Propping System Example



- *Poró* (*Erythrina poeppigiana*) posts to substitute cable way support arches
- Possibility of eliminating metal arches entirely
- Carbon capture potential





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# Plastics- Recycling Example



- All farms (Dole and independent )collect field plastic and send for recycling
- 2200 MT recycled yearly
- Most converted to pallet corner boards





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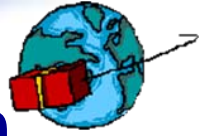
# Carbon Neutral Effort CR



Agreement with CR Government signed in Aug 2007 to collaborate with country which seeks carbon neutrality by 2021.

Dole CR hosted stakeholder visit in June 2008 to obtain feedback on carbon reduction efforts.



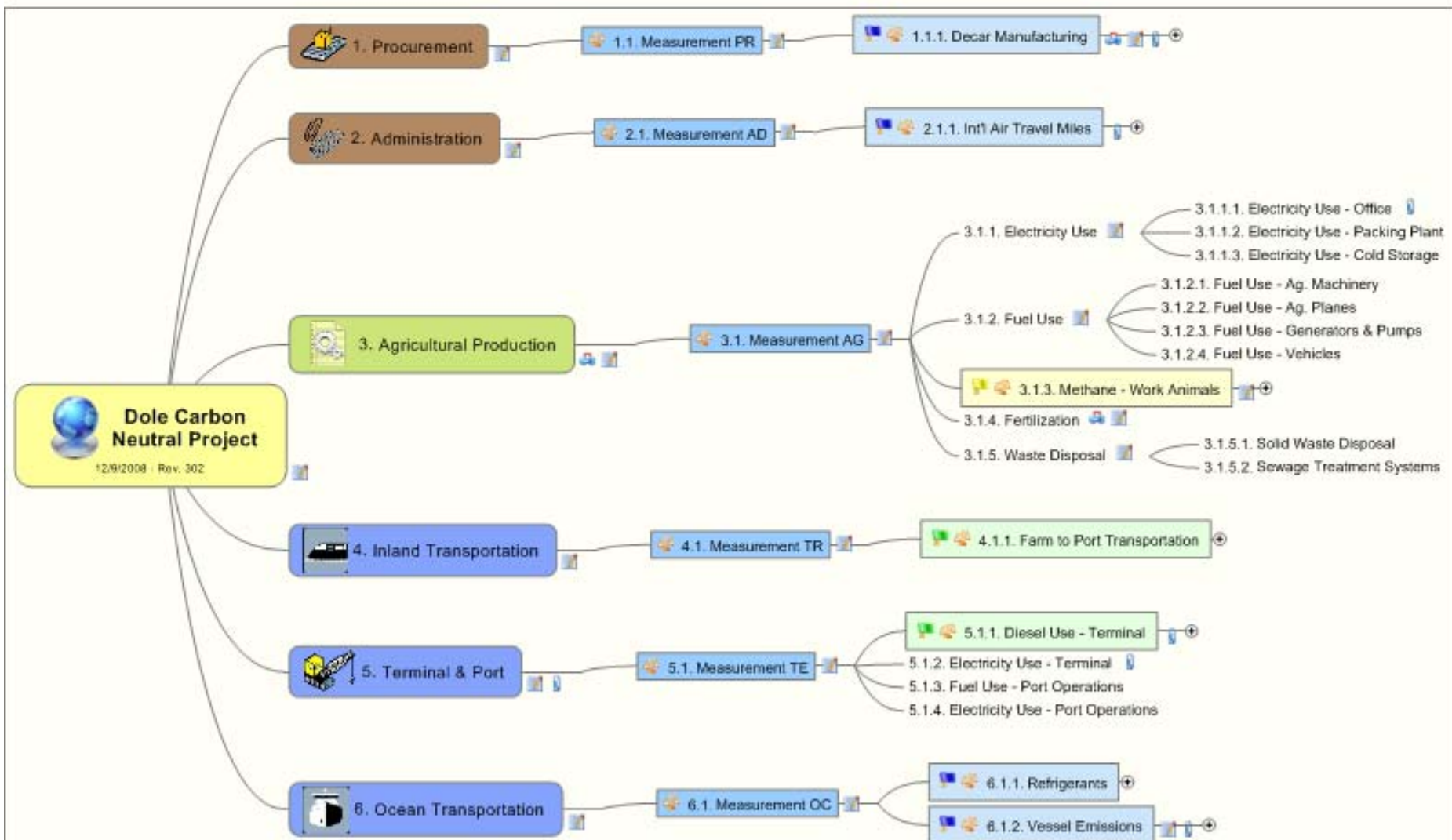


- **Reduce and mitigate effect of GHGs (green house gases) produced by Dole's operations**
  - Develop an inventory (*measure*)
  - Identify mitigation programs (*reduce*)
  - Evaluate carbon offset alternatives - internal and external (*compensate*)
- **Work with stakeholders within and outside the fresh fruit value chain on climate change issues**
  - Develop ideas to mitigate emissions
  - Communicate efforts and ideas
  - Strengthen business relationships and opportunities.



# Emission Inventory Measurement

*Process Analysis and high-level LCA to determine measurement areas*







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# Measurement Example. Fruit Transportation

CR Inland Transportation Summary

	A	B	C	D	E	F
1	Estimación de Emisiones (Año 2007)					
2	Fruta propia					
3	Concepto	Cajas	Viajes	Kms	Litros de Diesel	de CO2e {TM}
4	<b>Bananos</b>					
5	Carretera	11105862	11568	2558220	1075840	3207
6	Tren	5708419	-	-	362112	1079
7	<b>Sub-Total</b>	<b>16814281</b>	<b>11568</b>	<b>2558220</b>	<b>1437952</b>	<b>4287</b>
8	<b>Piñas</b>					
9	Carretera	5037167	3598	1157423	547606	1632
10	<b>Total</b>	<b>21851448</b>	<b>15166</b>	<b>3715644</b>	<b>1985558</b>	<b>5919</b>





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# Mitigation Example. Train Use.



- Use of railroad to transport fruit:
  - Dole is only CR exporter using this mode.
  - 35% of bananas produced by Dole are transported by rail.
  - Rail is 30 to 40% more efficient than road\*
  - Additional packing plant added to the rail network in Nov. 08, increasing to 40% the volume of bananas transported by this means.



\*Note: This is the situation in Costa Rica. Train would be much more efficient if it were to be powered by electricity.





## *Eco-energía Training Program.*

- > 400 employees trained on driving and equipment operation techniques to improve efficiency and reduce fuel use.
- Expected reduction from 8% to 15%.
- Extension to all Dole operating divisions during 2009.



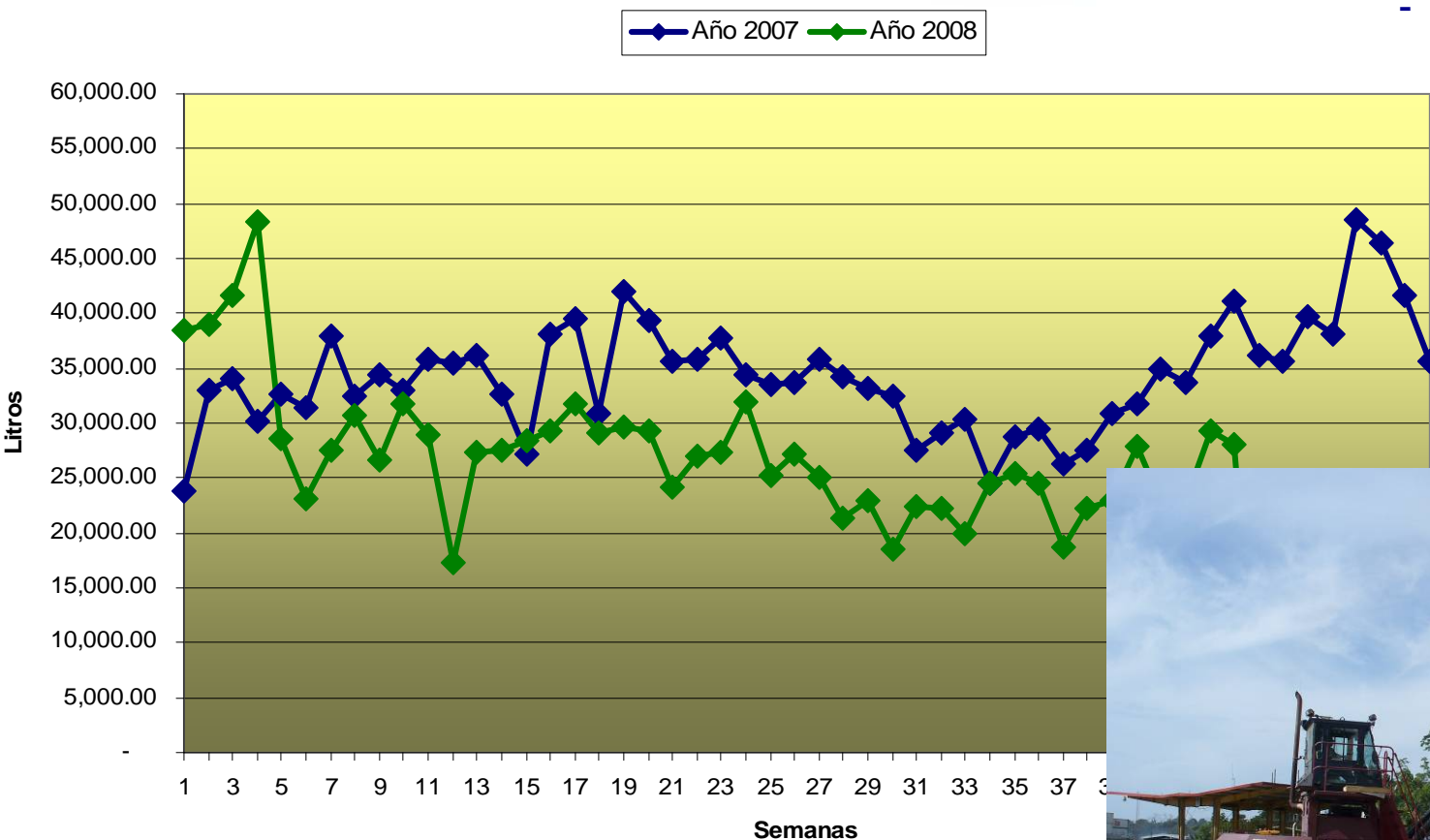




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# Mitigation Example. Terminal Fuel Use.

Consumo de Diesel en el 2008 YTD respecto al Año Base 2007



- Efficient fuel use:
  - Quota system by equipment
  - Vortex valve implementation
  - Automatic shut off valves



- 22 % reduction in fuel use
- Emission reduction: 1,000 tCO<sub>2</sub>e per year.



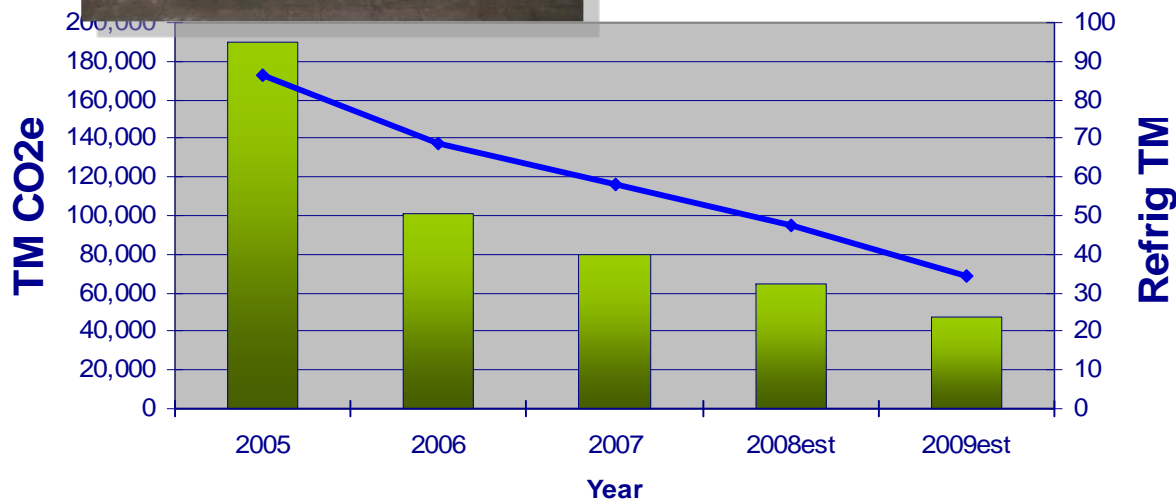
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# Mitigation Example: Container Refrigerants



## Refrigerant Consumption:

- Effective Preventive Maintenance Practices
- Refrigeration unit substitution to more modern technology
- Reduction in the use of refrigerants with a high global warming potential



■ tCO2e ◆ Refrigerants (TM)

**\*Green house gas emissions from refrigerants down 75%!**



# Compensation Example: CR Forestry Fund Certificates

## Dole Standard Fruit Firma acuerdo pionero para compensar emisión de carbono

Es la primera empresa agroexportadora con acciones concretas en el proceso de clima neutral en Costa Rica.

Los productos Dole se encaminan a la certificación de carbono neutral.

El 21 de abril 08 la Tierra, 22 ab Costa Rica S.A. fi compensar las e transporte de bana la compra de Certi

Dole Standard Fruit pagará por los CSA al Fondo Nacional de Financiamiento Forestal (FONAFIFO) una cantidad equivalente a las emisiones de dióxido de carbono generadas por el transporte interno de la fruta, por carretera y ferrocarril, en nuestro país.

Este es un acuerdo pionero, porque es la primera vez que una empresa privada se compromete a compensar las emisiones producidas por el transporte de sus productos.

El proyecto se inició con un acuerdo marco firmado en agosto último con el Ministerio de Ambiente y Energía de Costa Rica y la Estrategia Nacional de Cambio Climático, para lograr una cadena de valor carbono neutral para nuestro banano y piña.

Costa Rica busca convertirse en el primer país carbono neutral para el año 2021.



Food Company, Inc.

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### NEWS RELEASE

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## Agreement to compensate emissions from fruit transport to the port of export signed with the Minister of the Environment on Earth Day 2008.



Los Gerentes de Operaciones de Banano y Piña, Danilo Román y Renier Núñez, respectivamente, firman el compromiso acompañado por el Ministro del Ambiente, Dr. Roberto Dobles, y Jorge Alvarado Rodríguez, Director General FONAFIFO (derecha).

### DOLE ANNOUNCES CARBON NEUTRALITY AGREEMENT WITH COSTA RICA

August 8, 2007 Dole Food Company, Inc. today announced that its operating subsidiary in Costa Rica, Dole's operating subsidiary in Costa Rica, Dole Forestal (FONAFIFO), the National Forestry Institute of Environment and Energy of Costa Rica, will work together on a project aimed at establishing a carbon neutral supply chain for bananas and pineapples, from their production in Costa Rica and Europe.

The project, which aims to reduce CO<sub>2</sub> emissions from banana and pineapple product supply chains, means that Dole will produce, pack, transport and distribute the fruit in a way which increase the capture of CO<sub>2</sub> in order to offset the practices entail new, more efficient transportation methods to reduce CO<sub>2</sub> emissions, and partnering with FONAFIFO and reforestation programs.

Chief Executive Officer of Dole Food Company, Inc., stated: "The environment is a concern for all of us. Companies, consumers, governments and non-governmental organizations should endeavor to promote and adopt new production and distribution methods and consumption behavior in order to reverse harmful trends to the environment. As the world's largest producer and distributor of fruit and vegetables, Dole is determined to take the lead in its sector and the agreement with FONAFIFO is a good starting point."

Roberto Dobles, PhD., Minister of the Environment and Energy of Costa Rica stated, "Dole is a such an important company in the production of bananas and pineapples on a global level that we are very enthusiastic that Standard Fruit made the decision to strive to become a carbon neutral company here in Costa Rica and join our efforts to become the first carbon neutral country in the world by 2021. With this agreement, Dole demonstrates its enormous capacity to innovate and develop processes that will be reflected in benefits to the environment. I hope that this initiative will be followed by others in the private sector, so that we may unite efforts in favor of the environment."



Standard Fruit mantiene más de 2700 ha. con cobertura boscosa dentro de sus fincas.



Gracias las emisiones de efecto invernadero, un importante gas de efecto invernadero. Agregó que "esperamos que este programa reduzca las emisiones más del 12%, lo que representa una disminución anual de más de 9,000 toneladas de CO<sub>2</sub> equivalentes".

Renier Núñez, Gerente de Operaciones de Piña también manifestó que "la empresa siempre ha sido pionera en buenas prácticas ambientales. Estamos actualmente evaluando aspectos y formas para mejorar la eficiencia de nuestros tractores, capacitando a empleados para operar maquinaria con más ahorro en el consumo de combustibles, y así poder bajar la huella de carbono en nuestras operaciones agrícolas. Esperamos poder trabajar de manera conjunta con nuestros socios en la cadena de valor, para extender prácticas para la mitigación del cambio climático".

Dole Standard Fruit Company de Costa Rica S.A. es una empresa dedicada a la producción de banano y piña para exportación, bajo el se-

ño Dole, para los mercados de Estados Unidos y de Europa, principalmente. Inició sus operaciones en Costa Rica desde 1956 y actualmente tiene

fincas en Chimes de Puntarenas, Cutris de San Carlos, San Rafael, Guápiles, Guadalupe, Siquirres, Matina, Bannito y Valle de La Estrella en Unión.

En sus fincas propias trabajan más de 7000 personas como empleados directos. La empresa cuenta en este momento con 6500 ha. de ba-

nano y 1600 ha. de piña. También comercializa la producción de 5400 ha. de banano y 3300 ha. de piña de productores nacionales.



We are pushing ourselves  
today so that future  
generations will  
inherit a better world.

