

Establishing the Baseline So What's an EMS

- "that part of the overall management system which includes an organizations structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy." ISO 14000

IN OTHER WORDS

- **The SYSTEM, the PEOPLE and the overall CULTURE of a Farming Enterprise that achieves net AND continual environmental improvement.**



ISO14001

- International Environmental Management Standard
- Flexible framework for EMS Development, Auditing and Accreditation
- Global Adoption & Support, Its the Environmental Umpire
- Provides a structure & process for GS implementation
- Other standards emerging
 - Eurepgap, SFQ1000/2000, Freshcare, Codes of Practice



Farmer initial thoughts on EMS

- **We can't be green if we are in the red!**
- Is there product differentiation with EMS or sustainability focus?
- Can we gain external recognition (certification)?
- Will EMS become a minimum entry point for the supply chain in time?
- Will the costs outweigh the benefits?
- **Will there be a level playing field for implementation of these systems globally?**
- Carrots are better than sticks! (Are sticks needed?)
- Long term incentives required?



Emerging Drivers for EMS

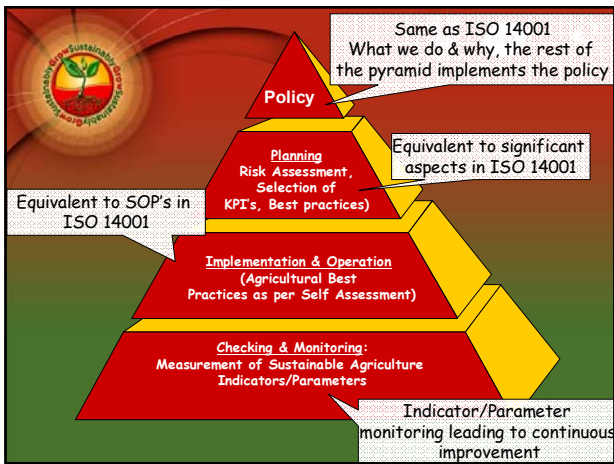
- Driver 1: Consumer Market Demand**
- Driver 2: Niche Market Identification**
- Driver 3: Eco-Labeling**
- Driver 4: Regulatory Pressure**
- Driver 5: Supply Chain Assurance**

For Unilever, in the first instance, GS has been developed in response to Driver 5



About Grow Sustainably

- Unilever & Horticulture Australia Initiative
- 2 Phases for Australia
 - Phase 1: Monitoring & Framework Development (Jan 00 to July 02)
 - Phase 2: GS Development, Establishing Sustainability Standards, Implementation & Change Management (July 02 to July 05)
- 1 of 15 global Unilever pilots



10 Sustainability Indicators

- Soil Fertility & Health
- Product Value
- Soil Loss
- Energy
- Nutrients
- Water
- Pest Management
- Social & Human Capital
- Biodiversity
- Local Economy

GS 4-10-20 10 Commandments

- 1 Understand, Assess & Manage Risks
- 2 Comply with the Law
- 3 Housekeeping
- 4 Quality & Farm Management
- 5 Knowledge Management
- 6 Training & Awareness
- 7 Transitioning to Improved Sustainability
- 8 Monitoring Sustainability
- 9 Audit & Continually Improve
- 10 Management Review



Risk Management Process to Prioritise Farm Risks						
	Consequence - Injury, Food Safety, Environment					
	Disastrous or catastrophic	Critical	Serious	Significant	Minor or negligible	
Likelihood of Occurrence	Almost certainly will occur	Very High Risk Score: 25	High Risk Score: 23	High Risk Score: 20	Medium Risk Score: 16	Marginal Risk Score: 11
	Good chance it could occur	High Risk Score: 24	High Risk Score: 21	Medium Risk Score: 17	Marginal Risk Score: 12	Low Risk Score: 7
	Likely to occur	High Risk Score: 22	Medium Risk Score: 18	Marginal Score: 13	Marginal Risk Score: 8	Low Risk Score: 4
	Unlikely to occur	Medium Risk Score: 19	Medium Risk Score: 14	Marginal Risk Score: 9	Low Risk Score: 5	Low Risk Score: 2
	Extremely unlikely to occur	Medium Risk Score: 15	Marginal Risk Score: 10	Low Risk Score: 6	Low Risk Score: 3	Low Risk Score: 1

Dominant Environmental & Sustainability Risks

Nutrient Management

- Inadequate or infrequent use of soil analysis to guide the establishment of nutrient budgets
 - Control: Regular soil testing (shallow/deep), permanent field monitoring sites, archiving test results (safe place)
- Lack of calibration of fertigation equipment combined with variability in irrigation distribution uniformities to give uneven fertilizer applications
 - Control: Determining injection lag times, improving DU
- Storage of solid and liquid fertilizers in a manner potentially causing environmental harm (high risk)
 - Control: Storing fertilizers separately to pesticides, storing minimal quantities, fixing leaks in liquid pipework, bunding

Dominant Environmental & Sustainability Risks

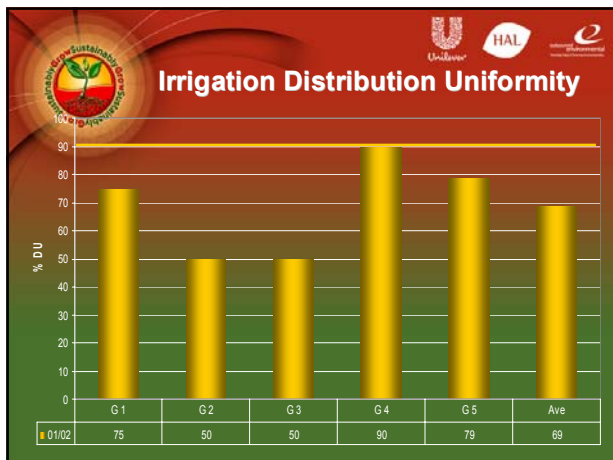
Pest Management

- Inappropriate storage and handling of pesticides and associated waste streams
 - Control: Designing adequate/ compliant storage & loading facilities, bunding, spray equipment with clean flush
- Application of pesticides by aircraft with associated off-target impacts to neighbouring land holders, crops, live stock and sensitive ecological areas
 - Control: Controls over wind speeds acceptable, ground equipment best option
- Lack of biological or non chemical control options to facilitate an Integrated Pest Management Program (IPM)
 - Control: More research, commercially viable options still at large?!

Indicator Concepts & Developing Sustainable Standards

Water Management
Irrigation Distribution Uniformity

- Irrigation Distribution Uniformity (DU%)
- Method Developed: 25 Inspection Points/Block (Flow & Pressure Recorded)
- Field Irrigation Block Assessment
- Threshold Developed: Drip >90% DU
- Current Practice: Old Drip Tube, Inconsistent Repairs (multiple flow rates added, poor design)
- Change: Regular monitoring, Replace Inconsistent Flow Rates, Flush & Acid
- Monitor: Annual Assessment
- Change: Programmed Maintenance etc



Sustainable Standards

GS Sustainability Scorecard

- Developed based monitoring indicator key learning's & review of emerging global standards
- 3 Tiers (can be tackled in stages)
 - Major Must Do's
 - Minor Must Do's
 - Recommended

The Sustainability Score Card (Tomatoes)



Pest Management
OHS & Pest Management

Rating: **Major Must Do**
★★★EU

Sustainability Criteria: **Safe Working Procedures for Crop Protection Products**



Previous
Next

Best Practice
Minimum Practice
Inadequate Practice
Immediate Action Required
Not Applicable

Description

BEST PRACTICE

An up to date chemical storage manifest (GS-SIR004g) & product register is maintained with information including the types and quantities of pesticides stored.

AND

An up to date list of pesticide MSDS's is maintained in printed form in the chemical storage facility (reviewed for currency annually).

AND

Pesticides are stored in their original labelled containers and according to label directions.

AND

Pesticides are stored separately from other chemicals and fertilizers; different pesticides (fungicides, herbicides and insecticides) are also kept separate.

AND

A first aid kit is available & regularly maintained at the facility.








The GS Footprint

- Awareness on environmental & sustainability issues
- Chemical storage & handling procedures & infrastructure changing
- Improvements in irrigation scheduling & distribution uniformities
- Transitioning from Furrow
- More soil analysis to assist with nutrient budgeting
- Catalyst for further research;
 - Mychorriza, sprinkler wetup trials, fertilizer trials

Tomato Inputs

- Effective Growing Season Rainfall _____ L
- Applied Irrigation _____ L
- Applied Salt (NaCl) _____ kg
- Electricity _____ kWh
- Diesel _____ L
- ULP _____ L
- Fertilizer N _____ kg
- Mineralized or Fixed N _____ kg
- Fertilizer P _____ kg
- Mineralized or Soil P _____ kg
- Fertilizer K _____ kg
- Mineralized or Soil K _____ kg
- Applied Cu _____ kg
- Applied S _____ kg
- Applied Insecticides _____ kg
- Applied Fungicides _____ kg
- Applied Herbicides _____ kg
- Tomato HR _____ FTE



**1 Tonne Paste
Or 1 Tonne Tomatoes
Concept**

Tomato Outputs

- Leaf & Tomato Trash _____ kg
- Cycling of Nutrients _____
- Leaching Fraction _____ L BERZ
- Pesticide Leaching _____ kg AI
- Pesticide Runoff _____ kg AI
- Nutrient Leaching (N, P, K) _____ kg
- Surface Runoff (N,P,K) _____ kg
- Waste (Non Hazardous) _____ kg
- Waste (Hazardous) _____ kg
- GHG _____ kg CO₂ eq
- EU _____ kg IPO₂ eq
- HT _____ kg 1,4 DGB eq
- TET _____ kg 1,4 DGB eq

GW = Global Warming
 EU = Eutrophication
 HT = Human Toxicity
 TET = Terrestrial Eco-toxicity

Grow Sustainably Footprint

For more information

www.growsustainably.com