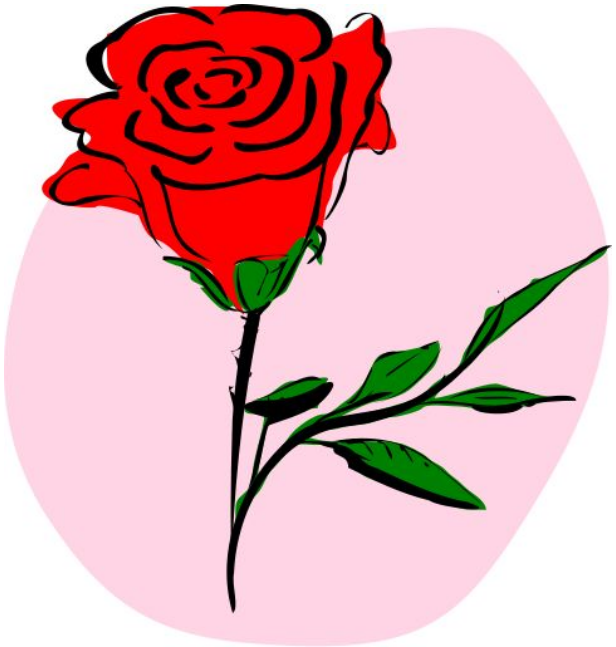
Comparative Study of Cut Roses for the British Market Produced in Kenya and the Netherlands



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Introduction

- Would you buy a super market rose from Kenya or a rose from your local florist?

- Comparing “production and delivery of roses from two specific production centres, one at Oserian and Kenya and the other near the Hook of Holland”
- This study was conducted by a team at Cranfield University
- Relating back to Microeconomics interventionist solutions to the externality problem
  -Pigouvian Taxes
  -Standards and Changes
  -Marketable pollution permits

Purpose

- Purpose of this study is to compare the CO2 (and other greenhouse gases) emissions, and Global Warming Potential of roses produced in Kenya and roses produced in the Netherlands
- Increase consumer awareness about sustainable rose production and therefore influencing consumption

Methods

- The Environmental Life Cycle Assessment (LCA) quantifies all factors that go into producing and delivering the roses:known as the functional unit
- Primary resources are traced back to the main source in terms of production and upkeep of vehicles that require crude oil
- Global Warming Potential is examined using CO2, NH4, and N2O
- Study the ways in which the Dutch use different techniques such as:
  - combined heat and power (CHP) during production
  -improved or various management
  -examine using the LCA approach

Data

- Air Freight
  - “Energy and known greenhouse gas (GHG) emission were increased by a further 10% to allow for aircraft manufacture and maintenance (this is rather less than for agricultural vehicles for which the factor is more typically in the range 20 to 30%).”
  - “Of greater concern, however, is the potential effect of the high altitude of aviation emissions on the effect of CO2 in radiative forcing.”
- Greenhouse Gases
  - CO2 carbon dioxide
  - CH4 methane
  - N2O nitrious oxide
- Global Warming Potential (GWP)

Results

- “The production at Oserian and delivery to the World Flowers RDC of the functional unit of 12,000 cut rose stems incurs 53,000 MJ primary energy and emits 2,200 kg CO2 (without including any allowance for the altitude of emissions). 7,800 MJ (15%) is fossil. The equivalent from one Dutch operation uses 550,000 MJ primary energy (>99% fossil) and emits 35,000 kg CO2.”
- “The main energy inputs in the Dutch house are 800,000 m3 natural gas and 1,200 MWh electricity per ha. These are broadly similar to those used for tomato production in Britain.”
- “The annual yields of marketable stems were almost 70% higher per ha in the Kenya when compared with the Dutch”
- “CO2 represented 90 to 96% of the Global Warming Potential (GWP100) from the two systems.”
- Tradable emission markets → carbon trading → Kyoto protocol

Results cont.

- “Including the altitude effect on CO2 impact, Dutch CO2 emissions were about 5.8 times larger than Kenyan CO2A emissions (Table 1). Including the altitude effect (albeit tentatively) with other GHG to give estimates for GWP100A, the Dutch emissions were about 6.0 larger then the Kenyan ones (Table 1).”

Table 1 Relative emissions of CO_2 and global warming potentials between Dutch and Kenyan production centres analysed

Emission	Relative magnitude of $\left(\frac{\textit{Dutch emissions}}{\textit{Kenyan emissions}}\right)$	Altitude effect included
CO_2	16	N
CO_2A *	5.8	Y
$GWP_{100}A$ *	6.0	Y

* CO_2 emitted from air freight increased by 2.7 to allow for the larger impact of high altitude emissions.

Discussion

Would you buy a super market rose from Kenya or a rose from your local florist?

Where do we stand right now?

- Most of our consumer good are imported or consist at least partly of imported pre products.
- Container shipping produces 4.5% of all greenhouse emissions
- Every other shipping method is producing more emissions

Micro Level Solutions

- Tradeable certificates - Pros:
  - Internalization of external costs
  - Higher prices → decreasing demand → less pollution
- Tradeable certificates - Cons:
  - unfair in global competition
  - Consumer awareness is not improved (high price=premium quality?)

Protectionist solution

- Only buy regional roses/ only allow regional roses
  - Problem: price, scarcity, works only for some products

→ overall welfare loss

International solutions

- Trade agreements
  - More likely to favor the low standards
- Sanctions
  - Unfair towards developing countries
  - Artificial increase in price

→ overall loss in welfare, underdevelopment of developing countries

International solution: Coordination

- Kyoto protocol
- Comparative Advantages by Ricardo
  - Specialization leads to higher efficiency even though a country has absolute advantages

	Roses	Avocados	Emissions reduced
Netherlands	100 100/120=0,83	120 120/100=1,2	20
Kenya	90 90/80=1,13	80 80/90=0,88	10

Conclusion

- Importance of comparative studies
- Importance of transparency for consumer awareness
- Importance of International coordination
- Ricardo’s Theory of Comparative Advantages as an idea to match both points

Thank you for your attention.

Sources

https://www.bimco.org/Reports/Market_Analysis/2014/0814_ContainerSMOO2014-04.aspx

https://www.greenpeace.de/themen/klimawandel/ursachen-klimawandel/co2-emissionen-der-schifffahrt-bisher-stark-unterschaetzt

http://internationalecon.com/Trade/Tch40/T40-0.php

Paper: Cut Roses for the British Market, Dr Adrian Williams, Cranfield University