Developing Sustainable Business
The TS Farming Solutions Case

Dr Henk Roodt

Centre for Transdisciplinary Research and Innovation
henk.roodt@wintec.ac.nz
This Talk

• The Wintec approach and technology
• The TS Farming Solutions Requirement
• The initial stages of a co-created solution
Design Approach

We know how to solve problems

We know how to design solutions

Integrative solutions
Focused on Real Business Problems

Key Partners

Key Activities

Key Resources

Value Proposition

Relationships

Customers

Delivery

Cost Structures

Revenue Streams

"Business Model Canvas"
- Osterwalder

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Sustainable Farming Approach
Sustainable Farming – Day 1

CAN YOU HELP US DESIGN A REVOLUTIONARY FARM, A CLOSED LOOP TYPE FARM, ONE WITH ZERO INPUT/WASTE?

Perpetual Motion?
Third law of thermodynamics?
Sustainable Farming

Low Carbon Footprint Farm Concept

- Supermarket waste
  - constitutes Protein source
  - can be Super food cakes
    - for Fresh Water
      - for Farmed animals
        - including Fish
          - for Cows
            - are deliver Heat
              - is Milk
              - makes Milk
              - generates Electricity
              - runs Bio-Digester
                - makes Methane
                  - goes to Generator
                    - for Bedding
                      - for Others
                        - for Water
                          - for Fish Ponds
                            - to Soil
                              - from nutrients
                                - for Recover
                                  - for LCF Farm
                                    - reduces Environmental impact
                                      - by recycling Liquids
                                        - consists of Solids
                                          - Waste
                                            - includes Farm Produce
• TSFS has developed a farming system which will dramatically increase farm revenue while significantly reducing ground water and atmospheric pollution.

• The system is based on a sustainable farming model where waste is utilised throughout the system to provide a valuable reusable resource.

- Richard Tyree: TSFS
The current farm project
Advantages of a “closed loop” dairy system

- Multiple Income streams
milk, fish, vegetables, crops

- Significantly reduced environmental impact
  60% less green house gas
  less Nitrification of waterways

- Range of potential locations
  almost any country, almost anywhere
Sustainable Farming

Diagram showing the flow of resources and processes in sustainable farming:
- COW generates milk, which contributes to income.
- COW produces biogas ($\text{CH}_4$) which can be used for energy.
- Biogas from the BIODIGESTER can be recycled and used for energy or electricity from the GRID.
- Effluent from the BIODIGESTER is used to fertilize the OWN CROP.
- Sludge from the BIODIGESTER is used in AQUACULTURE.
- Own feed can be used as a supplement for the COW.
- Store natural water for dairy use.

Logos and text:
- TS Farming Solutions Limited
- Waikato Institute of Technology

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Sustainable Farming
Daily Results

Milk Production
- Milksolids: 220.5

Income
- Milk Production: 992.25 (100.0%)
- Aqua Farming: 0 (0.0%)
- Electricity Generation: 0 (0.0%)

Expenses
- Energy Cost: 60 (100.0%)
- Supplement Feed: 0 (0.0%)

Annual Results
- Income
- Milk Production
- Rainfall
- Water Availability
- Pasture
- Fish Protein
- Grass Silage

Total Income: $353,710
Sustainable Farming

- COW
- CH₄
- EFFLUENT
- BIODIGESTER
- SLUDGE
- own crop
- aquaculture
- feed
- commercial variety
- grid
- energy
- $
Annual Results

Daily Results

Milk Production
- Milksolids: 220.5

Income
- Milk Production: 992.25 (55.3%)
- Aqua Farming: 800 (44.6%)
- Electricity Generation: 2 (0.1%)

Expenses
- Energy Cost: 60 (100.0%)
- Supplement Feed: 0 (0.0%)
The graph illustrates the cost of production and processing of milk as a function of seasonal peak day equivalents. The costs are measured in dollars per kilogram of milk solids.

- **Total Cost of Production and Processing**: This line shows a trend that is relatively flat, indicating that the total cost remains relatively stable across different seasonal peak day equivalents.
- **Pasture-fed Milk Production Costs**: This line is marked in red and shows a slight increase as the seasonal peak day equivalents increase.
- **Possible Range of Closed Loop Onfarm Costs**: This shaded area indicates the variation in costs that could be expected in closed-loop onfarm operations.
- **Milk Collection & Processings Costs**: This blue line indicates a downward trend, suggesting that the costs for milk collection and processing decrease as the seasonal peak day equivalents increase.

The overall trend suggests that while the total cost remains relatively stable, the cost of production and processing can vary, and there may be opportunities for cost reductions in milk collection and processing.
Education

TS Farming is integrating education into the closed loop system with assistance and funding from;

- NZ Ministry of Education
- NZ Ministry of Primary Industries
- Wintec
- North Tec
- Primary ITO
- Northland Trades Academy
Education ...continued

Key aspects of the approach

- Engage students early and across a wide range of disciplines
- Meaningful and relevant learning – project based approach
- Physical learning space with specialist tutors
- Full immersion
- Involving International Students
Where the Koura live ......
Where the students live ......
Comments