

Malnutrition Matters

FOOD TECHNOLOGY SOLUTIONS

The VitaGoat and SoyCow – Micro-Enterprise for Nutrition

WISHH Conference
‘Nutrition for All’

March 13, 2008



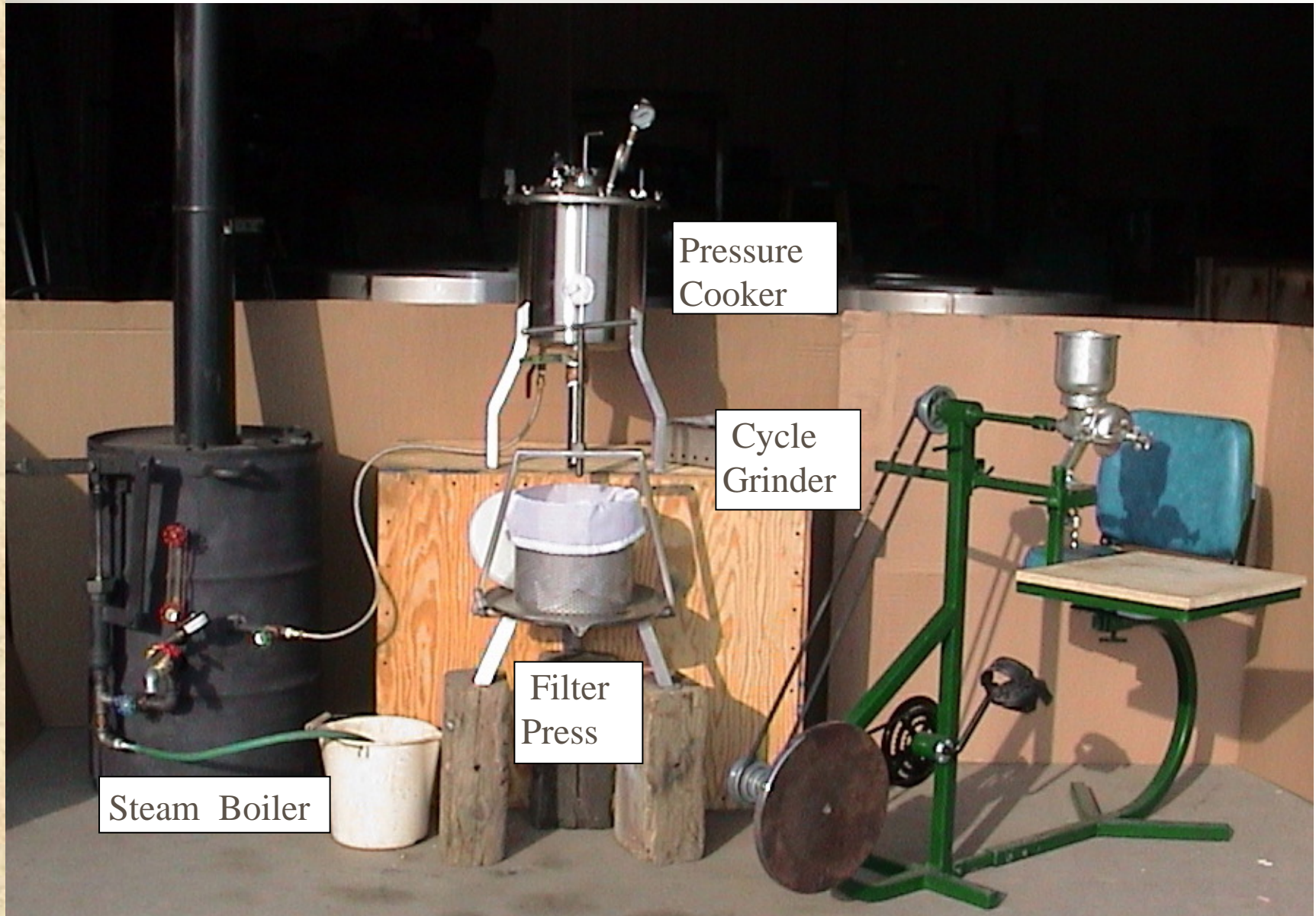
Sustainable Nutrition & Micro-enterprise Development

- Relieve malnutrition and create jobs in 'high-need' areas, mainly rural
- Local processing vs. direct food aid
- Employment for women
- Environmentally friendly
- Long-term sustainability through revenue generation



Soy milk being made in an Ashram in New Delhi

The VitaGoat System



Steam Boiler

Filter Press

Pressure Cooker

Cycle Grinder



The VitaGoat – Capabilities and Benefits

- Stainless steel construction for boiler and cooker
- Cooking under pressure and with super-heated steam is faster and more energy-efficient than open-fire or stove-top
- Can grind wet or dry foods for subsequent cooking or stand-alone (soya slurry, fruits, nuts into “butter”, cereals and grains into flour or meal, beans into grounds such as coffee)
- Used to make soymilk, vegetable and fruit juices, vegetable and fruit purees, for fresh consumption or canning
- Nutritional Benefits
 - Safe hydration through high-temperature process
 - Excellent **low-cost** source of protein and iron
 - Micronutrient delivery capability
 - Ideal HIV/AIDS protein nutrition and weaning foods

Why the VitaGoat?

- Manual (non-electric) operation to enable rural micro-enterprise
- Wood, coal, gas or other fuel options
- High-efficiency boiler conserves fuel
- No electric/water connection costs
- Easier to fabricate locally
- Dry and wet food production

Rural groups benefit from processing their own foods, especially when there is a glut of local produce



Monarajnan releasing soymilk from cooker into press, Antapali, Orissa, India

VitaGoat Sites Status – January 2008

MOROCCO

TAJIKISTAN

CHINA

IRAN

AFGHANISTAN

ASIA

PAKISTAN

BANGLADESH

INDIA

+17!

Bay of Bengal

LIBYA

EGYPT

ALGERIA

Tropic of Cancer

SAUDI ARABIA

MALI

NIGER

YEMEN

Arabian Sea

GUINEA

GHANA

NIGERIA

BENIN

CHAD

SUDAN

SOMALIA

CONGO

Equator

UGANDA

KENYA

VitaGoat Installations

Existing



44

(2004 - 2007)

Committed



46

(2008 / 2009)

Expected



1

(2008)

C.A.R.

ETHIOPIA

CONGO (DRC)

TANZANIA

ANGOLA

MOZAMBIQUE

ZAMBIA

NAMIBIA

Tropic of Capricorn

SOUTH AFRICA

INDIAN OCEAN

NORTH KOREA

Why the SoyCow?

- SoyCow
 - Electric grinder and gas or electric boiler
 - Soya foods only
 - Equipment cost US \$6,000 or more
 - More suited for urban / commercial applications



The VitaGoat – Food Production Chart

| Foods | Production capacity | Full System | Cycle grinder only |
|--|----------------------------------|-------------|--------------------|
| Soy milk from whole soybeans and soymilk-derived foods such as tofu, soy yogurt and sour soymilk. The fibrous by-product “ okara ” has many baking applications. | 30-40 liters/hour (8 USG/hr) | √ | |
| Fruit or vegetable sauces, purees and juices | 30 liters/hour (8 USG/hr) | √ | |
| Flour or meal from corn, sorghum, wheat, soya, rice, millet, etc | 8 – 12 kg/hour (20-30 lbs/hr) | | √ |
| Peanut or other nut butter or paste | 8 – 12 kg/hour (20-30 lbs/hr) | | √ |
| Ground roasted coffee | 6 – 8 kg/hour (12-20 lbs/hr) | | √ |

“Pedal Power” is 10 times faster than grinding with traditional methods



The VitaGoat / SoyCow

Applications & Economics

- Settings:
 - Direct feeding (emergency or other)
 - Social institutions (schools, hospitals, etc.)
 - Community or entrepreneurial businesses
- Economics:
 - variety of local foods can be processed
 - Generates income for group
 - Can employ 3-6 people per system
 - Minimal infrastructure and set-up costs
 - Entrepreneur or cooperative can typically recoup capital cost (\$3,500) in 12-24 months
- Food Security:
 - Frees up time for women and girls
 - High protein and caloric food output for low work input and low-cost inputs

Sustainability

- Sufficient revenue generation is critical
- Confirmation of market acceptance (products and variation, packaging, pricing) and market facilitators (agents, buyers, distributors) before project initiation
 - Institutional
 - Wholesale
 - Retail
- Price vs. input costs
- Market trials helpful
- Government and/or regulatory approvals, as required, before project implementation

*Sharing a joke over lunch at Baduapali, Orissa
– dipping bread into their soymilk*





Project / Site Suitability

- Strong community support (local NGO, elders, leaders, government officials, community groups)
- Access to capital / finance (micro / mini credit)
- Management capacity (SHG members or support group)
– creativity, persistence
- Market accessibility (physical access and community support)
- Ability to modify product output to match market demand or seasonal factors



Implementation and Sustainability

- Market realities will likely change over time
 - Cost and availability of raw materials, labour, rent...
 - Pricing factors (competition)
 - Market acceptance of products (review of product options)
- Early identification of key challenges (reporting)
- Community support
- Enthusiasm of manager / SHG members



Monitoring and Evaluation

- Income and expenses
 - Weekly / monthly reports itemizing all costs and revenues
 - Production reports itemizing daily production and product types, waste (spoiled products)
 - Jobs created, wages paid
 - Management summary outlining successes and problems
- Nutrition and Outcomes
 - Agree on objectives at project start with stakeholders
 - Agree on reporting of outputs and outcomes, “sample size”
 - E.g., for school-feeding: schools served, number of students served
 - Simple measurement: Physical development survey and/or illness incidence survey to document impact of improved nutrition
 - Alternative measurements: blood serum levels of specific micronutrients