Collaborative Product Development Research Initiative for Gascoyne Primary Produce By Product

SUMMARY OF RESULTS

Dr Janet Howieson (Curtin University)

Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

Curtin University

GASCOYNE DEVELOPMENT COMMISSION
CREATING THE CLIMATE FOR GROWTH

Australian Government
Fisheries Research and Development Corporation

Why Gascoyne Collaborative Value-Add

1. GDC priority is regional economic development and sustainable jobs.
2. State and federal policy and funding support for reduction of waste, food innovation and regional innovation, growth and new industries.
3. “total utilisation” may increase profitability
4. Food safety/biosecurity risks and new labelling laws are pushing a return to Aust based food processing.
5. Australia clean/green reputation enhanced by processing in Australia.

Objective of the Project

- Two “investment ready” value-added products from horticultural waste.
- Platform to fund further value-added product development

Actual Deliverables

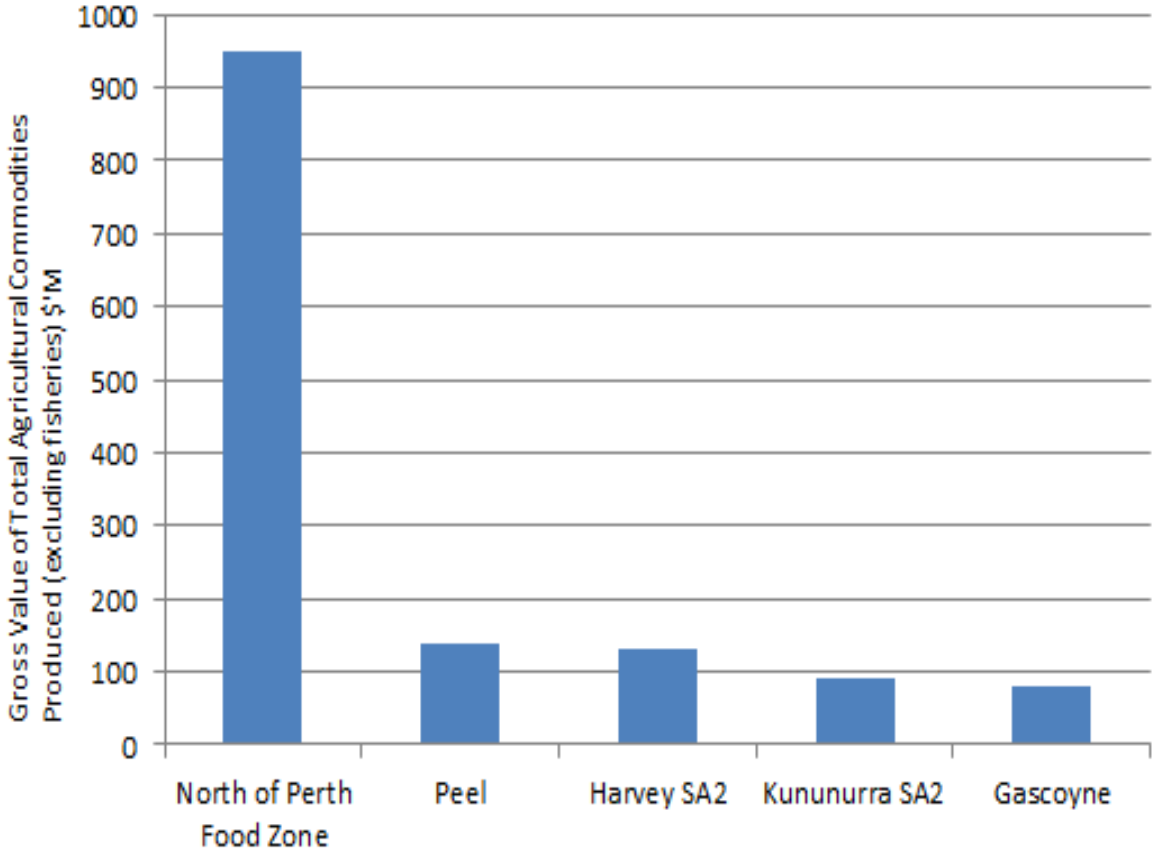
- 6 investment ready products (including CBA)
- Facility design
- Overarching, transferable framework for investigating value-adding to horticultural waste.

Overarching Messages

1. This is a consultation stage in the process…….not a final end point.
   - We have tried to undertake whole of supply chain consultation all the way through the project (but always need more feedback). (Experts on hand to answer questions; adjust reporting).
   - We have tried to develop a robust project framework that is continuously adaptable and transferable for new information/products/regions.
   - We are seeking your feedback today on everything presented: products; cost benefit assumptions; facility design etc.
2. Return to producer is essential.
3. The project is based on collaboration across sectors (one facility; multi-sector equipment).
4. We are "building for tomorrow" not today (renewable energy; flexibility; adaptability).
5. Modular Approach: this is the first stage (other stages/product outcomes can be added later viable).

Agricultural Production by Region.

(supplied by Northern Food Bowl initiative presentation (Wheatbelt Development Commission and Shire of Wanneroo)



Our Project Stages

1. BACKGROUND: (Literature review and market prices).
2. CONSULTATION (Group Explorer consultation with supply chain stakeholders: list of products; barriers; opportunities) followed by end-user consultation for formats, prices and demand (which product options to pilot)
3. PRODUCT DEVELOPMENT TRIALS (Carnarvon and Manjimup)
4. CONSULTATION (end-user consultation for target products)
5. RAW MATERIAL AVAILABILITY AND TONNAGES (waste streams: seconds below return, packing shed discards, unharvested product).
6. Pre-feasibility COST BENEFIT ANALYSIS and generic costing model development
7. GENERIC FACILITY DESIGN AND PRELIMINARY COSTINGS
8. CONSULTATION AND REPORTING (workshop and written)

Stage 1: BACKGROUND

Woolworths
Diced mango

500 g
$8/kg
Mangoes from Peru

Vadilal
Sliced mango

1 kg
$8.99/kg
Mangoes from India

Berryfruits
Mango cheeks
750 g
$10.49/kg
Mangoes from
Australia

Coles
Diced mango
500 g
$8/kg
Mangoes from Mexico

Literature review (~45 reports) and broad outcomes/findings

Key Findings from Lit review

Opportunities

1. **Simple value-adding** (pulp, juice or pre-prepared/frozen) has the greatest potential to form a viable business case. Varietal differences and origin should be leveraged to differentiate in a competitive market.

2. **Tomato, melons and banana** have the highest production volumes and likely the largest waste streams suitable for value-adding. Additionally they have long seasons and can likely provide the most consistent supply of waste produce for value-adding.

3. Due to the limitations of the Gascoyne region (distance to market, comparatively low production and limited existing infrastructure) the **formation of a group** (such as cluster/co-op) by growers is essential to reduce costs, increase funds for R&D and capital investment.

Challenges

1. **Existing tensions between growers need to be overcome** and collaborations formed. Additionally, for projects to progress beyond the R&D stage some **investment risk** needs to be accepted (this can be minimised for individuals by forming a group).

2. Previous attempts to **formulate viable business plans** have not been successful. Inclusion of intangible benefits of waste utilisation may assist with this. Alternatively, a different approach may be required (i.e. outsource processing) to overcome the financial barriers.

3. Supply of horticultural waste is predicted to be highly seasonal. **Overcoming the seasonal supply constraints** will be critical to the development of a viable operation.

Stage 2: CONSULTATION

GROUP EXPLORER

- 27 participants from throughout the supply chain.
- 96 product ideas (grouped broadly into cattle feed, insect feed, biofuel, composting, juices/drinks, purees, stocks, chopped veges, dried snacks/sweets, protein powders, health/nutriceuticals, fabrics and packaging).
- Challenges identified: supply(continuity and quality); costs (power, infrastructure, transport etc).
- Activities identified: waste volumes and type, market/end-users, trials, cost benefit.

Stage 2: CONSULTATION (end-users to reduce product options).

Products:

Biofuel: expensive but can be used to power a single facility
Composting: market challenges
Insect larvae production: volumes too low unless specific high value product eg chitin
Feedlot: volumes too low; compositional issues

Nutriceuticals/Health: expensive equipment (but pre-processing opportunities then transport eg freeze drying in Qld).

Processed Products: slice/dice; puree/juice, freeze (or extend shelf-life); bulk packaging; food service or institutional catering opportunities. (Ingredients or final product?)

- Tomatoes: sliced and diced (different sizes) (cooked and raw); paste; water; roasted;
- Melons (honeydew melons as trial): juiced, pickled; juiced.
- Bananas (whole: puree)
- Mangos (puree; juice)
- Eggplants/Zucchini (diced) (no diced eggplant on market)
- Final Products: Chill paste/sauce, salsa, babaganoush; XO sauce; ratatouille; mixed roast veges; vege and fruit chips).

Stage 3: PRODUCT DEVELOPMENT
a. Factory Trials in Carnarvon

Steam Kettle

Microcutter

Screwpress

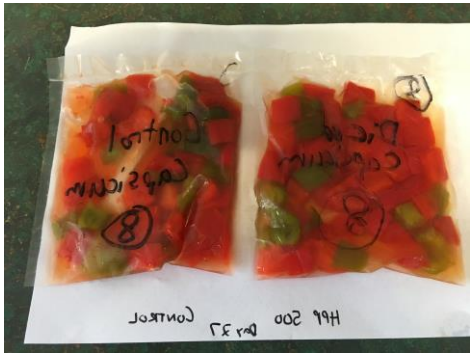
Dicer

- Three days of Trials (August 2017)
- Consultant chefs and Curtin Uni scientists: 25 Processed Products: tomato; banana, mango, eggplant, melons, chilli, capsicum, basil, dried asparagus.
- Feasibility (processing and packaging; problems, recoveries, quality, informal shelf-life, addition of preservatives).
- Community invite/presentation

Factory Trials (Carnarvon)

Factory Trials (Manjimup)

- High Pressure Pasteurisation facility in Manjimup: extension of chilled shelf-life.
- Two days of Trials (December 2017).
- Consultant chefs and Curtin Uni scientists 25 Products: tomato; banana, mango, eggplant, melons, chilli, capsicum, basil:
- Feasibility (processing and packaging; problems, recoveries, quality, shelf-life micro (up to Day 30).



Stage 4: END-USER CONSULTATION (demand and pricing)

1. IQF diced tomato (sizes) ($2/kg) (long-life fresh) ($6.5/kg) (fresh)
2. IQF diced capsicums ($2/kg) (long-life fresh) ($8-12/kg) (fresh)
3. Melon Juice/puree (frozen/long-life) ($3-$4.5/kg)
4. IQF diced zucchini (long-life fresh) ($5.50/kg fresh)
5. Tomato water
6. Frozen Mango Puree (long-life fresh) ($4.50/kg) (Cheeks $6.50)
7. Frozen Banana Puree (long-life fresh) ($1.10-1.70)
8. Whole VP frozen banana ($1.90-2.50)
9. *Ratatouille vegetable mix (long-life/frozen)*
10. *IQF Roast Tomato*
11. *IQF Roast/raw diced Pumpkin*
12. *Salsa mix (long-life)*
13. *Vegetable/Banana Chips*

Stage 5: TONNAGES/AVAILABILITY OF RAW MATERIAL

PER SECTOR (tomatoes; bananas; mangos; honeydew; zucchini; capsicums)

1. Production delivered to Perth (DPIRD data)
2. Waste streams
   - Grading/Packing discards (and edible percentage) (surveys with growers and sheds)
   - Seconds volumes below market breakeven point (ie not sent to market) (surveys with growers and sheds)
   - Estimate on Farm waste (and edible percentage) (GDC grower survey) (not included in CBA)
3. Assume 60% of available product is supplied for processing: (volume of product supplied)
4. Add in processing recoveries (from product development trials) (Volume of product outputted)

Stage 6: COST BENEFIT ANALYSIS and TRANSFERABLE MODEL DEVELOPMENT

Components of the CBA (Generic spreadsheet developed)

a. Raw Material options (seconds, shed waste, on farm waste) and volumes.
b. Grower costs and appropriate return: Breakeven for market. Savings by not sending to market (focus on appropriate grower return)
c. Processing, Packaging and Transport costs
    a. Equipment (based on product options) (vacuum packer, IQF freezer, slice and dice, puree, juicer, ripening option).
    b. Shed/Facility (including certification)
    c. Processing and Packaging costs (staff etc, once equipment is in place):
    d. Maintenance and Running costs (including certification).
    e. Transport.
d. End-user Prices
e. Seasonality of Supply to Facility

Intangible Benefits
    a. Fruit fly eradication
    b. Regional development and employment outcomes
    c. provenance/branding price premium
    d. other

Stage 7: FACILITY DESIGN AND COSTING (TRANSFERABLE MODEL DEVELOPMENT)

See Later Presentation

"Building for Tomorrow not Today"

END-USER COMMITMENT/ INTEREST

a. Harvest-time (Richard K: banana and mango puree and dices/cheeks).
b. Borthwick Foods (to Talk)
c. Geraldton Growers – supply opportunity
d. Abundance Agriculture (to talk)
e. Directus
f. Compass Catering
g. Jennie Franceschi – Karri Country Produce

Next Steps

1. Take outcomes of today and incorporate into all aspects of project.
2. Community consultation and support? Broader stakeholder consultation and support?
3. Ownership, Organisational and Management models
4. Planning (infrastructure and equipment; logistics).
5. End-user commitment? (contracts??)
6. Work with GDC and Partners to develop full Business Plan and Funding strategy
7. Investment Options

Thanks

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