

A woman with tattoos on her arms is weighing produce in a market stall. She is using a scale and looking at a basket of green produce. In the background, other people are working at tables with more produce. The scene is brightly lit, suggesting an outdoor or well-lit indoor market.

Food Safety & Wild Harvest of Australian Native Foods

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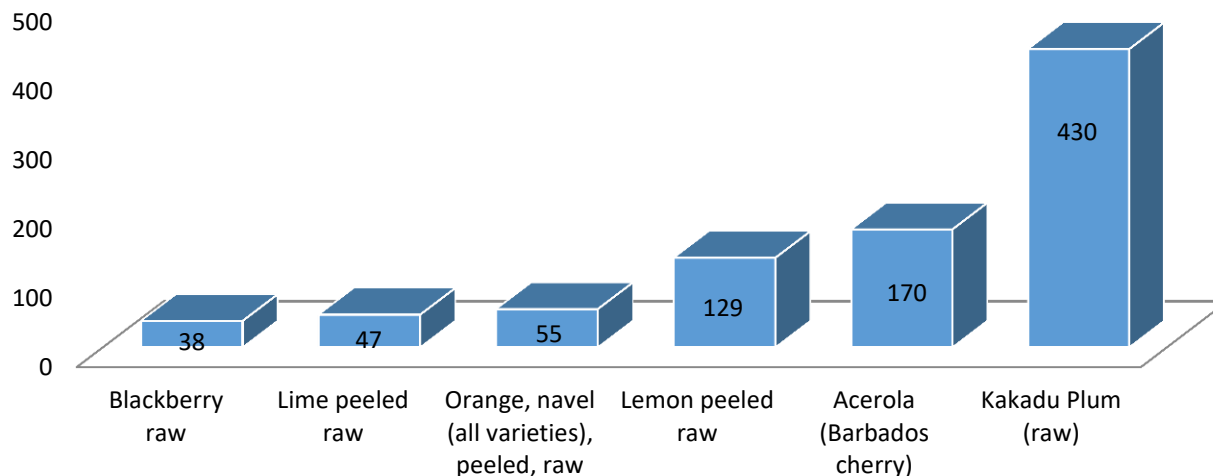
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Kakadu Plum

- *Terminalia fernandiana*, Gubinge, Billy goat plum, Anmarlok, mi mirrarl;
- Endemic to northern Australia
- Traditionally used as a medicine (for colds & lethargy)
- Contains world's richest source of Vitamin C & high antioxidant properties
- High levels of Ellegic & Gallic acid

Vitamin C content of Kakadu Plum compared to other fruits (mg/g)*



*Fruit data sourced from AUSNUT 2011-13 AHS Food Nutrient DB. Kakadu Plum data from samples tested by NMI 2019



Kakadu Plum

- **Contemporary uses**

- Superfood in health foods
- Natural preservative (high ascorbic acid)-(eg. Prawn Industry)
- Cosmetics & skincare- high Ellegic & Gallic Acid content for collagen synthesis



Australian Bushfoods Sector

- In 2012 the Australian native food sector was estimated to be valued at between \$10 to \$16 million AUD annually (*excluding macadamia*), and predicted to grow rapidly in the coming years
- Historical problems around supply chain continuity with 'middlemen' between harvesters and buyers, increasing risks
- Less than 1% of the estimated value of the Australian bushfoods sector benefits Aboriginal people



<https://www.agrifutures.com.au/wp-content/uploads/publications/18-003.pdf>

<http://www.foodstandards.gov.au/industry/novel/novelrecs/Documents/Record%20of%20views%20formed%20in%20response%20to%20inquiries%20May%202019.pdf>

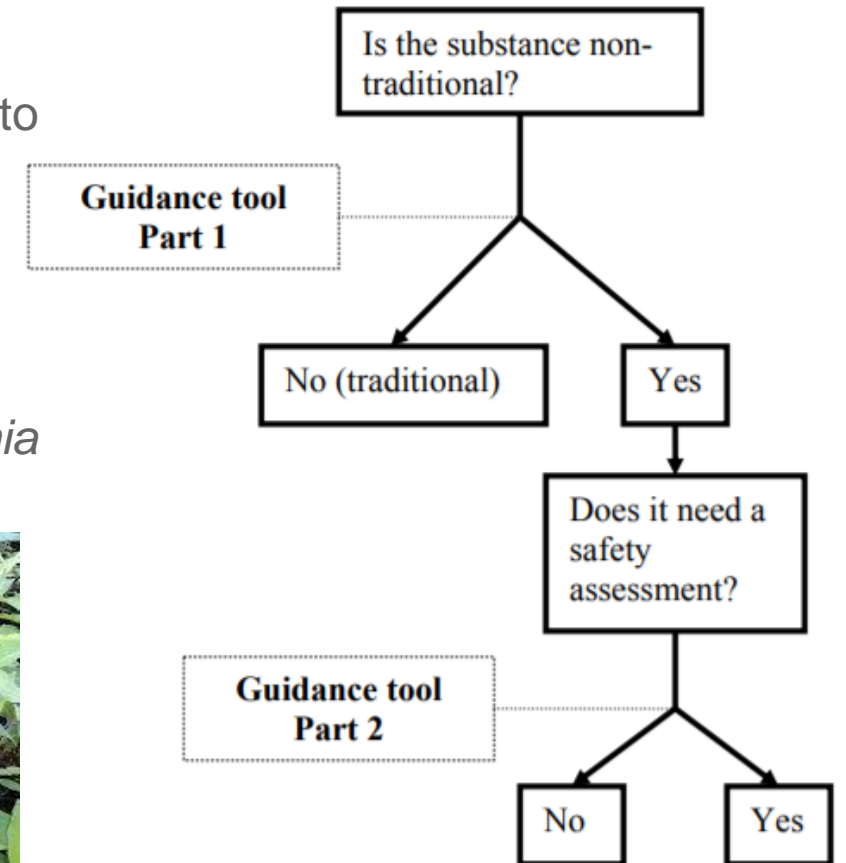
Australian Bushfoods Sector

- More than 200 native species have been used and continue to be used as food by Aboriginal people with about a dozen certified through FSANZ;
- FSANZ consider Kakadu Plum not a novel food, but a traditional food with a long history of use in Australia;
- Examples of better known native Australian foods; *macadamia nuts*, *lemon myrtle*, *finger limes*, and *quandongs*



<http://www.foodstandards.gov.au/industry/novel/novelrecs/Documents/Record%20of%20views%20formed%20in%20response%20to%20inquiries%20May%202019.pdf>

NAAKPA



Emerging sector challenges

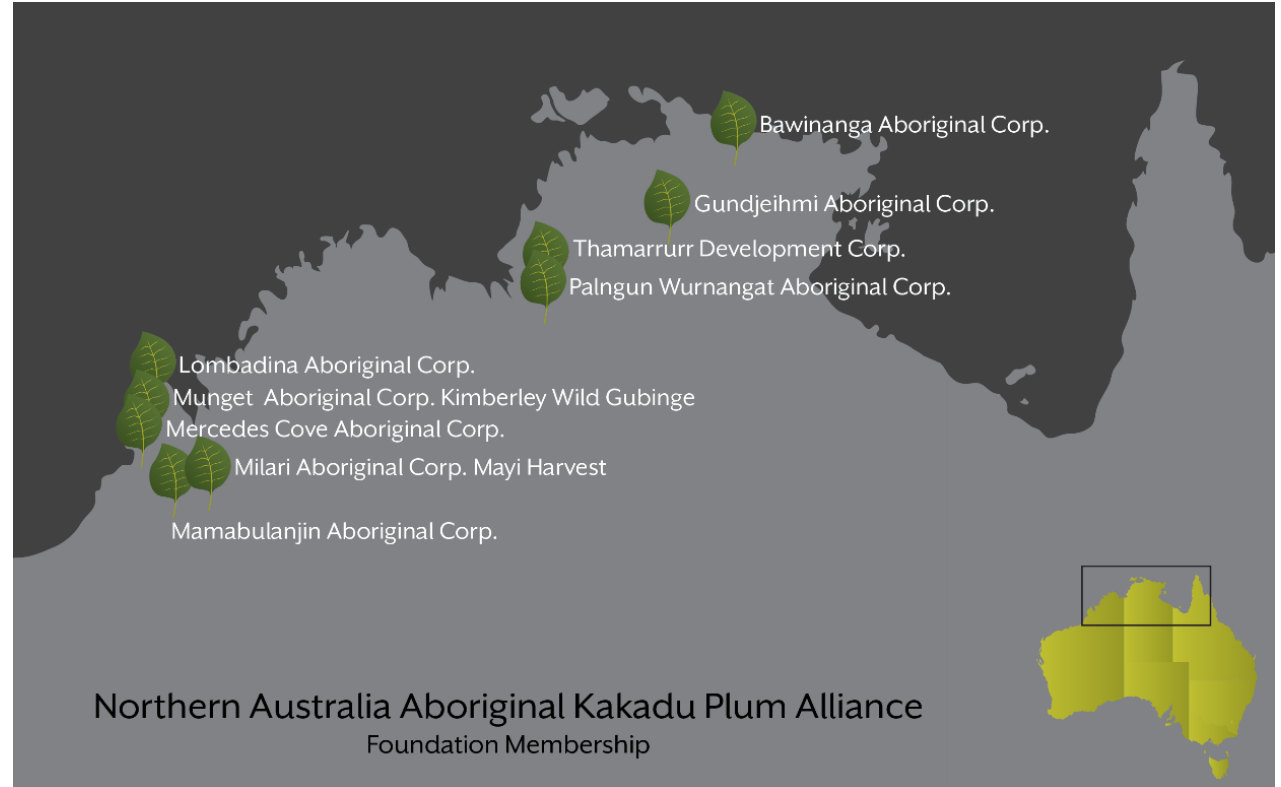
- **Bringing Wild harvest into commercial food supply chains**
 - No standards or benchmarks for wild harvest safety & quality
 - No data available on harvest volumes- guesstimates at 20-25 tonnes annual across northern Australia
- **Adapting varieties to traditional horticulture**
 - Limited knowledge of natives in mono-culture environments
 - Many subspecies not clearly identified (short & tall KP)
- **Processing native foods**
 - Converting into extracts/ingredients for mainstream food supply chain
 - Adapting processing technologies to suit native foods
- **Food provenance, biosecurity, certification**
 - Provenance systems for wild harvest
 - Limited Aboriginal control of supply chain



The Northern Australia Aboriginal Kakadu Plum Alliance (NAAKPA)

Established August 2018

- Establish a stakeholder decision making governance framework (Aboriginal controlled)
- Central point of contact for prospective buyers (www.naakpa.com.au)
- SAI Global conducted a HACCP Food Safety Gap analysis audit (2019)
- NMI food testing- chemical & microbial analysis
- Harvested 20 tonnes of fruit in 2019, farmgate value of \$600,000 (USD)
- ANSTO collected samples to develop a proof of concept for elemental fingerprinting of Kakadu Plum



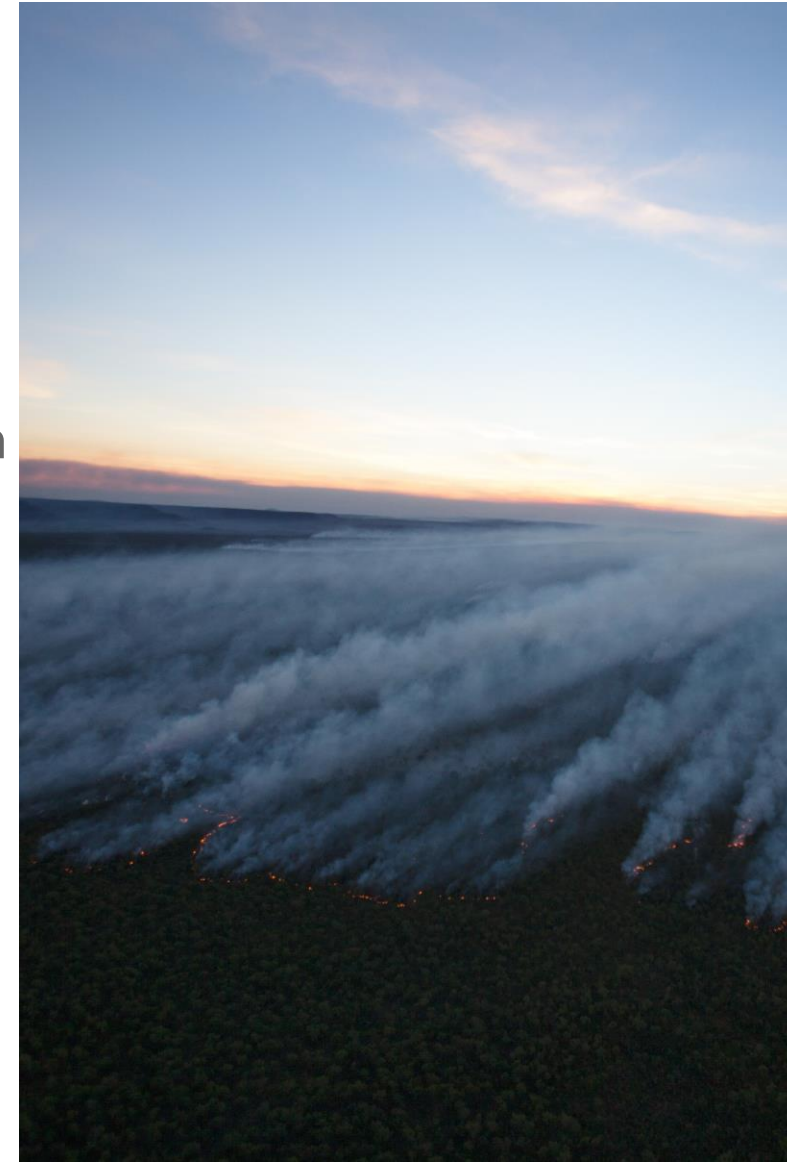
Wild Harvest -Advantages



- **Sustainable food production**
 - No large scale land clearing;
 - Works with native ecosystems;
 - Greater resilience to climate change;
- **Organic food production**
 - No fertilisers, no herbicides, no pesticides;
- **Brings large areas of land into food production**
 - Groves established naturally;
 - Genetic populations with natural distributions;
 - Complements & strengthens food production systems;
 - Generates economic outcomes for Aboriginal communities.

Wild Harvest-opportunities

- **Indigenous knowledge systems**
 - What is safe to eat (Traditional Knowledge)
 - Managing the environment for food production (eg. savannah burning)
- **Indigenous value systems**
 - Social constraints (permissions/behaviours)
 - Cultural connections (totems, moiety, kinship)
- **Adapt parts into mainstream Food QA systems**
 - Food Safety benchmarks
 - Ethical sourcing/ harvest practice



Food Safety & Wild Harvest

Project Brief

- Provide feedback on potential food safety risks related to current harvesting and processing techniques
- Food Safety HACCP Certification where enterprise is ready.
- GAP Analysis Assessment for remaining enterprise
- Build understanding of the future pathway to certification and feasibility should markets / customers require it



Food Safety & Wild Harvest

Considerations when Defining the Best Approach

- What benchmark to use?
- Unlikely to be 'typical' audit for Food Safety Certification
- Depth of knowledge regarding Food Safety & HACCP would be low within the enterprise
- No expectation with maturity of FS & Q system
- Need for practicality – in approach and expectations regarding controls in place

Food Safety & Wild Harvest

Approach to Assessments / Audit

- HACCP Introduction / Workshop - Remote
- Inspections of harvest / operations
 - Dampier Region WA – January 2019
- Inspections of harvest /operations
 - NT – April 2019
- GAP Assessments - 7 sites
- Certification HACCP – 2 sites



Food Safety & Wild Harvest

Positive/Negative Findings – Systems

Risk Based Food Safety & Quality Management systems.

HACCP – basic only

Defined Product Specifications – differences in fruit and subsequent properties.

Attributes, chemical, physical and microbiological – Grading Systems.

Documented Pre-requisite Programs – GMP, PHP, Training, water, cleaning, maintenance / calibration

Protocols for harvesters / pickers – permissions, training, monitoring .

Trace and provenance – forwards / backwards, standardised coding systems



Food Safety & Wild Harvest

Positive / Negative Findings - Operations

- Diverse Operations – driven by current market expectations
- Collection / Harvest Methods
- Facilities for conducting grading, freezing packing varied
- Washing Techniques – whole fruit – validation of techniques / benefits
- Environmental Chemicals / Contaminates



Food Safety & Wild Harvest

Positive / Negative Findings - People

- 'Trust' is key; desire to do the right thing
- Knowledge of HACCP Principles and GMP
- Knowledge in developing Food Safety & Quality Systems



Food Safety & Wild Harvest

Lessons Learned – What is needed for success?

- Access to training / resource Food Safety & Quality
- Shared development of FSQM for 'generic' operations / processing
- Standards for the Sector – trace systems, harvest and post harvest controls, optimise harvest for quality, environmental factors
- Recognition of food safety practices via 3rd party HACCP certification is achievable



***“We are more than excited to announce that our Food Safety Management System has been certified through SAI Global under their CODEX HACCP and GMP requirements.*”**

***As far as we understand we are the only Aboriginal business to achieve this certification for the full spectrum of processing Kakadu plum into end products. Pretty proud moment for our Lil business.*”**

Next Steps

Developing technologies, practices and understandings on

- Commercially harvesting bushfoods (Wild harvest)
- Food Safety management practices for wild harvest
- Processing techniques for bushfoods
- Present bushfoods as useful ingredients for mainstream food processors and manufacturers

Working with a variety of partners to bring wild harvest foods into mainstream food supply chains

- Northern Australia Aboriginal Kakadu Plum Alliance
- Indigenous Land and Sea Corporation
- SAI Global
- Australia's Nuclear Science Technology Organisation (ANSTO)
- National Measurement Institute (NMI)
- University of New South Wales

Developing Export markets

- Japan Superfood Association (supported through Austrade Tokyo)



