

RESNICK AGRICULTURAL INNOVATION RESEARCH FUND

BYPRODUCT INNOVATION FEASIBILITY ASSESSEMENT

This document provides four templates to help researchers assess the economic feasibility of bringing new byproduct innovation to market. Information on the price paid for byproducts has been provided by the Wonderful Company and should be used to calculate the minimum byproduct feedstock price.

Byproduct	Current Use	Current Value (\$/ton)
Almond hulls	Cattle feed	\$100-250
Almond shells	Animal bedding	\$10-80
Pistachio hulls	N/A	0
Pistachio shells	Energy	\$0-10
Pomegranate husks	Cattle feed	\$15-40

TEMPLATE 1. ESTIMATING PRICE

Scenario	Guidance	Answer (can be a range or scenario-based)
Pricing a product as a simple substitute for an existing product	If your product is a simple replacement, what is the price for the existing product? If this is a retail price, assume your price (wholesale) would be 50% of retail	
Pricing a product that is better (or worse) than an existing product	If your product is superior (e.g., additional benefits, more effective) is there any evidence people are willing to pay for that benefit? Are there ways to calculate the potential additional benefits? If your product is worse (e.g., less effective) how would you need to discount it relative to what is on the market today?	
Pricing a product that is new to market	What problem are you solving for a potential customer? How much does this problem cost your potential customer today?	

TEMPLATE 2. ESTIMATING ANNUAL SALES VOLUME

Scenario	Guidance	Answer (can be a range or scenario-based)
Buyers(s) identified	If you have existing interest from a buyer, what volume do they want to purchase? Are there other similar customers? If so, can you use their relative size / annual revenue to scale additional potential demand?	[\$ or tons]
Market identified	What is the current size of the market? What proportion of the market could you expect to capture?	[\$ or tons]

TEMPLATE 3. OTHER FEASIBILITY CONSIDERATIONS

Question	Answer
What are the main hurdles for getting your product to market (e.g., regulatory, consumer acceptance)?	
Do you have any strategic partners or other sources of investment/funding?	

TEMPLATE 4. OTHER FEASIBILITY CONSIDERATIONS

Line Item	Components	Guidance	Unit Price	Quantity	Estimated Value
Revenue	Projected sales	Raw input x yield x price	\$700 / ton	1,500 tons [raw input x yield]	\$1,050,000
Raw input	E.g., Almond hull	See table 1	\$150 / ton	5,000 tons	(\$750,000)
Cost of good sold (COGS)	Labor Manufacturing overhead Shipping		\$83 / ton	1,500 tons	(\$125,000)
Gross profit	Revenue minus Raw Input and COGS		\$116 / ton	1,500 tons	\$175,000
Gross profit %	Gross profit / Revenue		-	1,500 tons	17%
Operating expenses	Selling, General, and Administrative (SG&A) Marketing and Advertising Rent and Utilities		\$21 / ton	1,500 tons	(\$31,500)
Depreciation	E.g., Machinery purchases	Sum of asset value divided by useful life	\$33 / ton	1,500 tons	(\$50,000)
Operating Income	Gross profit minus operating expenses and depreciation and amortization		\$63 / ton	1,500 tons	\$94,000
Interest & tax	Projected interest on debt	Assume 5% of revenue	\$35 / ton	1,500 tons	(\$52,000)
Net income	Operating income minus interest and tax		\$28 / ton	1,500 tons	\$42,000

At this stage of development, many P&L inputs will be highly uncertain. We would encourage using sensitivity and/or scenario analyses to explore the impact of this uncertainty on your business case. See below for two example charts exploring the impact of feedstock price on net income.

FIGURE 1: THE IMPACT OF POMEGRANATE HUSK FEEDSTOCK PRICE ON NET INCOME

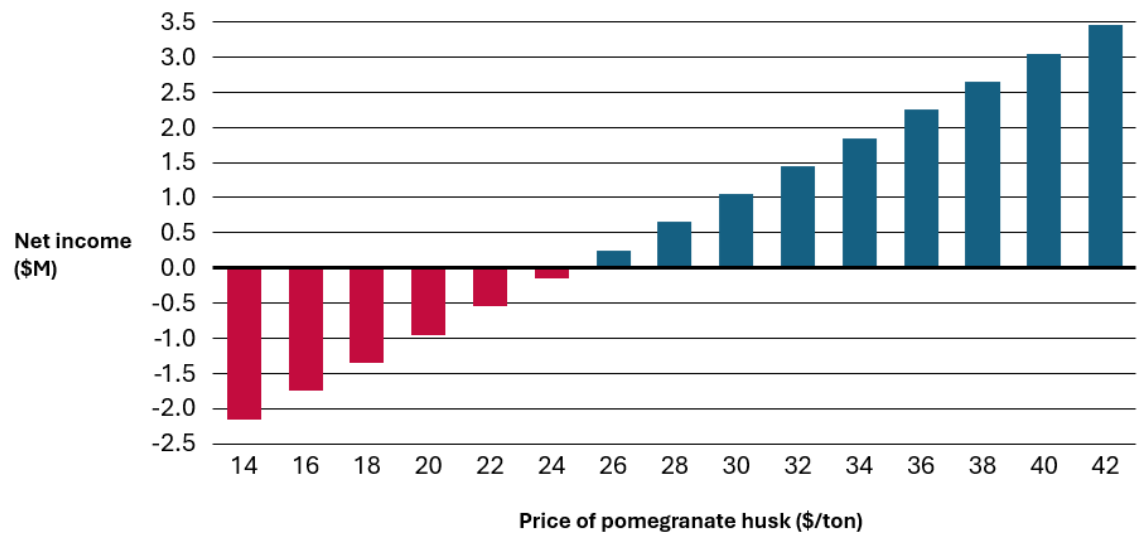


FIGURE 2: SCENARIO ANALYSIS

