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Pigeonpea: Alleviating the Poverty Cycle Sustainable Agriculture and Economic Development

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Pigeonpea: Alleviating the Poverty Cycle through Sustainable Agriculture & Economic Development

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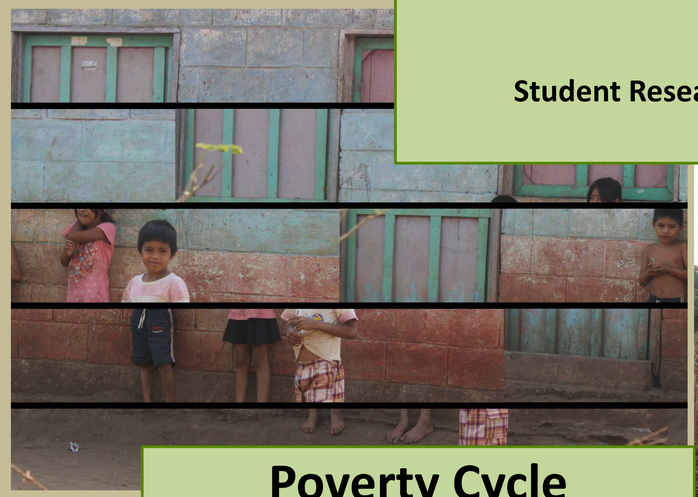
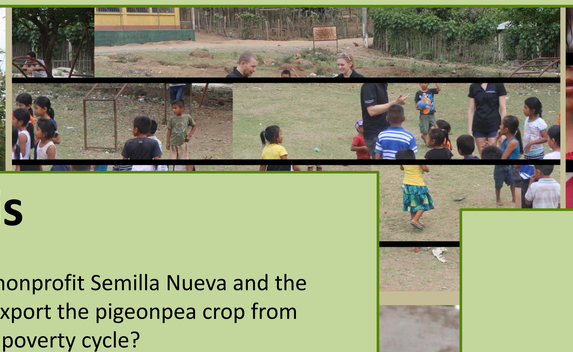
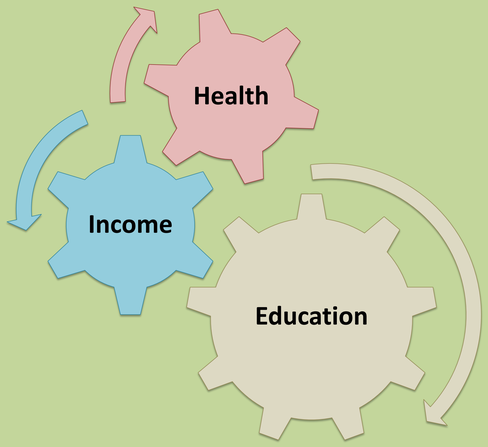
Student Research Initiative Fellows[1], Mentor[2], 2014 Undergraduate Research Conference, Boise State University



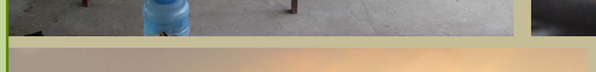


Poverty Cycle



Hypothesis

Which economic market has the greatest potential for the nonprofit Semilla Nueva and the farmers they are assisting to immediately and sustainably export the pigeonpea crop from Guatemala in order to increase their income and break the poverty cycle?

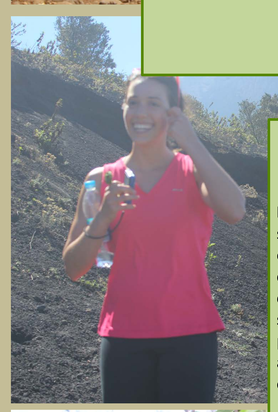


Our Findings & Recommendation

Findings: After analyzing the various potential markets India would be the ideal market based on consumption rates and the population of the country. Semilla Nueva should aim for the Indian market long term (five to seven years) after increasing pigeonpea production. Until the farmers reach economies of scale, the shipping costs are too high thus decreasing profit margins.
The NGO should therefore focus on the U.S. and Latin American markets initially (immediately to five years). Increasing farmer production of the pigeonpea crop is Semilla Nueva's core competency; they do not have the resources or infrastructure to market and distribute the pigeonpea to the end consumer.

Final recommendation: Locate a distributor such as GOYA to sell the crop to in bulk. Semilla Nueva should act as a cooperative to sell all pigeonpea crops to the distributor holistically for a higher price. Five major distributors, including U.S. based GOYA, have been identified as potential partners. This SRI team has made contact with GOYA and Semilla Nueva will be submitting a two pound sample of three different varieties of the crop at the end of April 2014.

Next steps: After Semilla Nueva enters into a contract with a distributor they can increase production across the eleven farming communities they work with and positively impact over 11,000 families to break the poverty cycle over the next two-to-three years.



Pigeonpea

Pigeonpea, or *Cajanus cajan,* is a summer legume and pulse crop with excellent drought tolerance. Pulse crops are any dry pea, or lentil that consist of 20-25% protein and 40-50% starch; they are also rich in iron, zinc, potassium, magnesium, dietary fiber, and usually have only small amounts of oil.

Pigeonpea has the widest range of applications among pulse crops. Pigeonpea's uses include human food, feed for livestock, medicine, and as a fuel source.

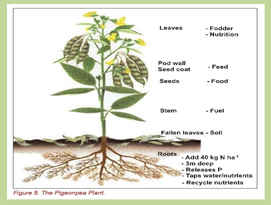


Figure 8. The Pigeonpea Plant.

Green Pigeon Peas

Nutrition Facts

Serving Size 1/2 cup (81g)
Servings Per Container approx. 5

Amount Per Serving	
Calories 90	Calories From Fat 0
	% Daily Values*
Total Fat 0g	**0** %
Saturated Fat 0g	**0** %
Trans Fat 0g	
Cholesterol 0mg	**0** %
Sodium 70mg	**3** %
Total Carbohydrate 17g	**6** %
Dietary Fiber 6g	**23** %
Sugars less than 1g	
Protein 5g	

Vitamin A	10 %	• Vitamin C	20 %
Calcium	40 %	• Iron	20 %
Thiamin	%	• Riboflavin	%
Niacin	%	• Folate	%

* Percent Daily Values are based on a 2,000 Calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sdium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

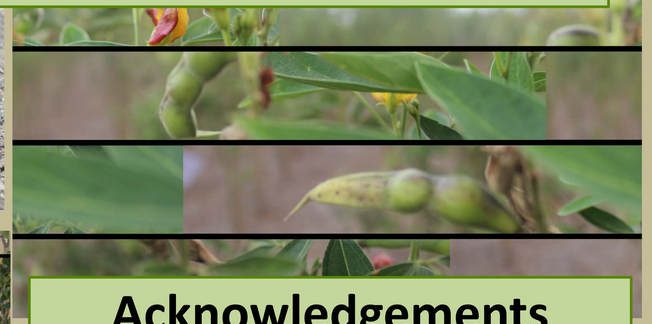
India, Africa & United States

Demand in India
India is the largest pigeonpea producer and consumer in the world. India produces approximately 70% of the world's pigeonpea production. However, the domestic production of pigeonpea is less than the domestic demand. Therefore, there is a large demand for pigeonpea imports. Furthermore, the India National Food Security Act, 2013, increases the potential for imports.

Africa as a Model
The nonprofit, non-political organization called the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has helped empower approximately two billion people in sub-Saharan Africa to overcome poverty, hunger and a degraded environment through better agriculture. By applying scientific innovations from their CIGAR Research Program on Grain Legumes in combination with adequate policy, marketing and other support services, ICRISAT has been able to increase the dry land farmers' crop productivity and incomes, while improving the resilience of their lands and livelihoods. Specifically in Africa, ICRISAT has helped many villages grow more nutritious, diverse and resilient food through on-farm trials of pigeonpea.

India's Imports of Pulses from various countries

United States as a Potential Market
With the passage of the 2014 U.S. "Farm Bill" the demand for pulse crops will increase over the next 5-10 years. Included in the bill are two pulse crop initiatives-Pulse Crop Health Initiative (PHI) and the School Pulse Crop Products Program. Both promote the research and implementation of pulse crops into the U.S. market.



Acknowledgements

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STUDENT RESEARCH INITIATIVE

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International Business Programs

Semilla Nueva