



PurpleGreen

PROVIDING STABLE PARTNERSHIPS



Biomass Industry Overview

The World Pellet/Briquette Production is presently estimated at 10 million tons per year. By 2020 production will grow to 30 Million tons annually.

Canada's current production is 1.4 million tons per year.
Huge potential exists for Canadian farmers and Canadian pellet/briquette manufacturers



Challenges to the Canadian Biomass Industry

Canada has little or no experience with large scale bioenergy plantations

Competition with traditional cash crops corn, soy beans etc...

Crop science studies for biomass energy crops are limited (climatic variable temperature, CO₂)

Demand exists, reliable and sustainable supply does not



Opportunities/Trends/Forecasts

Biomass is one the fastest growth sectors internationally

Premium markets exist for high BTU output, low ash content/ very low carbon footprint product

European markets are the fastest growing markets in the world

Reliable raw material sources of Biomass for alternative distribution channels have been sourced and tested in every major market

The issue has always been a sustainable supply

At any given time Canada has one of the largest inventories of fallow land in the world

A farmer focused initiative with export objectives



Who we are

Canadian Based- Partnership driven company - Export Focussed

We exist to:

Provide stable and predictable market conditions for the Biomass industry

Maintain and develop new partnerships between Farmers, Pellet/Briquette producers and Exporters

Our work will:

Speed up understanding on energy crop design and improve “biomass energy pipeline ” by:

- Providing a stable and predictable biomass supply

- Focusing on the farmers as the key to the process



Government Programs/Initiatives

Funding model for greenhouse use as a supply stability tool

Farmer Funding programs for Cardoon as an approved biomass source

Harvesting Equipment initiatives including compactors and transport to Processors

Funding for processor research re: briquette machines; test models for mobile versus static concepts

Marketing development initiatives including target market development; Export Canada; Export Ontario

- Seed supply
- Buyer of harvest
- Program liaison
- Relationship MGT

- Plant/Grow/ Harvest

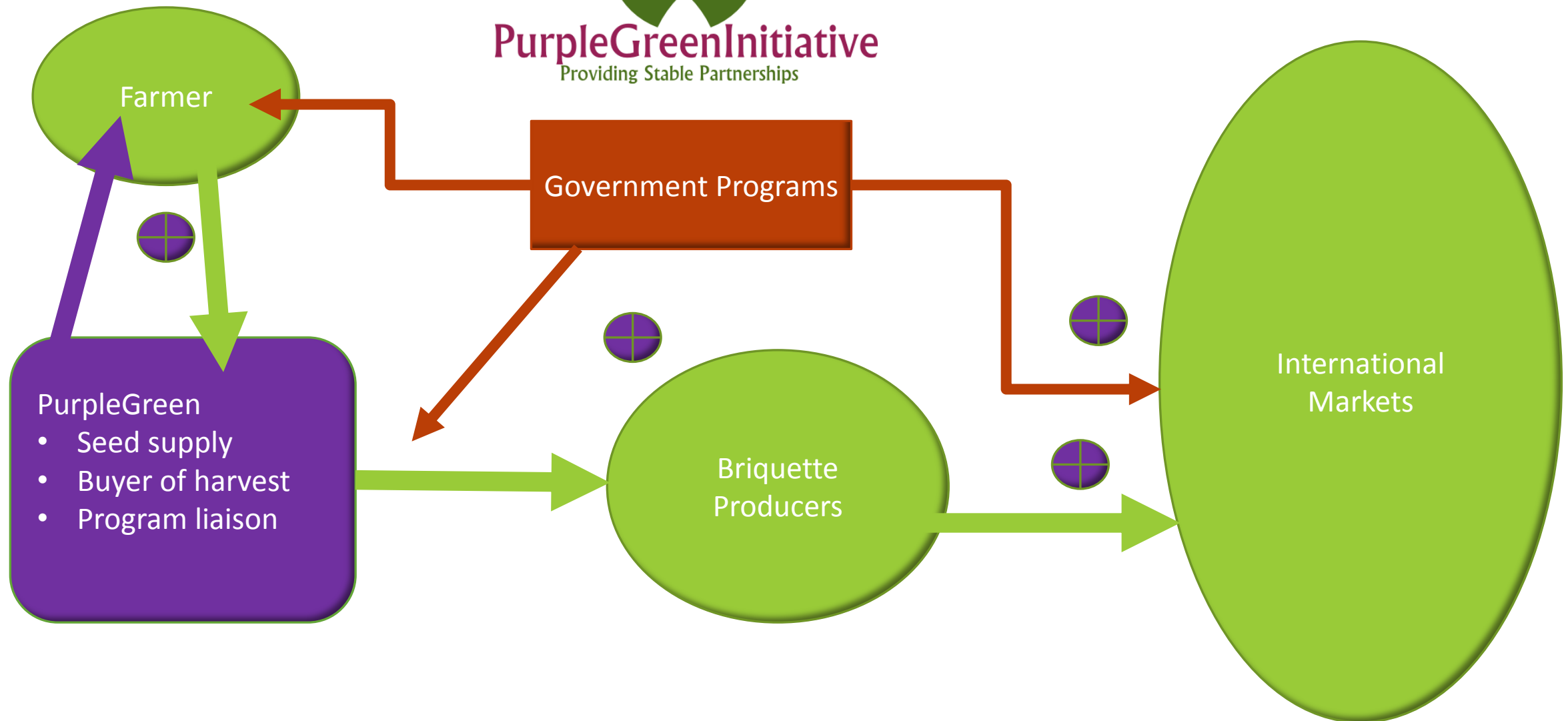
Biomass Processing

- Logistics:
- International Markets



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 Key relationship





Cardoon - Characteristics

A perennial species that sprouts in autumn

Tap root, able to extract water and nutrients from very deep soil zones

Thrives in far poorer soils such as sandy loam

Sown once and harvested every year for up to 15 years

Fall drying period of about one month

Harvested using common equipment

Resistant to climate extremes

Grown in the same temperature and climate regions as wheat and corn

Contains medically active compounds cynarin and silymarin (used for treating liver diseases)

Oil seeds utilized for production of biodiesel



Cardoon – Advantages vs Switchgrass, Miscanthus & Tall Grass Prairies (TGP)

Lower crop establishment costs

Lower crop maintenance costs

Lower ash content

Higher Yield > 2x per acre vs TGP & Switchgrass

Higher BTU output (premium product with superior burning characteristics)

Highly desirable internationally

Lower processing costs

- No drying required ~12% moisture

- Natural lubricating properties which increases machine longevity & reduces maintenance costs



Current Initiatives

OMAFRA Research

Creating partnerships to plant 3,000 acres

Investigation of Canadian Based Processing equipment and testing of mobile versus static processing equipment

Best practices at processor facility

Burn testing and documentation of Canadian Production

Interest internationally for our product

Interest nationally for premium briquettes

OMAFRA Research

Development of Cardoon as a feedstock for the production of high heat (btu) biofuel briquettes

Agronomic production information

- Time and method of planting
- Optimum plant density
- Fertility requirement
- Harvest options

Crop production (Overall Yields)

Herbicide efficacy and tolerance studies to help with future product registrations



Value Chain

Feed Stock Supplier to Processing Facility (Conventional)

OR

Partnership Driven Entity

Economics of Cardoon – Feed Stock Supplier

	<i>Yr -1</i>	<i>Yr-2</i>	<i>Yr-3</i>	<i>Yr-4</i>	<i>Yr-5</i>	<i>Yr-6</i>	<i>Yr-7</i>	<i>Yr-8</i>	<i>Yr-9</i>	<i>Yr-10</i>
Yield (tonne/acre)	0	8	10	10	10	10	10	10	10	10
Price (\$/tonne)	75	75	75	75	75	75	75	75	75	75
Seeds	420	0	0	0	0	0	0	0	0	0
Variable Costs	710	204	256	261	266	272	277	283	288	294
Fixed Costs	176	179	181	184	187	190	192	195	198	201
Gross Margin (Revenue – Variable)	-710	396	494	489	484	478	473	467	462	456
Net Margin (Gross – Fixed)	-886	217	313	305	297	289	280	272	263	255

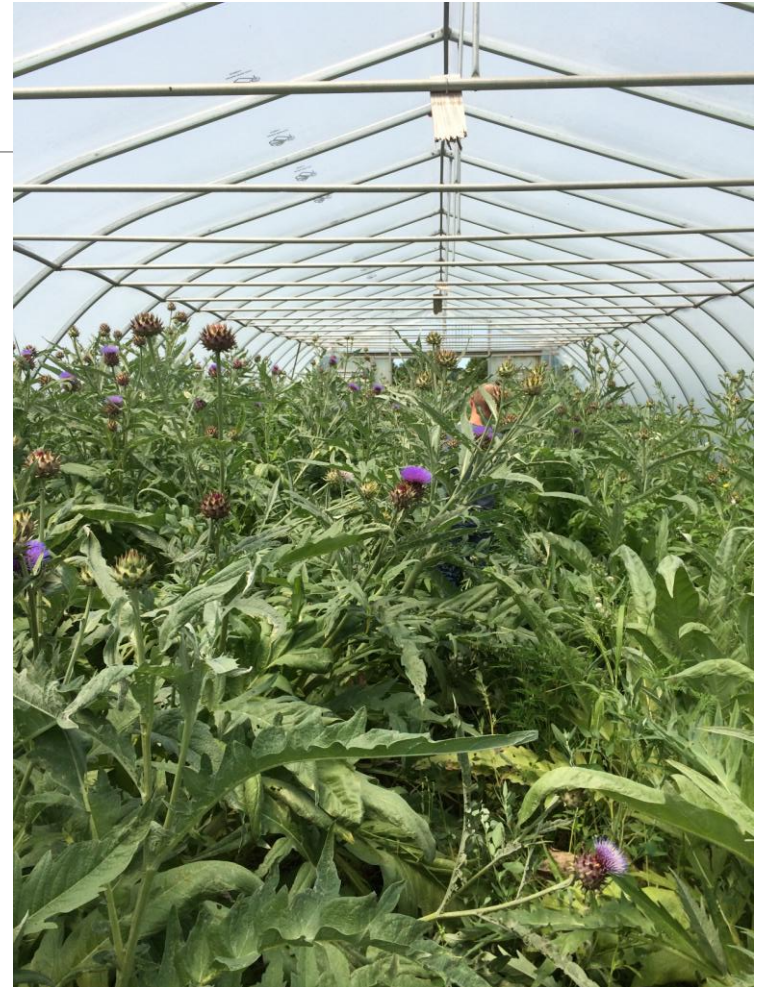
Economics of Cardoon - Partnership

	Yr -1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10
Yield (tonne/acre)	0	8	10	10	10	10	10	10	10	10
Price (\$/tonne)	220	220	220	220	220	220	220	220	220	220
Seeds	420	0	0	0	0	0	0	0	0	0
Variable Costs	710	204	256	261	266	272	277	283	288	294
Fixed Costs	176	179	181	184	187	190	192	195	198	201
Gross Margin (Revenue – Variable)	-710	1556	1944	1939	1934	1928	1923	1917	1912	1906
Net Margin (Gross – Fixed)	-886	1377	1763	1755	1747	1739	1730	1722	1713	1705
Transportation \$20/tonne (200km)	0	160	200	200	200	200	200	200	200	200
Processing (\$23/tonne)	0	184	230	230	230	230	230	230	230	230
Net (After Processing)	-886	1033	1333	1325	1317	1309	1300	1292	1283	1275

Economic Model

<i>Variable Cost Items (\$/acre)</i>			<i>Fixed Cost Items (\$/acre)</i>	
Seed	420		Land Cost	150
Fertilizer & Herbicides	85		Interest on Term Loan	19
Crop Insurance	15		Other Fixed Costs	7
Custom Work (seeding, harvesting, bailing)	100			
Fuel Lubricants	16			
Equipment Repair & Maintenance	15			
Labour	25			
Interest on Operating Capital	30			
Other	4			





Contact:
George Mihas. B.Sc.
President
PurpleGreen Innovations Inc.
george@p-gi.com

