

Toward diffusing “Cool Vegetables” – reconstructing rural socio-economic systems in Japan based on an eco-branding strategy with biochar cultivated vegetables

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Introduction

Reducing GHG on a global scale is needed and carbon sequestration with biochar has the potential to continuously sequester carbon if it is part of a sustainable, regional socio-economic system. Of particular importance is the redevelopment of agriculture to incorporate biochar, especially marginalized rural areas. Our project focuses on applying biochar to agricultural land and proposes a social scheme based on an eco-branding strategy with biochar-cultivated vegetables named “Cool Vegetables” in a rural area of Japan (Kameoka City, Kyoto Prefecture).

The “Carbon Minus Project” (Figure 1) was launched by a partnership between the Kameoka City Government, Ritsumeikan University, and a local farming cooperative in 2008.

The socio-economic system proposed in this social scheme can be sustainable and feasible when local communities have the capacity to cover biochar production and application costs. The scheme includes a system to trade emission-offset credits, but the returns from trading are expected to be unable to cover whole these costs. Therefore, eco-branding of biochar-cultivated vegetables supplements income is expected to complete this scheme.

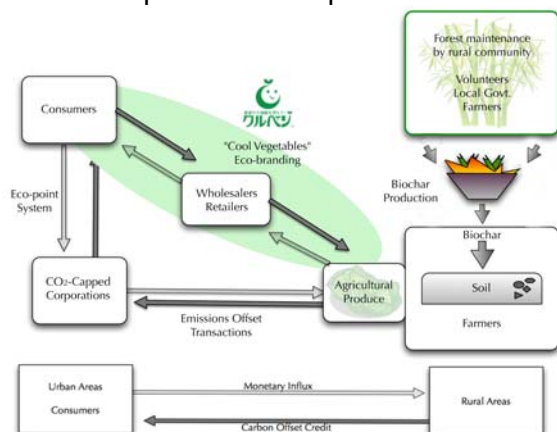


Figure 1. “Carbon Minus Project” Scheme

However, little is known as to how “Cool Vegetables” branded products will be accepted by the public. This paper reports the results from a marketing pre-survey conducted to gauge the public response to the “Cool Vegetables” brand.

Results and Discussion

(1) Outlining the experimental sale of “Cool Vegetables” (CV) and the marketing pre-survey

The conditions of the experimental sale of “Cool Vegetables” as an eco-friendly agriculture brand are summarized in Tables 1, 2, and 3. “Cool” cabbages were sold to a supermarket chain, processed into deli salads, marked with a “Cool Vegetables” brand sticker, and sold to consumers.

Table 1. Cultivation details

Site	0.2 ha; Hozu Town, Kameoka City
Period	Aug. 2009–Jan. 2010
Agricultural product	Cabbages
Sequestered carbon by Biochar	1.1t/10a
Charged material into agricultural field	Mix of compost (Cow manure, rice husks) and biochar
Biochar material	Bamboo and food residue
Biochar carbon content	About 80%

Table 2. Sale details

Number of sites	69 outlets
Sales period	Jan.15, 2010–Jan.31, 2010
Promotion at the store	Self-talker, price cards with logo and video display

Table 3. Survey details

Allocated number	750
collected number	78
Rate of collection	10.4 %
Question items	<p>Q1. When did you first learn about CV?</p> <p>Q2. Why did you purchase CV?</p> <p>Q3. What environmental issues are you interested in?</p> <p>Q4. What are you doing to prevent global warming?</p> <p>Q5. How open are you to the idea of paying for products that mitigate climate change?</p>

(2) Results of the marketing pre-survey

1) Consumer attitudes and price

Half of the respondents answered that they would purchase global warming preventing "Cool Vegetables" if they were priced equally with other agricultural products. About 15 % of the respondents answered that they would purchase "Cool Vegetables" even if they were sold at a premium (Table 4).

Table 4. Consumer motivation for purchasing "CV"

Motivation of purchasing "Cool Vegetables"	Number of times	%
Purchase if this prevents global warming and leads to saving	29	38.2
Purchase if this prevents global warming and the same price	36	47.4
Purchase if this is at a higher price but prevents global warming	11	14.5
Total	76	100.0

2) Consumers' environmental consciousness level and reason for purchase

Consumers' general level of environmental consciousness was assessed and compared against the reasons for purchasing "Cool Vegetables" (Table 5). Environmentally conscious consumers purchased "CV" for such reasons.

Table 5. Relationship between reason of purchasing and environmental conscious levels

			Reasons of purchasing "Cool Vegetables"					Total
			Wish product	Looked tasty	New product	Looked eco-friendly	Contribution to preventing GW	
Environmental conscious levels	1	Num	1	1	1	0	0	3
		%	33.3%	33.3%	33.3%	0%	0%	100%
	2	Num	0	3	0	0	0	3
		%	0%	100%	0%	0%	0%	100%
	3	Num	0	6	1	0	0	7
		%	0%	85.7%	14.3%	0%	0%	100%
	4	Num	1	6	0	4	0	11
		%	9.1%	54.5%	0%	36.4%	0%	100%
	5	Num	1	30	1	4	7	43
		%	2.3%	69.8%	2.3%	9.3%	16.3%	100%
Total		Num	3	46	3	8	7	67
		%	4.5	68.7	4.5	11.9	10.4	100.0

3) Positive response and consumers with children

Of those consumers willing to pay a premium for "Cool Vegetables," 31% had children (Table 6). The ratio of the respondents who answered that they would purchase "Cool Vegetables" if it leads to savings exceeded 40% of the whole sample.

Table 6. Positive response with or without a child

		Positive attitude of purchasing "Cool Vegetables"			Total
		Purchase if this prevents global warming and leads to saving	Purchase if this prevents global warming and the same price	Purchase if this is at a higher price but prevents global warming	
With or without a child	without	NUM 26	22	6	54
		% 48.1%	40.7%	11.1%	100.0%
	with	NUM 3	8	5	16
		% 18.8%	50.0%	31.3%	100.0%
Total		NUM 29	30	11	70
		% 41.4%	42.9%	15.7%	100.0%

4) Eco-brand imagery and eco-consumers

On encountering the "Cool Vegetables" eco-brand, what kinds of images are conjured in environmentally conscious consumers' minds? In examining the constituents of their eco-brand imagery, the ratio of responses for "river or marine conservation," "chemical-free vegetables," and "additive-free food" were high, as shown in Table 7.

Table 7. Constituents of eco-brand imagery of eco-consumers

	Constituent of the eco-brand image	Interest to global warming	Interest to eco-friendliness	n
River or marine conservation	26.7	100.0%	26.7%	n=10
Chemical-free vegetables	23.9	75.6%	31.6%	n=22
Additive-free food	19.9	68.6%	29.0%	n=24
Energy saving	18.3	81.1%	22.6%	n=22
Organic vegetables	16.7	61.1%	27.3%	n=23
Domestic food	14.0	54.3%	25.8%	n=21
Local production for local consumption	13.4	58.1%	23.1%	n=19

Conclusions

The results of this marketing pre-survey indicate that "Cool Vegetables" brings additional value to produce and may be a viable eco-brand. Coop Kobe, where this survey was conducted, sells many environmentally-friendly products and attracts consumers with a high environmental consciousness. This may explain why respondents might have showed higher consciousness toward "Cool Vegetables" than "common" consumers. Further inquiry is needed at stores frequented by typical consumers to verify this conclusion.

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