

PROPOSAL FOR THE CAMPESINOS OF THE VIÑALES VALLEY IN CUBA TO ENHANCE TRADITIONAL ORGANIC FARMING PRODUCTION SYSTEMS

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Viñales Valley, Cuba – A UNESCO World Heritage Site

1. THE CONTEXT

The Viñales Valley in the western region of Cuba is a UNESCO World Heritage Site made famous by its picturesque mogotes limestone formations. Nestled in between the mogotes, lies the town of Viñales characterised by its vernacular architecture and surrounded by traditional agricultural practices. The Viñales Valley is a very popular tourist destination that values the timeless traditions of the area, its inhabitants and rich culture. More information can be found at <http://whc.unesco.org/en/list/840>.





The thrust of this proposal lies in the opportunity to enhance the traditional agricultural practices of Campesinos in the Viñales Valley by capitalising on the growing ethical movements that support the production of organic food, fair trade and cultural tourism, and also, to establish low external input sustainable agricultural practices (LEISA) as a means to entrench sustainability whilst simultaneously creating economic benefits to the Campesinos.

This opportunity was recognised when considering the stark economic hardships of the Campesinos in context of a decreasing fertility of their agricultural fields and associated general decline in production. The latent potential of the Campesinos in the Viñales Valley lies in the restoration and maintenance of traditional agricultural practices that will derive economic benefits for not only the Campesinos, but also the local economy in general.



2. THE PROBLEM

THE FARMER, THE PLOUGH & THE DEVIL

Land in the Viñales Valley is losing its productivity due to years of excessive ploughing and associated loss of soil fertility. The declining agricultural production detrimentally affects the income of the Campesinos. Furthermore, the declining economic opportunities from traditional agriculture is not attracting the youth to embark upon a livelihood in agriculture, who prefer the more lucrative tourism industry. Traditional agriculture as a whole is therefore in decline in the Viñales Valley, despite its potential cultural and economic value.

However, the above problem for declining traditional agricultural production can be reversed by the adoption of LEISA practices which are rooted in Permaculture design principles. More specifically, Permaculture embraces organic farming systems, the establishment of keyline rainwater harvesting, limited till, raised ridges, natural soil conditioning, alley cropping and agro-forestry, all of which will mitigate against the declining traditional agricultural economy.



3. THE SOLUTION

HOMESTEAD GARDENS



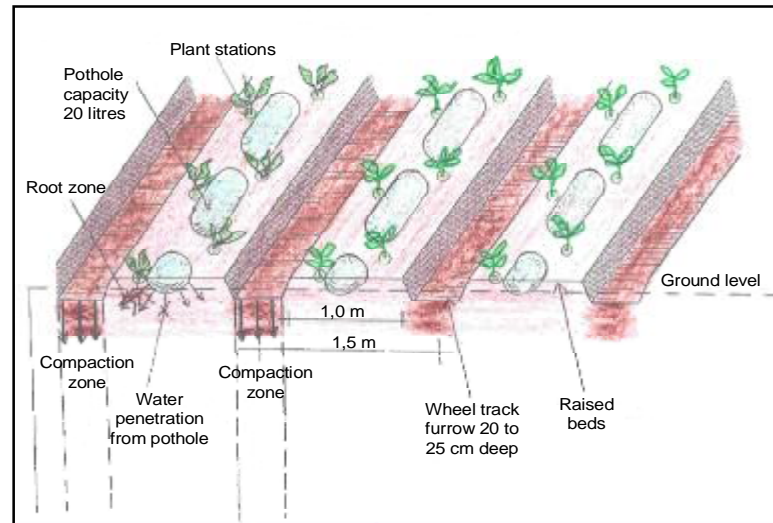
Many community based agricultural schemes have failed because beneficiary farmers do not have adequate food security and hence the neglect of such schemes upon hard times. For this reason, it is vital to ensure that beneficiary farmers establish homestead gardens that satisfies food security whilst the agricultural scheme can be used for income generation. A flourishing homestead garden is illustrated above which shows the application of many sustainable agricultural practices, such as, rainwater harvesting, plant guilds and succession. The acid test for beneficiary farmers in any agricultural scheme is the state of their homestead garden. In other words, a flourishing homestead garden demonstrates that beneficiaries have applied what they have learnt close to home and thus will generally not neglect their contribution in the community based agricultural scheme when their time is required.

ORGANIC FARMING SYSTEMS

Organic Farming is an approach whereby the farmer cares for the environment and for people; the people who work on the farm; the people who live in the area; and, the people who buy the food and other products produced on the farm. In simple terms, there are four major principles based on these values of responsible care, namely;-

- Feed the soil, not the plant.
- Find the right plants and animals for your farm.
- Do not use chemical fertilizers, poisons and genetically engineered seeds.
- Ensure that healthy products reach consumers.

Quality Management (QM) depends on a responsible farmer understanding these principles, assessing the risks of non-compliance, and developing an internal standard which manages these risks. This applies to an individual farmer or to a group of farmers.



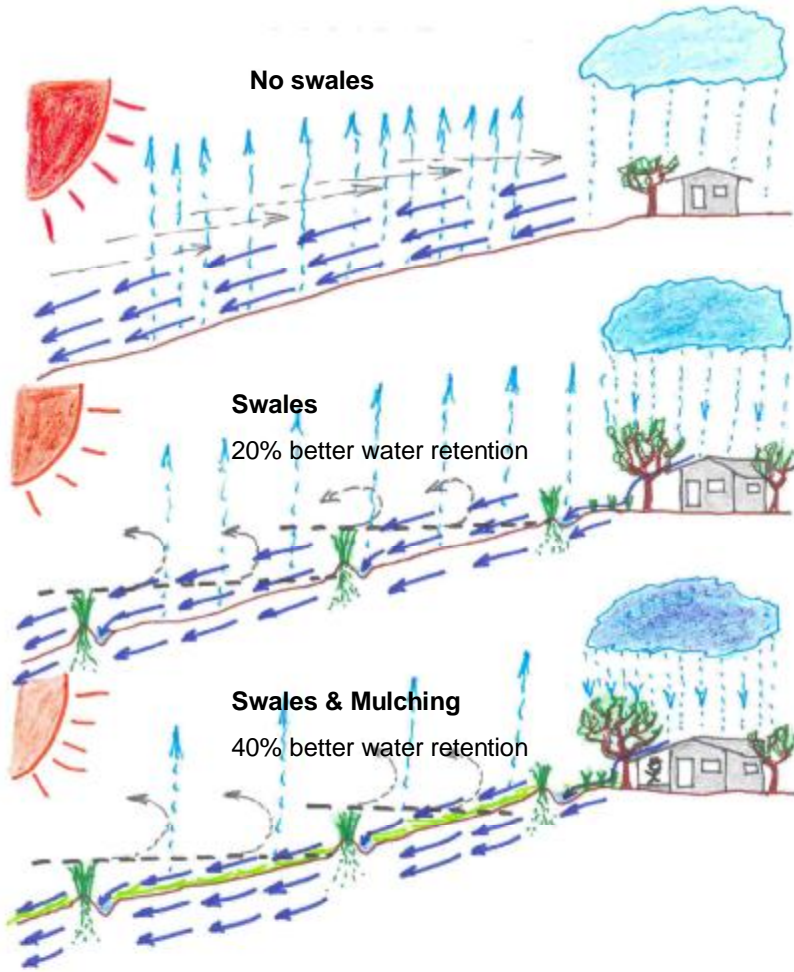
NO-TILL OR LIMITED TILL FARMING

No-till or limited till farming has been gaining popularity during the past two decades, particularly in the USA, Australia and some parts of Europe. However, its advantages have not yet been widely acknowledged in South Africa. No-till or limited till farming essentially minimizes the disturbance to soils in order to retain their healthy natural state. The alternative, which is conventional ploughing, basically compacts the soil and destroys the vital humus content of soils, thus rendering the soil useless unless it is heavily fertilized. Furthermore, no-till or limited till farming reduces the use of heavy agricultural machinery and consequential operating costs.

The crux of no-till or limited till farming lies in the use of a ridging system in association with keyline rainwater harvesting systems. More specifically, the ridging system falls in between keyline rainwater swales which are designed with slight slopes to promote the absorption of rainwater and irrigation water into the soils. The figure on the left illustrates a ridging system which shows a ridge of about a metre width that can be established by a small tractor, and/or, hand hoeing and an implement called a "ridge-bed-maker", which essentially breaks up the soil before shaping the ridge via discs and a crumbler. The crumbler can also be modified to allow attachments that make uniform seedling holes and a water basin, or pothole, on top of the ridge. The ridge-bed-maker can also be used to plant seedlings and feed the soil with appropriate organic fertilizers.

The benefits of the pothole in the middle of the ridge at about half a meter centres enhances the ability to catch rainwater and provide water right where the plants need it. A hectare of this ridging system contains about 6,7 kms of ridging at 1,5m centres and about 13,400 small basins that can each capture approximately 20 litres of water. This amounts to 268 Klitres per hectare of additional water storage capacity and effectively halves the amount of bulk irrigation storage capacity required.

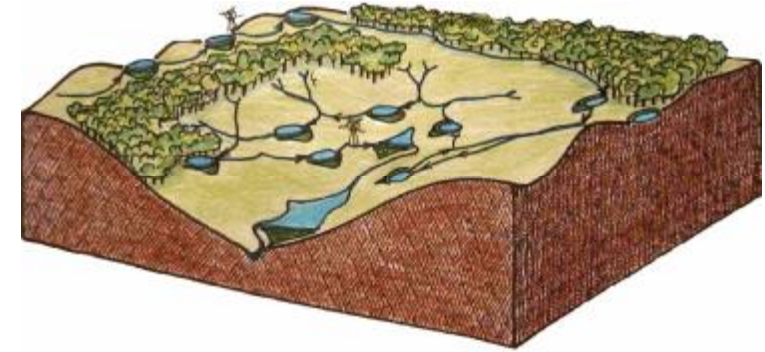
KEYLINE RAINWATER HARVESTING



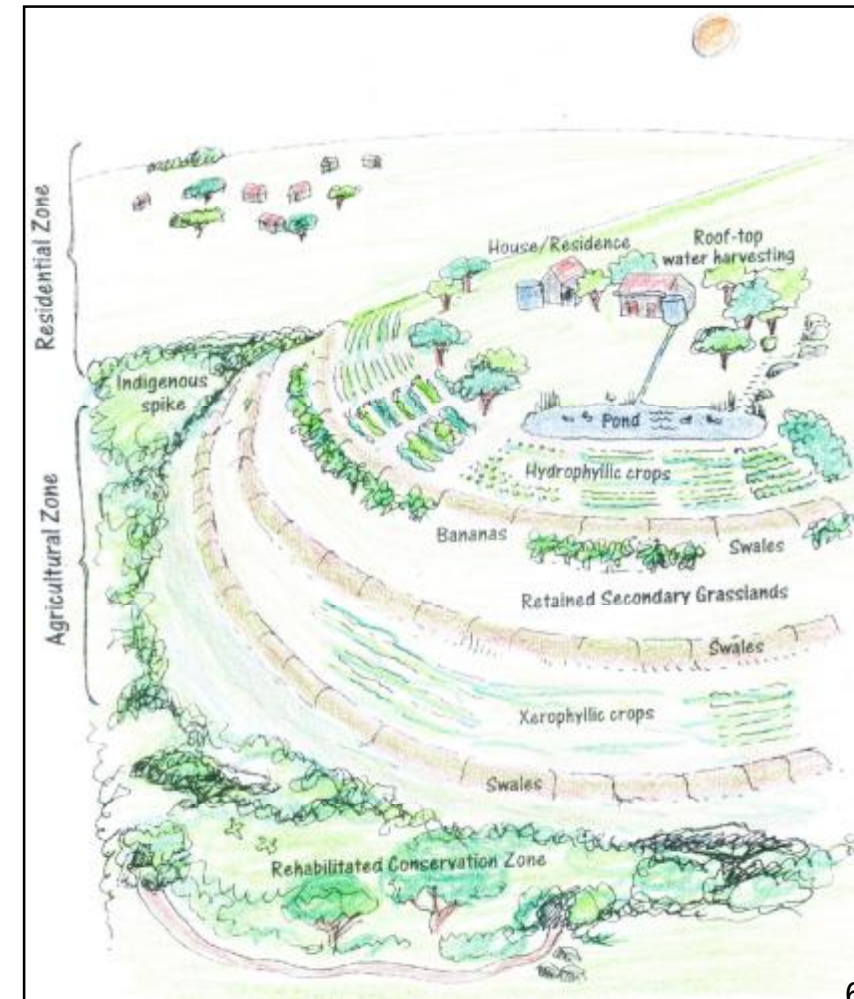
Progressive benefits from Swales	No Swales	Swales	Swales & Mulching
Rainwater harvesting	None	Good	Very good
Soil erosion	Bad	Very little	Contained
Water table	Low	Good	Very good
Moisture retention	Low	Good	Very good
Crop yields	Low	Good	Very good

All agricultural projects rely on direct and/or indirect rainfall of sorts to produce crops. Direct rainfall benefits what is commonly known as run-off or conservation agriculture, whilst indirect rainfall is used in irrigation schemes that make use of any combination of boreholes, canals, weirs, dams and pumping systems. The former generally entails low infrastructure irrigation systems whilst the latter cannot be undertaken without a heavy investment in infrastructure.

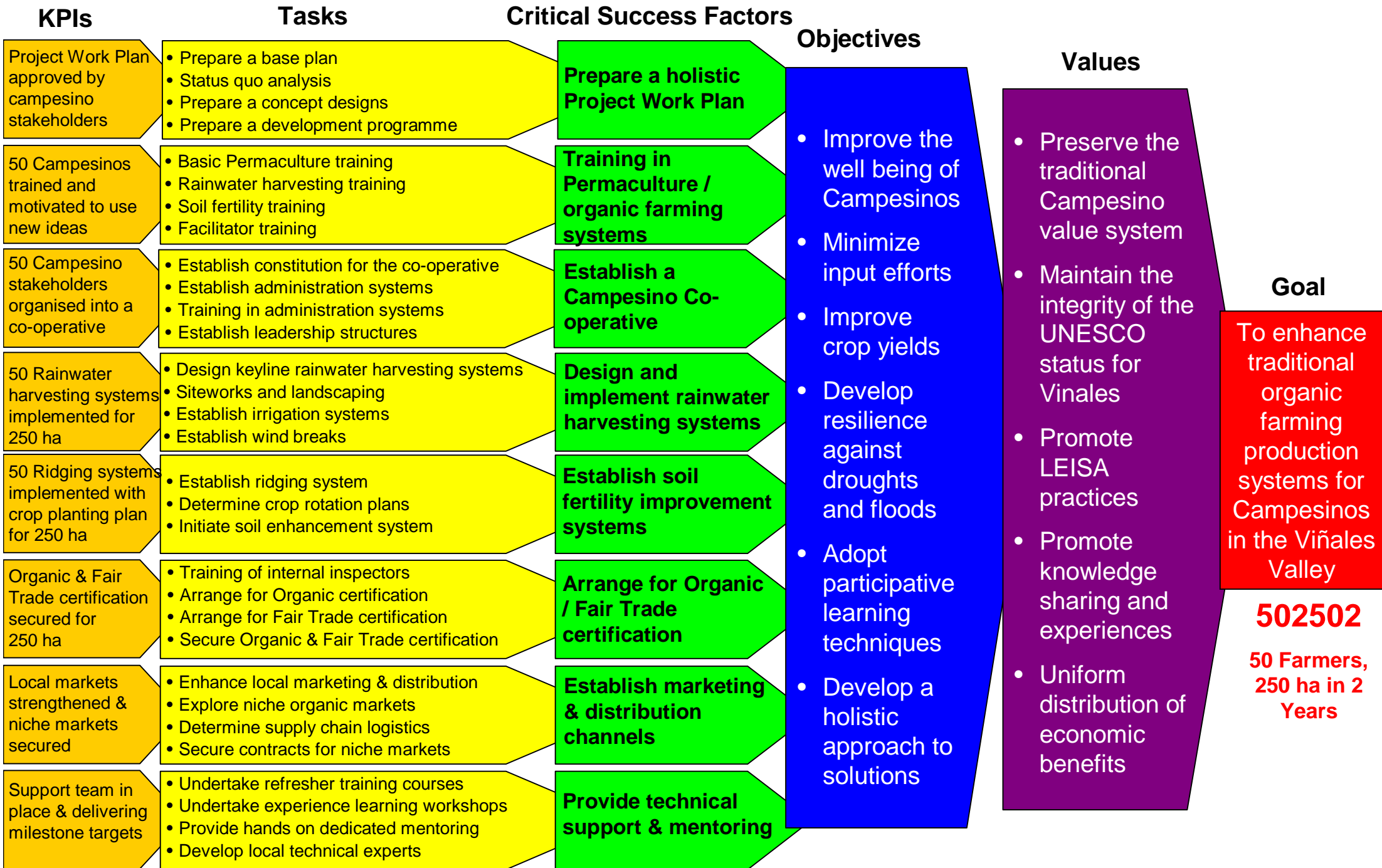
An important criteria in assessing the sustainability of irrigation schemes is their effect on local aquifers, the consequential effects to natural riverine ecosystems, and, the cost of infrastructure maintenance. Whilst run-off / conservation agriculture generally replenishes aquifers, the same cannot generally be said about boreholes, canals, weirs, dams and pumping systems. For this reason, run-off / conservation agriculture is an appropriate entry level for developing small grower groups, especially since keyline rainwater harvesting systems rely on low cost but effective infrastructure and are relatively cheaper to maintain. Furthermore, keyline rainwater harvesting systems also promote best practices for landcare management and replenish aquifers. An example of keyline catchment dams is illustrated in the top right figure whilst the benefits of swales for rainwater harvesting are shown in the figures to the left and right.



Keyline dams & rainwater harvesting landscape



4. THE STRATEGY



5. THE SCOPE OF WORKS

#	Tasks	Scope of Works	Key Performance Indicators
1	Prepare a holistic Project Work Plan		
1.1	Prepare a base plan	Orthophoto base map with overlays of agricultural fields, water courses, farm cadastra and existing	Project Work Plan approved by campesino stakeholders.
1.2	Status quo analysis	Analyse weather factors (rainfall, wind, etc.), soil samples, irrigation resources, agricultural markets, agricultural resources and distribution networks.	
1.3	Prepare a concept designs	Concept plans for designated agricultural areas that outline keyline irrigation systems, wind breaks, soil enhancement remedies, and, resources required to implement, operate and maintain.	
1.4	Prepare a development programme	Consolidation of concept plans plus agricultural resources and market logistics into a holistic and detailed development programme with budget, cash flow and key performance indicators.	
2	Training in Permaculture / organic farming systems		
2.1	Basic Permaculture training	Basic Permaculture training course for 50 Campesinos.	50 Campesinos trained and motivated to use new ideas.
2.2	Rainwater harvesting training	Rainwater harvesting training course for 50 Campesinos incorporating practical on site design for each farm.	
2.3	Soil fertility training	Soil fertility training course for 50 Campesinos with practical implementation plans for each farm.	
2.4	Permaculture Facilitator training	Facilitator training for 10 leading Campesinos who will extend this knowledge base to other Campesinos.	
3	Establish a Campesino Co-operative		
3.1	Establish constitution for the co-operative	Engage all Campesinos and organise into a co-operative with an accepted constitution.	50 Campesino stakeholders organised into a co-operative.
3.2	Establish administration systems	Establish administration systems to manage and govern the co-operative's resources, marketing, finances	
3.3	Training in administration systems	Train Campesinos and administrative support staff to manage resources, marketing, finances and	
3.4	Establish leadership structures	Establish leadership structures amongst the Campesino stakeholders that will manage the Co-operative and	
4	Design and implement rainwater harvesting systems		
4.1	Design keyline rainwater harvesting systems	Detailed on site design of keyline rainwater harvesting systems, including, small catchment dams, berms,	50 Rainwater harvesting systems implemented for 250 ha.
4.2	Siteworks and landscaping	Implement siteworks and landscaping for keyline rainwater harvesting systems.	
4.3	Establish irrigation systems	Establish irrigation systems including pumps, drag lines & valves.	
4.4	Establish wind breaks	Establish wind breaks from indigenous trees and plants, including vetiver grass.	
5	Establish soil fertility improvement systems		
5.1	Establish ridging system	Establish ridging system in between rainwater harvesting swales.	50 Ridging systems implemented with crop planting plan for 250 ha
5.2	Initial organic seed stock	Determine crop rotation plans to ensure natural soil fertility through complementary and companion planting	
5.3	Initiate soil enhancement system	Initiate soil enhancement system for newly ridged areas.	
6	Arrange for Organic / Fair Trade certification		
6.1	Training of internal inspectors	Training of internal inspectors to oversee the operation of organic control and administration systems.	Organic & Fair Trade certification secured for 250 ha.
6.2	Arrange for Organic certification	Resource an independent Organic certifier to visit the project area and arrange for organic certification.	
6.3	Arrange for Fair Trade certification	Make application to and arrange for Fair Trade certification.	
6.4	Secure Organic & Fair Trade certification	Attend to compliance issues to secure Organic and Fair Trade certification status.	
7	Establish marketing & distribution channels		
7.1	Enhance local marketing & distribution	Implement improvements for the distribution of produce to existing local markets.	Local markets strengthened & niche markets secured
7.2	Explore niche organic markets	Scan organic markets and assess feasibility for fulfilling supply contracts.	
7.3	Determine supply chain logistics	Determine clear supply chain logistics for the transport, shipment, landing and insurance of organic supply	
7.4	Secure contracts for niche markets	Secure organic supply contracts including contractual matters and planning thereto.	
8	Provide technical support & mentoring		
8.1	Undertake refresher training courses	Undertake at least 3 refresher training courses in Permaculture, rainwater harvesting, soil fertility and farm	Support team in place & delivering milestone targets
8.2	Undertake experience learning workshops	Undertake bi-monthly experience learning workshops amongst Campesinos.	
8.3	Provide hands on dedicated mentoring	Continual visitations to Campesinos to provide support and mentoring.	
8.4	Develop local technical experts	Recognize and develop local Campesino experts for further education and training.	

6. THE BUDGET

#	Tasks	Machinery & equipment				Plants, seeds & soil material				Professional Skills				Disbursements	Total
		Unit	Quantity	Rate	Budget	Unit	Quantity	Rate	Budget	Unit	Quantity	Rate	Budget	Budget	Budget
1	Prepare a holistic Project Work Plan				\$0				\$0				\$62,500	\$12,500	\$75,000
1.1	Prepare a base plan			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$6,250	\$18,750
1.2	Status quo analysis			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$2,500	\$15,000
1.3	Prepare a concept designs			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$2,500	\$27,500
1.4	Prepare a development programme			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$1,250	\$13,750
2	Training in Permaculture / organic farming systems				\$0				\$0				\$87,500	\$26,250	\$113,750
2.1	Basic Permaculture training			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$7,500	\$32,500
2.2	Rainwater harvesting training			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$7,500	\$32,500
2.3	Soil fertility training			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$3,750	\$16,250
2.4	PermacultureFacilitator training			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$7,500	\$32,500
3	Establish a Campesino Co-operative				\$6,250				\$0				\$26,250	\$3,750	\$36,250
3.1	Establish constitution for the co-operative			\$0	\$0			\$0	\$0	days	3	\$1,250	\$3,750	\$0	\$3,750
3.2	Establish administration systems	sum	1	\$6,250	\$6,250			\$0	\$0	days	5	\$1,250	\$6,250	\$0	\$12,500
3.3	Training in administration systems			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$3,750	\$16,250
3.4	Establish leadership structures			\$0	\$0			\$0	\$0	days	3	\$1,250	\$3,750	\$0	\$3,750
4	Design and implement rainwater harvesting systems				\$2,093,750				\$187,500				\$225,000	\$37,500	\$2,543,750
4.1	Design keyline rainwater harvesting systems			\$0	\$0			\$0	\$0	days	60	\$1,250	\$75,000	\$12,500	\$87,500
4.2	Siteworks and landscaping	ha	250	\$5,000	\$1,250,000	ha	250	\$500	\$125,000	days	60	\$1,250	\$75,000	\$12,500	\$1,462,500
4.3	Establish irrigation systems	ha	250	\$3,125	\$781,250			\$0	\$0	days	40	\$1,250	\$50,000	\$6,250	\$837,500
4.4	Establish wind breaks	ha	250	\$250	\$62,500	ha	250	\$250	\$62,500	days	20	\$1,250	\$25,000	\$6,250	\$156,250
5	Establish soil fertility improvement systems				\$156,250				\$312,500				\$56,250	\$15,000	\$540,000
5.1	Establish ridging system	ha	250	\$625	\$156,250			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$187,500
5.2	Initial organic seed stock			\$0	\$0	ha	250	\$625	\$156,250	days	5	\$1,250	\$6,250	\$2,500	\$165,000
5.3	Initiate soil enhancement system			\$0	\$0	ha	250	\$625	\$156,250	days	20	\$1,250	\$25,000	\$6,250	\$187,500
6	Arrange for Organic / Fair Trade certification				\$0				\$0				\$100,000	\$18,750	\$118,750
6.1	Training of internal inspectors			\$0	\$0			\$0	\$0	days	10	\$1,250	\$12,500	\$3,750	\$16,250
6.2	Arrange for Organic certification			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$31,250
6.3	Arrange for Fair Trade certification			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$31,250
6.4	Secure Organic & Fair Trade certification			\$0	\$0			\$0	\$0	days	30	\$1,250	\$37,500	\$2,500	\$40,000
7	Establish marketing & distribution channels				\$62,500				\$0				\$100,000	\$25,000	\$187,500
7.1	Enhance local marketing & distribution	sum	1	\$62,500	\$62,500			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$93,750
7.2	Explore niche organic markets			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$31,250
7.3	Determine supply chain logistics			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$31,250
7.4	Secure contracts for niche markets			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$6,250	\$31,250
8	Provide technical support & mentoring				\$0				\$0				\$568,750	\$120,625	\$689,375
8.1	Undertake refresher training courses			\$0	\$0			\$0	\$0	days	25	\$1,250	\$31,250	\$9,375	\$40,625
8.2	Undertake experience learning workshops			\$0	\$0			\$0	\$0	days	20	\$1,250	\$25,000	\$15,000	\$40,000
8.3	Provide hands on dedicated mentoring			\$0	\$0			\$0	\$0	days	360	\$1,250	\$450,000	\$90,000	\$540,000
8.4	Develop local technical experts			\$0	\$0			\$0	\$0	days	50	\$1,250	\$62,500	\$6,250	\$68,750
	Totals				\$2,318,750				\$500,000				\$1,226,250	\$259,375	\$4,304,375

Excluding taxes

#	Tasks	Machinery & equipment	Plants, seeds & soil material	Professional Skills	Disbursements	Total
1	Prepare a holistic Project Work Plan	\$0	\$0	\$62,500	\$12,500	\$75,000
2	Training in Permaculture / organic farming systems	\$0	\$0	\$87,500	\$26,250	\$113,750
3	Establish a Campesino Co-operative	\$6,250	\$0	\$26,250	\$3,750	\$36,250
4	Design and implement rainwater harvesting systems	\$2,093,750	\$187,500	\$225,000	\$37,500	\$2,543,750
5	Establish soil fertility improvement systems	\$156,250	\$312,500	\$56,250	\$15,000	\$540,000
6	Arrange for Organic / Fair Trade certification	\$0	\$0	\$100,000	\$18,750	\$118,750
7	Establish marketing & distribution channels	\$62,500	\$0	\$100,000	\$25,000	\$187,500
8	Provide technical support & mentoring	\$0	\$0	\$568,750	\$120,625	\$689,375
	Totals	\$2,318,750	\$500,000	\$1,226,250	\$259,375	\$4,304,375
	Total %s	53.9%	11.6%	28.5%	6.0%	100.0%
	Estimated extent of agricultural fields (ha)	\$9,275	\$2,000	\$4,905	\$1,038	\$17,218
	Estimated number of Campesinos with access to avg 5 ha	\$46,375	\$10,000	\$24,525	\$5,188	\$86,088

7. THE PROGRAMME

#	Tasks	Year 1												Year 2											
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
1	Prepare a holistic Project Work Plan																								
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8. THE WAY FORWARD

1. This proposal basically scopes the extent of this project by making provision for at least 50 Campesinos with an average farm size of 5 ha, making a total of some 250 ha in total.
2. The scope of works of this project will need to be verified through the preparation of a Work Plan at the outset of the project that will need to be endorsed by the beneficiary group of Campesinos.
3. The time frame for this project makes allowance for a two year development programme. However, the Work Plan will essentially outline a detailed implementation programme with resource allocations and refined budget estimates in keeping with the initial budget estimate.
4. The initial budget estimate requires CUC\$ 4,3m to implement this project. This translates to an initial estimate of CUC\$ 17,218 per ha or CUC\$ 86,088 per Campesino. CUC\$ = Cuban Convertible unit Currency \$.
5. The budget assumes that an international development agency be recruited to place two full time highly skilled and experienced agricultural practitioners, one being a hands on farmer / permaculturist, whilst the other an agricultural business expert.
6. The budget makes allowance for these two full time experts to be supported by additional periodic expertise, and, use of local machinery and resources to establish aspects of sustainable agricultural landscapes.
7. These two full time experts will need to work hand in hand with local Campesinos and also recruit local facilitators that can assist with logistical planning, advice and local knowledge.
8. This proposal may be used to solicit potential donor funding that is keen to preserve traditional cultural values rooted in sustainable development principles.



Campesino from the Viñales Valley



Viñales Valley heritage