The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Florencia Andrea Trama
Project title	Conservation of aquatic resources and biodiversity in rice fields and mangroves of Piura, Peru
RSG reference	5749-1
Reporting period	January 2011 to June 2012
Amount of grant	£6000
Your email address	ftrama@centroneotropical.org
Date of this report	June 2012

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Evaluate which chemicals farmers are using in rice			**X**	I carried out a total of 102 interviews (Annex I): 1. More than 66% of farmers do not use any special protection or clothes while apply the pesticides. Only 10 % use eventually boots and/or gloves. 30% use eventually mask or a piece of fabric on this face. 2. 41 % of farmers throw away the pesticide containers near the plots, 24 % bury them, 17% incinerate them, 14 % take them home, 5 % throw them away in the water channels or the desert. 3. I elaborated a list of products used by farmers (40 pesticides, 4 plant growing regulators, 6 fertilisers and 1 surfactant) and observed at the plots (Annex II). 4. Some of these pesticides are prohibited and/or are not registered for the Peruvian Agriculture Ministry.
Determine if the agrochemicals reach the mangrove ecosystem			**X**	Some of the pesticides were detected on the mangroves ecosystem. I am still analysing the consequences of it. Seven pesticides were found at the water samples (Annex III)
Evaluate how these chemicals are affecting water quality and macroinvertebrate composition		**X**		I am comparing the composition and structure of the macroinvertebrate communities in all sampling points. I have a list of macroinvertebrates for all points, with relative abundances (Annex IV).
To know what waterbirds are using the rice fields and how			**X**	Few bird species (14) were found using the rice fields at different stages. Some of these birds are feeding from invertebrates and can be affected by insecticides that are applied on the crop.

Creation of friendly information for farmers in order to awareness about the effects of pesticides on human and biological health.		X		I am still working on a pamphlet to give to the farmers.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The most difficult thing was reaching the farmers using local transportation, it took me longer time that I planned. I had to contract the guide and transportation for more time than I thought.

The other difficulty was to transport the samples to the capital in short time to ensure that the pesticides samples were not degraded. I have got very cheap air tickets in order to avoid 16 hours by bus.

3. Briefly describe the three most important outcomes of your project.

Outcome 1. I found differences between the invertebrate communities that inhabits the different sampling points with correspondence to different detections and concentration of pesticides at: P1. Water entrance (control), P2. Drainage point and P3. Channel ending at the mangroves.

P1 (control point) had more invertebrates species that were sensitive to pollution, than P2 (drainage point) and P3 (channel ending at the mangroves) with more species that where resistant to pollution. (Annex IV)

Additionally, a lower species richness and abundance of invertebrates were found at the drainage point and at the channel that ends in the mangroves. Pesticides were found in all points, but in different dates and concentrations. Additionally, a sample of water was taken at the end of the study at the mangroves.

Outcome 2. I evaluated physicochemical, nutrients and pesticides at the main sampling points and I could realizs that some of the pesticides are reaching the mangroves and possibly affecting local populations not only of macroinvertebrates but also of other inhabitant macro fauna in the ecosystem. Some of the pesticides are prohibited for the country and/or not registered by the Peruvian agriculture ministry. It is possible that some of the products used by farmers are being illegally imported from Ecuador and/or are persistent on the environment.

Outcome 3. I looked for information about the pesticides used in the area and to know these chemicals are being applied by farmers. This information is essential to produce friendly pamphlet to create awareness.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

I interviewed farmers while they were working at their plots, at several workshops I participated and in meetings organised by the local irrigation office. I also participated on a meeting organised by

Campo Limpio (a foundation created by pesticides companies) which teaches farmers about pesticide correct use and the proper washing of containers.

Some of the farmers started to go to the reunions because I informed them (while I was interviewing them) about the benefits of participating in meetings. Some of them now use boots when apply pesticides.

However, the bigger social benefit will be done when I give the farmers the pamphlet I am elaborating. They need to know the health consequences of how they are working and change attitudes and activities.

5. Are there any plans to continue this work?

I will definitely continue with my research in agrochemicals and macroinvertebrates. However, I am looking for funds to continue with this project in Piura. Additionally, I am thinking on identifying sensitive macroinvertebrates on the Amazon basin (Oxapampa district where I am currently living) in order to develop local indexes for water quality related to agriculture and deforestation.

6. How do you plan to share the results of your work with others?

Aside of the pamphlet I am developing to spread awareness I am working on two papers and my thesis document. A copy of my thesis will be given to all the local organisations involved in water management and rice cultivation inside the country as well as the relevant international organisations. I am working in two papers that will be published at both a national and an international journal.

7. Timescale: Over what period was the RSG used? How does this compare to the anticipated or actual length of the project?

Most of the requested amount was used at the field and water sample analysis stages (5 months). The field and water samples analysis stages' length were the same as I planned. Later I started with the macroinvertebrate samples analysis. This period was longer than I planned because of the size of the samples. For this reason I am still working on the pamphlet. The total length of the analysis took me approximately 18 months.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Local guide	162	216	+54	I need him to come with me more times to finish the interviews
Lab equipment and analysis	5521	5520	-1	The cost of the analysis did not change, I asked for a special price as a student.
Office costs	114	38	-46	I am still working on the pamphlet.

Housing, food and transportation	203	250	47	I needed to be more time on the field due to the interviews
TOTAL	6000	**6024**	54	I used personal funds to cover the difference

9. Looking ahead, what do you feel are the important next steps?

From the environmental point of view, I believe that high quantities of pesticides are being used in the area, with minimal control/supervision/technical assistance. Also a prohibited pesticide was detected on water and some of them reach the natural ecosystem (mangroves) where people usually fish. It is necessary to control the application of pesticides in order to protect the ecosystems.

From the health/social point of view it is necessary to invest time/resources on the correct application of pesticides with adequate clothes and protection. Farmers need technical assistance. Most of them do not have help, they apply pesticides according to the advices of neighbours, and sometimes they can pay to an agronomic engineering for advices.

10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

I am including the logo con the pamphlet I am creating. I will include it on my thesis document, my dissertation and the papers I am writing.

11. Any other comments?

The farmers have requested several trainings:

Topic	**%**	**Topic**	**%**
Water management and salinity	4	Pesticides management	1
Pest management	10	Water management for irrigation	24
Rice commercialization	2	Other cultures management	11
Biologic Control	1	Soil analysis	2
Direct planting	3	Social Organization	3
Rice production management	4	Rice cultivation techniques	4
Technical Assistance	2	Management of rice culture	13
Fertilizers use	4	Market Price Management	10

Annex 1

Annex 2

List of products (pesticides and fertilizers) found at the plots or mentioned by the farmers

Commercial name	Type of product	Active Ingredient
Amina 6	Herbicide	2,4 d
Bala	Insecticide	Cartap
Balazo	Herbicide	Glyphosate
Baytroide	Insecticide	Cyfluthrin
Belmark	Insecticide	Fenvalerate
Beta-baytroide 125 sc	Insecticide	Beta-cyfluthrin
Buonarroz 60% ce	Herbicide	Butachlor
Bronco	Insecticide	Chlorpyrifos, alpha-cypermethrin
Carbodan 48 f	Insecticide	Carbofuran
Chem rice 5g	Herbicide	Butachlor
Cyperklin 25	Insecticide	Cypermethrin
Cipersol 25 ec	Insecticide	Cypermethrin
Cipermex super 10 ce	Insecticide	Alpha-cypermethrin
Terbutryn mr combi	Herbicide	Atrazina+triazina+terbutrina
Curathane	Fungicide	Mancozeb, cymoxanil
Decis 2.5 ec	Insecticide	Deltamethrin
Dorsan 48 ec	Insecticide	Chlorpyrifos
Ectran	Herbicide	Bispyribac sodium
Embate 480 sl	Herbicide	Glyphosate
Fastac	Insecticide	Alpha-cypermethrin
Folidol	Insecticide	Parathion-methyl
Fuego	Herbicide	Glyphosate
Furadan	Insecticide	Carbofuran
	Insecticide	Imidacloprid
Lannate	Insecticide	Methomyl
Larvin 375 f	Insecticide	Thiodicarb
Lorsban 2.5% ps	Insecticide	Chlorpyrifos
Machete	Herbicide	Butachlor
Pyrinex 25 cs	Insecticide	Chlorpyrifos
Protexin 500 fw	Fungicide	Carbendazim
Purarroz g	Herbicide	Butachlor, pyrazosulfuron-ethyl
Rarroza	Herbicide	Pyrazosulfuron ethyl + butachlor
Regent sc	Insecticide	Fipronil
Roundup	Herbicide	Glyphosate
Sanfosato	Herbicide	Glyphosate
Saturno 90	Herbicide	Benthiocarb
Sherpa	Insecticide	Cypermethrin
Silvacur combi 300 ec	Fungicide	Triadimenol, tebuconazole

Tamaron	Insecticide	Methamidophos
Tifon	Insecticide	Chlorpyrifos
Trigard 75 wp	Insect Development Regulator	Cyromazine
Agrostemin	Plant Growing Regulator	Nutrientes y aminoacidos
Cytex	Plant Growing Regulator	Citoquininas
Ergostin	Plant Growing Regulator	
Triggrr foliar	Plant Growing Regulator	Citoquininas
Baylofan	Leaf Fertilizer	N,P, Fe, Mn, Bo, Cu, Zn
	Fertilizer	Sulfato de amonio
Nitrofosca	Fertilizer	
Urea	Fertilizer	
Fertilizer		Cloruro de potasio
Promalina		6-benziladenina
Razormin	Fertilizer	NPK
Maxi-cover	Surfactant	Polyether-polymethylisiloxano

* Pesticides found at the water analysis and mentioned by farmers

Annex 3

Pesticides concentrations in water samples

August			September			October		
P1 (Irrigation water)	**P2 (main drainage)**	**P3 (main channel to the mangroves)**	**P1 (Irrigation water)**	**P2 (main drainage)**	**P3 (main channel to the mangroves)**	**P1 (Irrigation water)**	**P2 (main drainage)**	**P3 (main channel to the mangroves)**
Clorobencilato 0.013 ug/L*, **Benalaxil 0.003 ug/L *,** Endosulfansulfato 0.02 ug/L	_	Cipermetrina 0.047 ug/L, Fenvalerato 0.029 ug/L	-	Carbofurano 0.06 ug/L	-	-	-	-

*Pesticide prohibited for the country since 1999.

* Not mentioned by farmers. However, because the water comes from a reservoir, it is possible that this product comes from the middle or upper Piura river basin.

November			December			
P1 (Irrigation water)	**P2 (main drainage)**	**P3 (main channel to the mangroves)**	**P1 (Irrigation water)**	**P2 (main drainage)**	**P3 (main channel to the mangroves)**	**P4 (Mangroves)**
-	-	-	**Etoprofos 0.06 ug/L,** Fenvalerato 0.031 ug/L	**Etoprofos 0.06 ug/L,** Carbosulfan 0.30 ug/L, Fenvalerato 0.039 ug/L	**Etoprofos 0.03 ug/L,** Carbosulfan 0.03 ug/L	**Etoprofos 0.43 ug/L,** Carbosulfan 0.14 ug/L

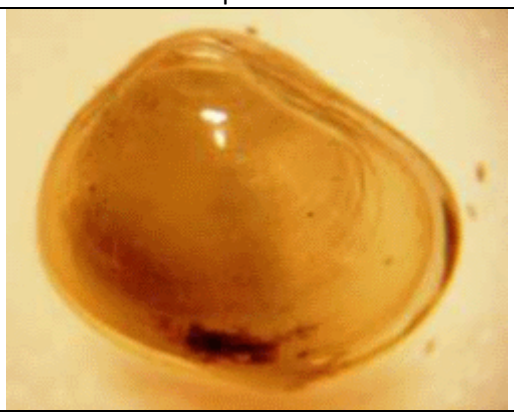
***Clorobencilato was used in cotton, but it is prohibited.**

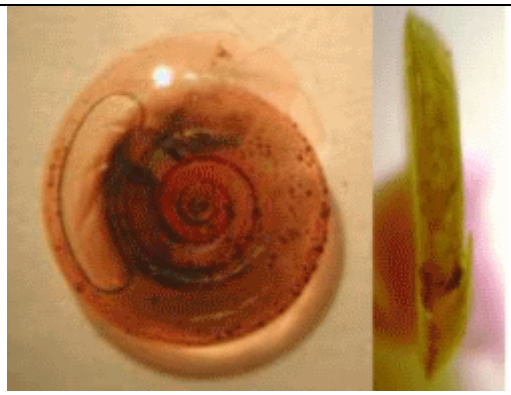
***Etoprofos is used in plantain and citric for nematodes and it can come from other places.**

*Carbosulfan is used for the acaridae family. It could be from the evaluated area or from other places.

Annex 4
Macroinvertebrates sensitive to Pollution

	
Fam. Tricoritoridae: *Tricoritodes* sp.	Fam. Hydropsychidae: *Macronema* sp.
	
Fam. Leptoceridae: *Nectopsyche* sp 1.	Fam. Leptoceridae: *Nectopsyche* sp 2.
	
Fam. Hydropsychidae: *Macronema* sp.	Fam. Leptoceridae: *Nectopsyche* sp 1.

	
Fam. Hydroptilidae: *Oxyetira* sp.	Fam. Hydroptilidae: *Hydroptila* sp.
	
Fam. Coleoptera: *Berosus* sp.	Fam. Empididae: *Hemerodromia* sp.
	
Fam. Chironomidae: Sub. Fam. Tanipodinae	Fam. Tabanidae: sp 1.
	
Fam. Thiaridae: *Melanoides tubertculatus* sp.	Fam. Sphaeriidae: sp. 1

	
Fam. Physidae: sp 1.	Fam. Planorbiidae: *Drepanotrema depressisimun* sp.