



International Seminar on Integrated  
**WATER-Related**  
Disease Control

12-14 May 2014, Norway

Sorhellinga Building  
Norwegian University of Life Sciences, Ås



# Reducing diarrhea in children and controlling dengue vector *Aedes aegypti* in rural schools in two municipalities in *Colombia*

## Lessons learned



# PURPOSE OF THIS PRESENTATION

- *Socialize lessons learnt during the project*
- *Share experiences, especially for upcoming projects applying the positive experiences and think of different alternatives for the negative experiences*

# WORKING WITH MUNICIPALITIES AND DEPARTMENT

- The mayors
- Secretaries of Health in the municipalities
- Secretaries of Education in the municipalities
- Headmasters
- Teachers
- Students

**We learned to interact with local actors and their political and social dynamics**

- Departmental level

*The Foundation is a nongovernmental institution that played an important role in the design of the project objectives in the following areas:*

- *Facilitate streamlining of budget management, by providing cash for project field expenditures, e.g. transport, payments and laboratory equipment, this includes the paid for some of the professionals that were not associated with the UEB.*
- *Supported the project by providing two field technicians.*
- *Provided space for entomological laboratory, base for field staff, and storage space for project materials, e.g. hand soap and cleaning products for bathrooms.*

# The University El Bosque

- *The Research Vice-rectory of the university was instrumental in assuming the payroll expenses for project professionals who were initially paid only by the project.*
- *The Research Vice-rectoy of the university further supported the project by additional funding (COP 10 million and 50 million) through separate proposals submitted to calls, which allowed the project to be extended by more than six months.*
- *Support with equipment's like stereomicroscope and phase contrast microscope for the entomological laboratory*

# THE TIME FACTOR

## ***National or internal times:***

- *Establish field work time schedules at the beginning of the year, taking into account school holidays.*
- *Development of some activities needed more time than estimated, for example educational guides and KAP.*
- *Having time in 2014 assigned to databases and analysis of results is very positive, nevertheless the time was not enough to write the articles*

## ***International or external time:***

- *Establish deadlines for conference presentations and correcting posters well in advance*
  - In this case the Colombia team reviewed all material before sending to the international team for input: Sometimes the time was too short to make the suggested changes.

# PARTICIPATION IN CONFERENCES OR ARTICLES

- **Short of time:** *It was difficult to carry out the various project activities and, at the same time, prepare presentations and articles.*
- **Participation in conferences :** *Permitted to know the latest trends and studies on the subject. Present the work done by the project. Establish contacts.*
- **Articles:** *Give weight to the research. They are tangible products that remain.*



# WORKING IN AN INTERDISCIPLINARY TEAM

*What contributes to the construction of interdisciplinary group, besides frequent reunions, is the disposition of team members to understand the look from other disciplines and to build a common language for addressing the problems.*

# SUSTAINABILITY OF INTERVENTIONS

- *Water filters*
- *Tank cap and netting*
- *Tank washing*
  
- *Pyriproxyfen*
  
- *Curtains*
  
- *Hand washing*
- *Solid waste recollection campaign*
- *The educational intervention*

# ECONOMIC ASPECTS

- *Generation of local employment: The project contracted six local people for field work. Similarly, the seamstress who sewed the curtains was also local.*
- *For the development of the project during the 4 years project, the NMBU send money to UEB. The project lost money by the exchange rate.*

# SMALL PROJECTS

- *Small projects were developed simultaneously with the main project to provide additional information that was not covered in the main study protocol, supplying additional information and project outputs.*
- *Before starting a project like this it is important to define: Execution times, budget, products and authorship of articles or presentations at events.*

# SMALL PROJECTS

## Project Name

## Student/Responsible

**Relación entre la presencia del mosquito *Aedes aegypti* vector del dengue y variables climáticas temperatura, precipitación y humedad relativa en escuelas rurales de los municipios de Anapoima y La Mesa (Cundinamarca), Colombia**

Manuel Obando Peña/ Víctor Alberto Olano y Juan Felipe Jaramillo/ **Bachelor Project**

**Nutritional situation among children in the rural schools**

Sandra Vargas, Gilma Rodríguez y Edgar Ibañez

**Determinantes de la transmisión del dengue: zonas rurales**

Melissa Caycedo Dajud / Sandra Vargas / **Bachelor Project**

**Differences in *Aedes aegypti* production and domestic water container characteristics in urban and rural areas in Colombia**

Hans Overgaard ,Víctor Alberto, Olano y Juan Felipe Jaramillo

**Detección de los cuatro serotipos de dengue a partir de mosquitos *Aedes aegypti* recolectados en área rural de dos municipios de Cundinamarca, Colombia**

Rosalía Pérez/ Instituto Virología UEB  
Victor A. Olano / ISA UEB (Field Work)

1. María Inés Matiz, Juan Felipe Jaramillo, Víctor Alberto Olano, Diana Sarmiento, Sandra Lucía Vargas, Audrey Lenhart, Neal Alexander, Razak Seidu, Thor Axel Stenström, Hans Overgaard. **Abordaje integral para la prevención del dengue y la diarrea en las escuelas rurales de dos municipios de Cundinamarca, Colombia.** XX Congreso Latinoamericano de Parasitología y XV Congreso Colombiano de Parasitología y Medicina Tropical, Bogotá, 27 de Sep - 1 de Oct de 2011[poster]
2. María Inés Matiz, et al **Healthy Schools: Reducing dengue a diarrheal diseases in primary schools in Colombia.** Sister project. Workshop Project Midterm Meeting. Tailandia.24-28 de Ene 2012 [Oral].
3. Vargas SL, Sarmiento DM, Jaramillo JF, Matiz MI, Olano VA, Alexander N, Lenhart A, Seidu Stenström TA, Overgaard HJ. **Knowledge, attitudes and practices about dengue in rural schools in two Colombian municipalities.** Third Pan American Dengue Research Network Meeting, Cartagena del 12 al 15 de Sep. 2012 [poster].
4. Olano VA, Matiz MI, Vargas SL, Jaramillo JF, Sarmiento DM, Lenhart A, Alexander N, Seidu R, Stenström TA, Overgaard HJ. **High levels of *Aedes aegypti* infestation in rural schools in two municipalities of Colombia.** Third Pan American Dengue Research Network Meeting, Cartagena del 12 al 15 de Sep. 2012 [poster].
5. Jaramillo JF, Olano VA, Matiz MI, Vargas SL, Sarmiento DM, Lenhart A, Alexander N, Seidu R, Stenström TA, Overgaard HJ. **Relation between infestation with *Aedes aegypti* immature forms and environmental conditions in rural schools in two municipalities of Colombia.** Third Pan American Dengue Research Network Meeting, Cartagena del 12 al 15 de Sep. 2012 [poster].
6. Maria Ines Matiz, Juan Felipe Jaramillo, Víctor Alberto Olano, Diana Sarmiento, Sandra Lucia Vargas, Audrey Lenhart, Neal Alexander, Razak Seidu, Thor Axel Stenström, Hans J. Overgaard. **Dengue and diarrhea: integrated control in rural schools.** Third Pan American Dengue Research Network Meeting, Cartagena del 12 al 15 de Sep. 2012 [poster].
7. Vargas SL, Olano VA, Jaramillo JF, Matiz MI, Lenhart A, Stenström TA, Overgaard HJ. **Epidemiological and entomological characteristics of dengue in rural area of Anapoima municipality, Colombia.** XVIII International Congress for Tropical Medicine and Malaria, Brazil, 23 -28 Sep. 2012[poster].
8. Olano VA, Matiz MI, Vargas SL, Jaramillo JF, Sarmiento DM, Lenhart A, Stenström TA, Overgaard HJ. **Presence of *Aedes aegypti* in rural primary schools in two communities in Colombia.** XVIII International Congress for Tropical Medicine and Malaria, Brazil, 23 -28 Sep. 2012[poster].
9. Diana Sarmiento Senior, Sandra Lucía Vargas, Juan Felipe Jaramillo, María Inés Matiz, Víctor Alberto Olano, Neal Alexander, Audrey Lenhart, Razak Seidu, Thor Axel Stenström, Hans Jorgen Overgaard. **Que saben los niños sobre el dengue? Conocimientos, actitudes y prácticas en dos municipios de Cundinamarca.** XIV Congreso Nacional de Antropología: Proceso de construcción de la nación colombiana en el contexto latinoamericano. Medellín, Colombia, 23-26 de octubre 2012 [poster].

10. Maria Ines Matiz, Juan Felipe Jaramillo, Víctor Alberto Olano, Diana Sarmiento, Sandra Lucia Vargas, Audrey Lenhart, Neal Alexander, Razak Seidu, Thor Axel Stenström, Hans J. Overgaard. **Integrated interventions for dengue and diarrhea in rural schools in two municipalities of Colombia.** The 2012 Water and Health Conference: Science, Policy and Innovation at the University of North Carolina at Chapel Hill, USA, 29 Oct.-2 Nov. 2012 [poster].
11. Overgaard HJ, Alexander N, Mátiz MI, Jaramillo JF, Olano VA, Vargas SL, Sarmiento D, Lenhart A, Seidu R, Stenström TA. **Integrating dengue and diarrhea control in rural schools in Colombia: A cluster randomized controlled trial.** Annual Meeting of the American Society of Tropical Medicine and Hygiene 11-15 Nov 2012, Atlanta, GA, USA [poster].
12. Jaramillo JF, Obando MF, Niño H, Matiz MI, Overgaard HJ, Olano VA. **Relación entre la presencia de *Aedes aegypti* y variables climáticas en escuelas rurales de los municipios de Anapoima y La Mesa, Cundinamarca.** XL Congreso Sociedad Colombiana de Entomología (SOCOLEN). Bogotá, Colombia 10-12, July 2013 [poster].
13. Víctor Alberto Olano, Sandra Lucía Vargas, María Inés Matiz, Juan Felipe Jaramillo. ***Aedes aegypti* en área rural: Implicaciones en Salud Pública.** Congreso de la Sociedad Colombiana de Entomología. Universidad El Bosque. Julio 10-12.2013 [oral].
14. Víctor Alberto Olano Sandra Lucía Vargas María Inés Matiz Juan Felipe Jaramillo. **Mosquitos (Diptera: Culicidae) del área rural del municipio de Anapoima y su importancia en Salud Pública.** Congreso Nacional de Ciencias Biológicas. Conferencista en el Simposio de Entomología Médica y Veterinaria Universidad El Bosque. Octubre 6-9 2013 [oral].
15. Matiz MI, *et al.* **Reducción de las diarreas en los alumnos y control del *Aedes aegypti* vector del dengue, en las escuelas primarias rurales de dos municipios de Colombia.** XIX Congreso Institucional de Investigaciones. Universidad El Bosque. Bogotá, Colombia. 17-20 Sep. 2013. [oral].
- 16 Jaramillo JF. *et al.* **Reducción de las diarreas en los alumnos y control del *Aedes aegypti* vector del dengue, en las escuelas primarias rurales de dos municipios de Colombia. Resultados preliminares componente Ambiental.** XIX Congreso Institucional de Investigaciones. Universidad El Bosque. Bogotá, Colombia. 17-20 Sep. 2013. [oral].
- 17 Olano VA, *et al.* **Reducción de las diarreas en los alumnos y control del *Aedes aegypti* vector del dengue, en las escuelas primarias rurales de dos municipios de Colombia. Resultados preliminares componente entomológico.** XIX Congreso Institucional de Investigaciones. Universidad El Bosque. Bogotá, Colombia. 17-20 Sep. 2013. [oral].
18. Vargas SL, *et al.* **Reducción de las diarreas en los alumnos y control del *Aedes aegypti* vector del dengue, en las escuelas primarias rurales de dos municipios de Colombia. Resultados preliminares componente de salud.** XIX Congreso Institucional de Investigaciones. Universidad El Bosque. Bogotá, Colombia. 17-20 Sep. 2013. [oral].
19. Sarmiento DM, *et al.* **Reducción de las diarreas en los alumnos y control del *Aedes aegypti* vector del dengue, en las escuelas primarias rurales de dos municipios de Colombia. Resultados preliminares componente social.** XIX Congreso Institucional de Investigaciones. Universidad El Bosque. Bogotá, Colombia. 17-20 Sep.2013. [oral].

20. Jaramillo JF, Matiz MI, Olano VA, Vargas SL, Sarmiento DM, Alexander N, Lenhart A, Seidu R, Stenström TA, Overgaard HJ. **Dengue and diarrhea: Integrated control in rural schools**. International Workshop on Water Quality: Challenges to environmental risks – “AGUA 2013”. Cali, Colombia. 15-18 October 2013 [oral].
21. Overgaard HJ, Matiz MI, Olano VA, Vargas SL, Jaramillo JF, Sarmiento DM, Alexander N, Lenhart A, Seidu R, Stenström TA. **Diarrhea and dengue control in rural primary schools in Colombia: preliminary results after one year of interventions**. 8th Conference on Global Health and Vaccination Research. Bergen, Norway, 16-17 October 2013 [poster].
22. Overgaard HJ, Matiz MI, Olano VA, Vargas SL, Jaramillo JF, Sarmiento DM, Alexander N, Lenhart A, Seidu R, Stenström TA. **Dengue and diarrhea control in rural schools in Colombia**. 3rd International Conference on Dengue and Dengue Haemorrhagic Fever. Bangkok, Thailand, 21-23 October 2013 [poster].
23. Overgaard HJ, Matiz MI, Olano VA, Jaramillo JF, Vargas SL, Sarmiento DM, Lenhart A, Alexander N, Seidu R, Stenström TA. **Differences in *Aedes aegypti* production and domestic water container characteristics in urban and rural areas in Colombia**. 3rd International Conference on Dengue and Dengue Haemorrhagic Fever. Bangkok, Thailand, 21-23 October 2013 [poster].
24. Vargas SL, Matiz MI, Jaramillo JF, Olano VA, Sarmiento DM, Alexander N, Lenhart A, Seidu R, Stenström TA, Overgaard HJ. **Evaluación de una intervención educativa sobre dengue y diarrea en escuelas rurales de dos municipios de Colombia**. XXI Congreso Latinoamericano de Parasitología. Guayaquil, Ecuador, 6-9 October 2013.
25. Rodríguez G, Vargas SL, Ibáñez E. **Relación entre el estado nutricional y el ausentismo escolar de los niños(as) de las escuelas rurales del municipio de Anapoima, Cundinamarca**. XV Congreso de Nutrición y Dietética ACODIN 2013. Cali, Colombia, 23-26 Oct.
26. Sarmiento DM, Matiz MI, Jaramillo JF, Olano VA, Vargas SL, Alexander N, Lenhart A, Seidu R, Stenström TA, Overgaard HJ. **Condiciones de agua y saneamiento de las escuelas primarias: ¿Una expresión de inequidad entre las zonas rurales y urbanas en Colombia?** VIII Congreso Internacional de Salud Pública. Medellín, Colombia, 27-29 Nov. 2013.
27. Vargas SL, Rodríguez G, Ibáñez E. **Estado nutricional y ausentismo escolar de los niños(as) de las escuelas rurales del municipio de La Mesa, Cundinamarca**. VIII Congreso Internacional de Salud Pública. Medellín, Colombia, 27-29 Nov. 2013.
28. Pérez R, Castellanos J, Olano VA, Matiz MI, Jaramillo JF, Vargas SL, Sarmiento DM, Stenström TA, Overgaard HJ. **Los cuatro serotipos de dengue detectados en muestras de *Aedes aegypti* en una zona rural en Cundinamarca, Colombia**. V Simposio Nacional de Virología y I Congreso Latinoamericano de Virología. Bogotá, Colombia, 19-21 Nov 2013.
29. Víctor Alberto Olano Sandra Lucía Vargas María Inés Matiz Juan Felipe Jaramillo. ***Aedes aegypti* en área rural: Implicaciones en Salud Pública**. Congreso de la Sociedad Colombiana de Entomología. Universidad El Bosque. Jul. 10-12.2013 [oral].