

**IPM CRSP Trip Report**  
**Ruth Amata**

Country Visited: Tanzania/Arusha

Dates of Travel: July 19-24, 2015

Travelers Names and Affiliations: Ruth Amata; Kenya Agricultural and Livestock Research Organization; Kenya

Purpose of Trip: To attend a training on production of *Trichoderma* spp., *Bacillus* spp. and *Pseudomonas fluorescens* and their uses in agriculture

Sites Visited: Arusha AVRDC; Tanzania

Description of Activities/Observations:

1. Introduction to biological control agents (*Trichoderma* spp. *Bacillus* spp. and *Pseudomonas fluorescens*)
2. Media preparation, isolation and screening for efficacy of the biological agents
3. Mode of action of the biocontrol agents
4. Biocontrol potential of *Trichoderma* spp., *Bacillus* spp. and *Pseudomonas fluorescens*
5. Mode of action of *Trichoderma* spp., *Bacillus* spp. and *Pseudomonas fluorescens*
6. Mass production of *Trichoderma* spp., *Bacillus* spp. and *Pseudomonas fluorescens*
7. Formulations and delivery systems for the biocontrol agents
8. Enumeration of biocontrol agents
9. Status of the use of biocontrol agents and their registration in Kenya, Ethiopia and Tanzania
10. Quality control; shelf life and low cost technologies of mass production of biocontrol agents

### Training Activities Conducted

| Program type<br>(workshop,<br>seminar, field<br>day, short<br>course, etc.) | Date                       | Audience  | Number of<br>Participants |       | Training Provider<br>(US university, host<br>country<br>institution, etc.)   | Training<br>Objective   |
|---|----------------------------|---|---------------------------|-------|--|---|
|   |                            |   | Men                       | Women |  |   |
| Short course  | July<br>19-<br>24,<br>2015 | 23 Participants<br>from research<br>institutions and<br>universities in<br>Kenya, Tanzania,<br>Ethiopia | 12                        | 11    | Tamil Nadu<br>University;<br>Sevugapperumal<br>Nakkeeran and<br>Karthikeyan Gandhi<br><br>University/IPM IL<br>Rangaswamy<br>Muniappan; Zara<br>Shortt; Brhane<br>Gebrekidan | To gain an<br>understanding on<br>the production &<br>use of biocontrol<br>agents |

### Suggestions, Recommendations, and/or Follow-up Items:

1. The information will be used in establishing cottage industries on the production of *Trichoderma* spp., *Bacillus* and *Pseudomonas fluorescens* for use as biological control agents.
2. I will train colleges/universities on biocontrol agents and their importance.
3. The training was extremely useful and timely. I/we in Kenya needed to have the capacity to work on biocontrol agents, as we are expected to conduct efficacy trials and recommend the same; yet we have limited capacity in Kenya. I personally gained a lot in this area and can now train others with confidence.

### List of Contacts Made:

| Name                     | Contact Info (address, phone, email) |
|--------------------------|--------------------------------------|
| <b>India</b>             |                                      |
| Sevugapperumal Nakkeeran | nakkeeranayya@gmail.com              |
| Karthikeyan Gandhi       | agrikarthi2003@gmail.com             |
| <b>USA</b>               |                                      |
| Rangaswamy Muniappan     | rmuni@vt.edu                         |
| Brhane Gebrekidan        | bgebrekidan@gmail.com                |
| Zara Shortt              | shorttz@vt.edu                       |

| <b>Ethiopia</b>         |  |
|-------------------------|--|
| Bekele Kassa            | bkassa74@yahoo.com                                 |
| Solomon Yilma Mitiku    | solomonyilma509@gmail.com                          |
| Netsanet Bacha Hei      | netsanetbacha@yahoo.com                            |
| Mihiret Mekonnen        | mihiretmekonnen@yahoo.com                          |
| DemelashTeferi          | teferidemelash2008@gmail.com                       |
| Habetewold Kifelew      | habtekifelew@gmail.com                             |
| <b>Kenya</b>            |  |
| Ginson Riungu           | ginson.riungu@kalro.org<br>ginson.riungu@yahoo.com |
| Carolyne C. Mutai       | carochepmut@yahoo.com                              |
| Getrude Alworah         | gedohal@yahoo.com<br>getrude.alworah@kalro.org     |
| Jesca Njeri Mbaka       | jnmbaka@yahoo.com<br>Jesca.mbaka@kalro.org         |
| Ruth Lodenyi Amata      | amata_ruth@yahoo.com                               |
| Miriam Otipa            | otipamj@gmail.com                                  |
| Eston Njeru             | njerues@yahoo.com                                  |
| <b>Tanzania</b>         |  |
| Delphina Mamiro         | delphimamiro@yahoo.com                             |
| Jackson Nahson          | bagilisha@yahoo.com                                |
| Margareth Mziray        | mmziray@gmail.com                                  |
| Chrrian Marceale        | mmarciale@gmail.com                                |
| Hellen Mbije            | hmbije@yahoo.com                                   |
| Reinfrid Martin Maganga | maganga04@yahoo.co.uk                              |
| Osmund A. Ndomba        | osmund.ndomba@gmail.com                            |
| Magreth Francis         | maggyfrancy@yahoo.com                              |
| Mohamed Hussein MPINA   | husseinmpina@yahoo.ie                              |