



**WMO - CNR-IBIMET
WMO Regional Training Center**



**Report on the International Training course on
“Climate change impacts on agricultural systems in Africa”
Florence, 9-13 June 2014**



Florence, 28 June 2014

1. The Training Course

The Purpose of the Training Course on Climate change impacts on agricultural systems in Africa was to build capacities for analysis of climate change impacts on crop production, with a special focus on North and West Africa agricultural systems.

The training course offered to participants the opportunity to acquire theoretical and practical knowledge on several specific topics on climate change, focusing on methodologies and tools available to characterize the subject.

In particular, the participant had the possibility to face and develop these following themes:

- Existing climate data sets: availability, differences and limitations for climate analysis on crop productivity;
- Sensitivity of specific crop phases to climate variability and extremes;
- Methodologies and tools for climate analysis in relation to specific crops' phases;
- Integrative observed climate trends and climate projections for short term evaluation of climate change impacts on crop systems.

The training course was organized by the Regional Training Center in Italy in cooperation with WMO (World Meteorological Organization) and CNR-IBIMET (Institute of Biometeorology of the National Research Council). The participation of trainees to the course was sponsored by WMO for 5 participants, ANADIA Niger for 3 participants, DIPLOMAzia for 6 participants, PAPSEN for 2 participants.



The course was carried out at the CNR Research Centre in Sesto Fiorentino, via Madonna del Piano 10, in the Province of Florence and the duration was 1 week.

During the course a total of 14 lectures were presented by highly qualified trainers.

The list of the trainers, in alphabetical order, and the name of their Institution is the following:

- Dott. M. Bacci, IBIMET-CNR
- Dott.ssa M. Baldi, IBIMET-CNR
- Prof. M. Bindi, University of Florence
- Prof. G. Dono, University of Tuscia
- Dott. M. Diop, ISRA Senegal
- Dott.ssa R. Magno, IBIMET-CNR
- Dott. M. Pasqui, IBIMET-CNR
- Prof. P. Roggero, University of Sassari

Two whole afternoons were dedicated to practical lab activities where participants could develop some of the cases studies they proposed at the beginning of the training.

2. Participation

The Training Course was designed for agro-meteorological services technicians, climatologists, agro-meteorologists and agricultural and climate researchers, by creating an environment where agriculture and climate actors could share a common view and develop a common language.



The course was carried out by lectures, group discussion, individual presentation and case studies. Participants were involved in the training path through an initial presentation of their own activities and experiences and through moments of discussion at the end of every lecture.

The course counted with the participation of 6 Countries and 16 participants who attended during the entire week (Table 1).

Country	Male	Female	Total
Egypt	4	1	5
Tunisia	-	2	2
Senegal	3	1	4
Niger	2	1	3
Guinea Bissau	1	-	1
Jordan	1	-	1
Total			16

Table 1. Participants of the course

The participation to the course was also extended to 5 external participants already involved in the research activities of CNR, 2 from Egypt, 1 from Serbia and 2 from Italy.

3. Overview of the training course outcome

During the last day of the training course a questionnaire about the evaluation of the training activities was distributed to every participant. The form, composed by 17 questions about the course and 2 questions about the organizational aspects, was then used in order to evaluate the appreciation of the participants and their willingness to apply and share the knowledge they got from the course. Annex 2 shows in detailed the outcome of the questionnaires.

Participants had a good perception of the course in general, they evaluated the course and the material provided as very positive. The 94.1% of them felt that the program “fully met” and “very fully met” the expressed objectives and all of them commented that the knowledge acquired during the week will prepare them to contribute more effectively to the activities of their Institution.

The trainees declared that the program carried out will be relevant (64.7%) and very relevant (35.3%) to the work they will be doing at their return to their home country and all the participants left Italy with the aim to transfer the acquired knowledge to their colleagues by presentations and reports (23.5%), by lectures (29.4%), sharing of the collected materials and information (23.5%) and organizing several kind of activities and round tables on the topic (17.6%).

Considering the audience’s heterogeneity, the objective of the training course was satisfactorily reached and the degree of difficulty of the activities was suitable with the audience. In fact, the 88.2% of the participants did not have problems to understand the lectures and the 82.4% felt that the level at which the training activity was conducted was suitable to their educational background.



Only a 11.8% found some language difficulties with English and the 17.6% claimed that the level of activity was too high for their experiences.

The course was organized to alternate theoretical lectures with practical lab activities. From this point of view it must be said that some of the planned targets have not been completely reached. The 82.4% of the trainees considered the course too theoretical and the 70.6% would have preferred a 50-50 time-ratio between the theoretical and practical parts and the 17.6% asked for a 25-75 time-ratio between theory and practice.

Taking into account the quality of the handout-materials and the way the lectures were presented, the 17.6% of the participants had a good overall opinion on presentations, the 17.6% would have preferred to have more printouts material before the lectures, and few of them felt that the lectures were too general and not linked to practical examples (11.8%) and in some cases too long (5.9%). Some of them commented that the level of the trainers was excellent, but in some case lectures were too theoretical and did not stressed enough the possible application in practical trials.

Participants have also been asked for suggestions to improve the program and arrangements for a similar future activity and the 25% asked for the extension of the practical part (modeling, crop modeling, training, exercises) and for the improvement of the quality of case studies and tools (15.4%). The 19% would like to extend the duration of the course. In fact, to the question about the suitable duration of the training course, the 88.2% of the participants felt that one week was not enough to carry out the program, but the 52.9% considered necessary at least 2 weeks, while the 17.6% indicated 1 month as the adequate duration.

Anyway, the overall impact of the course was well perceived in general. The 23.5% qualified it as excellent, the 35.3% as very successful and the 41.2% as successful, and all the participants would recommend the course to their colleagues.

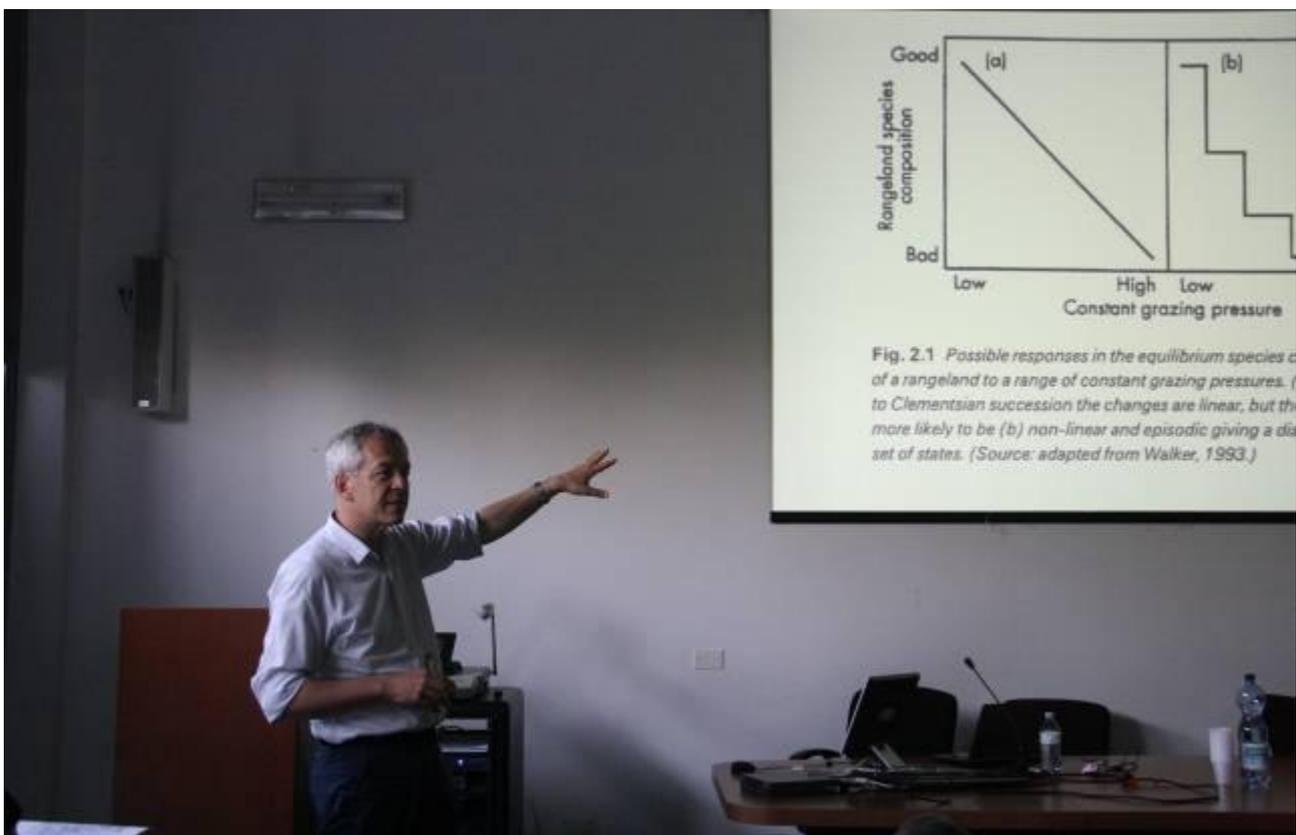
A different evaluation form was also distributed to the trainers, to collect their impression about the course and their perception about trainees’ level of knowledge, participation and interaction.

All the trainers had the perception that the program “fully met” and “very fully met” the expectation of the audience and the 50% considered the course as very relevant to the work of participants when they will be back in their home country.

All the trainers agreed that the participants showed a very high interest on the topics, asking questions on how to apply the knowledge and the concepts gained during the course to real situations in their country.

Concerning participant’s language skills, none of the trainers perceived any comprehension problems during their lectures and considered the level at which the training activity was conducted as suitable for participants’ educational background and experience.

Taking into account the time-ratio between theory and practice, the 57% of the trainers suggested as the best time-ratio a 50-50 between the need of giving theoretical bases and involving the audience in a practical activity.



The proof that the course was well perceived by the audience was the fact that the 88% of the trainers received relevant and very relevant professional feedbacks from participants, such as how to use and adapt the approach and tools presented during the lectures to start a new process of analysis in their Countries.

The overall impact of the course was considered very successful by the 71% of the trainers and excellent by the remaining 29% and all of them declared to be available to participate again as instructor in a RTC Training Course.

A suggestion that the trainers felt to share with the organizers for future courses was to cut some of the theoretical lectures and give more space to the practical work. Moreover, some of them said that the best way to keep the focus on the topic could be organizing the practical sessions hand in hand with theoretical lectures to improve the learning process and spend more time with participants.

4. Media

During the Training course we collected a series of interviews and pictures of both students and teachers. The goal of this initiative is to give more visibility to the training course, to show the background of the students, their expectation and thoughts on the training course, to question the teacher on the course topics and to frame the course in a wider WMO program.

The students received a double interview. At the beginning they were asked to present themselves, saying how their working activity is related to climate change, why they chose to follow the training course and what their expectation were. At the end of the course we chose some students to tell us what they received from the course, if they had any suggestions for the following RTC training courses and if they had any further comment.

On the other hand, the questions we asked to the teachers were more technical and concerned the impacts of climate change in Africa. The questions were about the priorities for adapting the African agricultural system to the climate change, what are the most vulnerable agricultural systems in Africa, a personal opinion on the stakeholder perception of climate change and how to increase their awareness on climate change.

Moreover, we interviewed also Mr Camacho of WMO asking him why RTC courses are so important for the WMO and what are the actions that WMO is coping to promote the adaptation strategy to climate change in Africa.

The material we collected is going to be elaborated to create an interactive document (to publish possibly on a dedicated web page) summarizing the content of the course, the impressions, the suggestions, presenting the students and the teachers that participated to the training course. The target groups of this communication strategy are first, the people interested in the WMO activities, than future students of the RTCs and personnel interested in the topics treated during the course.

We received a very positive response from the participants, they showed a great accessibility to take part in the interviews and they were interested in receiving the final product.

5. Recommendations for future Training Courses

Based on the previous findings, we learned many lessons and will take them into account as recommendations for the organization of future training courses.

Time-ratio between theoretical and practical parts: one of the main lessons concerns the time-ratio between the lectures and the practical lab activity. Most of the participants found the theoretical part prevailing on the practical one and felt the need to be more involved in case studies, in interactive lab activities and in modeling exercises. It appears so far necessary to extend the time dedicated to practical trials and case studies, to allow participants to analyze their own case study and to improve the learning process. To achieve this purpose, a better planning of the activities and the lectures is also required.

Enhance the quality of materials/data/tools: considering the complexity of the topics, to help the participants to follow properly lectures and activities, it would be opportune to improve the distribution of printout materials, brochures, summaries about the main aspects of the lesson before or during the lectures. Concerning the practical activity, the improvement of exercises organization would be necessary and we will recommend teachers to download/prepare the datasets before the class, to avoid waste of time.

Extend course's duration: one of the principal request that emerged from the evaluation forms was to extend the duration of the course. All the lectures were found very interesting, but the lack of time did not allowed to delve into the topics. Extending the duration up to 2 weeks instead of 1 could probably permit to give more attention to some specific interests, questions and deepening that participants feel like to delve. Lengthen the course would also improve the time-ratio between practical and theoretical activities. However, the participation to a two weeks course could be problematic for all those participants in charge of operational services (forecasters, agrometeorologists, season monitoring responsible). Thus, we think that longer duration could be fruitfully applied to specific training courses and according with the period or season in which the training is organized.

Improving in organization/accommodation: some participants pointed out that the accommodation were too far away from the CNR facilities and that they would have prefer to stay all in the same accommodation. Moreover, some of them found some problem to move to Florence city center by public services. Unfortunately the RTC doesn't have in-house accommodation facilities, and in the area around CNR only small hotels with a limited number of rooms are available. However, for the future we acknowledge the need to previously plan accommodation and transfers in advance and more in detail to avoid drawbacks. In order to do this the selection and financial support procedures should be completed at least a month before the starting of the training course.

Annex 1. Program of the training course

Monday 9

Morning

9.00-9.30	Registration of participants
9.30-11.00	Opening of the Training School (A. Raschi - IBIMET) Research challenges for an operational meteorological service (Bernardo Gozzini - LaMMA) WMO agricultural meteorology and training strategy (José Camacho - WMO)
11.00-11.30	Coffee Break
11.30-13.45	Introduction to the training course (V. Tarchiani - IBIMET) Climate change in the Mediterranean and in West Africa (Andrea Di Vecchia - IBIMET)

Afternoon

15.00-16.30	Presentation of participants: experience in climate and agriculture, proposed case studies
16.30-16.45	Coffee Break
16.45-18.00	Discussion on proposed case studies

Tuesday 10

Morning

9.00-11.00	Climate Change Assessment (M. Pasqui - IBIMET) Adaptive responses to climate change in agriculture. Lessons learned from the Agroscenari project and open issues. (P. Roggero – UniSS)
11.00-11.30	Coffee Break
11.30-13.45	Adapting to uncertainty associated with short-term climate variability changes in irrigated Mediterranean farming systems (G. Dono – UniTuscia)

Afternoon

15.00-16.30	Practical exercise: query on meteorological dataset (M. Pasqui)
16.30-16.45	Coffee Break
16.45-18.00	Crops modeling, theory and application for climate change in the Mediterranean Basin (M. Bindi - UNIFI)

Wednesday 11

Morning

9.00-11.00	Sensitivity of specific crop phases to climate variability (Mbaye Diop ISRA - Senegal) Climate Change impacts on African agricultural systems (Mbaye Diop ISRA - Senegal)
11.00-11.30	Coffee Break
11.30-13.45	Methodologies and tools for climatic analysis in relation to specific crops' phases (M. Bacci - IBIMET)

Afternoon

15.00-16.30	Case studies
16.30-16.45	Coffee Break
16.45-18.00	Case studies

Thursday 12

Morning

9.00-11.00	Existing climate data sets: availability, differences and limitations for climate analysis on crop productivity (M. Pasqui - IBIMET) Climatic indexes for extreme events identification (M. Baldi - IBIMET)
11.00-11.30	Coffee Break
11.30-13.45	Drought assessment and monitoring in the Mediterranean Basin (R. Magno - IBIMET)

Afternoon

15.00-16.30	Case studies
16.30-16.45	Coffee Break
16.45-18.00	Case studies

Friday 13

Morning

9.00-11.00	Climate trends (M. Bacci - IBIMET) Integrating observed climate trends and climate projections for the short term evaluation of climate change impacts on crop systems (M. Bacci - IBIMET)
11.00-11.30	Coffee Break
11.30-13.45	Climate future scenarios in the Mediterranean Basin (M. Pasqui - IBIMET)

Afternoon

15.00-16.30	Presentation of case studies
16.30-16.45	Coffee Break
16.45-18.00	Training course evaluation Closing remarks

Annex 2. Questionnaires’ results from participants

Question	Result	Total	%
1. Do you feel that the programme met the expressed objectives? Please assess the extent to which the objectives were met	Very well met	6	35.3%
	Fully met	10	58.8%
	Nearly met	1	5.9%
	Not met	0	0.0%
2. Do you feel that the knowledge you have acquired has prepared you to contribute more effectively to the activities of your Institution?	Yes	17	100.0%
	No	0	0.0%
3. Estimate to what extent the programme will be relevant to the work you will be doing when you return to your home country:	Very relevant	6	35.3%
	Relevant	11	64.7%
	Not relevant	0	0.0%
4. How will you share what you learned with your colleagues?	Through presentation and reports on the acquired knowledge	4	23.5%
	Through presentation/lecture	5	29.4%
	Through presentation and sharing of the collected material/information	4	23.5%
	Through round table on the topic/organize activity	3	17.6%
	No answer	1	5.9%
5. Did you receive advice on how to apply the knowledge gained during the course/seminar to relevant situations in your country (such as the facilities needed for this purpose, e.g. instrumentation)?	Yes	13	76.5%
	No (if no go to 5a)	3	17.6%
	No answer	1	5.9%

5a. If "no" indicate briefly the deficiencies:

Focusing on one subject is more efficient than on branches	1
I received general knowledge and no practice (agronomy and meteorology) on my case was done	1
No answer	1

6. Did you have any language difficulties?

Yes (if yes go to 6a)	2	11.8%
No	15	88.2%

6a. If yes explain.

French is more current than English	1
Difficulties in practice room with pc operating system and m.s. office program	1

7. In relation to your own educational background and experience, indicate the level at which the training activity was conducted:

Suitable	14	82.4%
Too high	3	17.6%
Too low	0	0.0%

8. How theoretical or practical was the programme?

Too practical	0	0.0%
Too theoretical	14	82.4%
A suitable balance	3	17.6%

9. What, in your opinion, should be the approximate time-ratio between the theoretical and practical components of the programme for a similar activity in future?

100% practical	0	0.0%
25% theoretical/ 75% practical	2	11.8%
50% theoretical/ 50% practical	12	70.6%
75% theoretical/25%practical	3	17.6%
100% theoretical	0	0.0%

10. Please give any comments you consider necessary and relevant to other aspects of the programme, such as handout-materials, the way the lectures were presented, etc.:

Good overall opinion on presentation	3	17.6%
Too general presentation, need more detail	1	5.9%
Need more practical	1	5.9%

examples/production modeling		
Need more printouts material before the lecture	3	17.6%
Good overall opinion but course duration too short	2	11.8%
Presentations too long	1	5.9%
No answer	6	35.3%

11. Do you consider that the duration of the programme was adequate?

Yes	2	11.8%
No (if no go to 11a)	15	88.2%

11a. If no, what would you consider to be a suitable duration?

1 month	3	17.6%
10 days	1	5.9%
2 weeks	9	52.9%
3 weeks	1	5.9%
8 days	1	5.9%

12. Do you consider the didactical material supporting theoretical lectures and exercitations exhaustive?

Yes	14	82.4%
No (if no go to 12a)	3	17.6%

12a. If no, explain:

During the practical part no didactical material was available to better undertake exercises	1
No answer	2

13. What specific feedback do you have for the instructors? For example how can people improve their teaching, their material or ability to engage the class.

All trainers and presentations were satisfying	4
Marco Bindi: more practical example on crop modeling	1
Marina Baldi: Too long presentation (but interesting), low interaction with trainees.	4
Maurizio Bacci: interesting scientific material, the time needed should be higher and interactive	1
Pier Paolo Roggero: too long presentation but interesting	1
Massimiliano Pasqui: very good theoretical lecture but during exercises he needs to slow down	1

	Andrea di Vecchia: Great presentation	1	
	The presentations should be done in 2 phases instead	2	1
<hr/>			
14. How much did you learn from other course members?			
	Very much	5	29.4%
	Relevant	9	52.9%
	Not a lot	1	5.9%
<hr/>			
14a. Please explain			
	All topics on climate change are recent	1	
	By questions, comments, explanations etc	1	
	Lecturers are great and each one is brilliant in his own field	1	
	The content of presentation is very interesting	1	
	The way of representation was easy and interesting. Good exercises in the lab (but we need more time)	1	
	Exchanging our knowledge/sharing experience since we are coming from different fields	3	
	Very specialist lecturer and participants, so common presentation not works, if they add some practical results it will be better	1	
	Question not understood	1	
<hr/>			
15. Have you any suggestions for improving the programme and arrangements for a similar, future activity?			
	Yes (if yes go to 15a)	13	76.5%
	No	4	23.5%
<hr/>			
15a. If yes, explain:			
	Extend course duration	3	
	Extend the practical part (modeling, crop modeling, training, exercises). Improve the quality of case study	4	
	Better organization of accommodation to allow all the participant to stay in the same place to share experiences	2	
	Improve interactive tools during the theoretical part using some what-if ways to keep the attention high	2	
	Include impact models	1	
	it would be good to prepare a small book of summaries of all course	1	
<hr/>			

16. Would you recommend this course to your colleagues?

Yes	17	100.0%
No	0	0.0%

17. How would you rate the overall event?

Excellent	4	23.5%
Very successful	6	35.3%
Successful	7	41.2%
Fair	0	0.0%
Poor	0	0.0%

Non-academic aspects

A. Did you encounter any problems with regard to Travel and Accommodation Arrangements (Tickets – Payments – Accommodation – Transport)?

Yes (*)	2	11.8%
No	15	88.2%

* place accommodation is so far from markets and from the centre of the city. 1
One day buses made a strike and we were at risk of not to reach our residences at Florence on the afternoon 1

B. Did you encounter any problems with regard to Course Activities Logistics Arrangement (Training Room, Informatics Equipments)?

Yes (**)	6	35.3%
No	11	64.7%

** A/C not working properly 6 100%
Better adaptation of food 1 17%
Informatic tools in English instead of Italian 1 17%

Annex 3. Questionnaires’ results from trainers

Question	Result	Total	%
1. Do you feel that the programme met the expressed objectives? Please assess the extent to which the objectives were met	Very well met	4	57%
	Fully met	3	43%
	Nearly met	0	0%
	Not met	0	0%
2. Estimate to what extent the programme will be relevant to the work of participants when back in their home country	Very relevant	4	50%
	Relevant	4	50%
	Not relevant	0	0%
3. Did you receive questions on how to apply the knowledge gained during the course/seminar to relevant situations in participants’ country (such as the facilities needed for this purpose, e.g. instrumentation)?	Yes	8	100%
	No	0	0%
If Yes Indicate briefly	Question about insurance tools, income stabilization tools, specification of model's parameters, water pricing in study areas	1	13%
	Use of crop model to evaluate climate risk of vegetable crops. Evaluation of the impact of CC on crops using crop models.	1	13%
	Model: practical application in their home case studies	2	25%
	How/where get the software I illustrated during my lecture and the needed resources to run it	1	13%
	Some questions on the possibility of applying the drought monitoring on the definition of the best crop variety to stand climate stresses; the answer was to apply crop modeling that can take into account	1	13%

	the extreme events Application of the described assessment models of CC impact in African contest	1	13%
<hr/>			
4. Did you felt any language difficulties by participants?			
	Yes	0	0%
	No	8	100%
<hr/>			
5. In relation to your session, did you felt that the level at which the training activity was conducted was suitable for participants educational background and experience?			
	Suitable	8	100%
	Too high	0	0%
	Too low	0	0%
<hr/>			
6. How theoretical or practical was the programme?			
	Too practical	0	0%
	Too theoretical	3	43%
	A suitable balance	4	57%
<hr/>			
7. What, in your opinion, should be the approximate time-ratio between the theoretical and practical components of the programme for a similar activity in future?			
	100% practical	0	0%
	25% theoretical/ 75% practical	0	0%
	50% theoretical/ 50% practical	4	57%
	75% theoretical/25%practical	3	43%
	100% theoretical	0	0%
<hr/>			
8. Please give any comments you consider necessary and relevant to other aspects of the programme			
	More time for interaction students/trainers	1	25%
	Group session would help learning using case study analysis	1	25%
	No answer	2	50%
<hr/>			
9. Did you get professional feedbacks from participants?			
	Very relevant	2	25%
	Relevant	5	63%
	Not relevant	1	13%

Please explain.

Some participant showed their interest to use the approach and tools I presented	2	40%
Three of the students asked very relevant questions consistent to what illustrated	1	20%
Some of them asked to exchange contacts and information to reciprocally improve our activities because both involved in the same seminar topic.	1	20%
Discussion on CC perception and assessment. Insurance programs in Islamic countries	1	20%

10. Are you available for participating again as instructor in a RTC Training Course ?

Yes	8	100%
No	0	0%

11. Have you any suggestions for improving the programme and arrangements for a similar, future activity?

Yes	3	38%
No	5	63%

If yes explain.

Combine theory and practice, invite audience to develop their own case study through the illustration of their experience	1	
Keep the program focused to the point cutting some of the theoretical lectures and giving more space to the practical work. Organize the practical sessions in such a way that the instructors of the theoretical lectures can handle also a practical session with hands on directly on what they explained in the theoretical session and spend more time with participants	1	
Provide a session for interaction and specification of research	1	

12. How would you rate the overall event?

Excellent	2	29%
Very successful	5	71%
Successful	0	0%
Fair	0	0%
Poor	0	0%

Non-academic aspects

A. Did you encounter any problems with regard to Travel and Accommodation Arrangements (Tickets – Payments – Accommodation – Transport)?

Yes	0	
No	5	100%

B. Did you encounter any problems with regard to Course Activities Logistics Arrangement (Training Room, Informatics Equipments)?

Yes	0	
No	5	100%
