



CARIPAC SUMMER CAMP FOR SCIENCE TEACHERS: INSTRUMENTAL IN THE PROMOTION OF AGRICULTURAL SCIENCES CURRICULA

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ABSTRACT: Promotion of Agricultural Sciences Curricula requires a series of strategies to reach and influence high school student attitude. Change postures of school teachers towards agricultural sciences is particularly important, especially those incline to promote natural sciences. During the summer of 2008, ten teachers from public middle and high schools participated in summer camp offering a series of workshops with hands-on experiences focused on Concepts and Laboratory Practices in Agricultural Sciences. A two-week period summer camp for science teachers was sponsored by USDA Residence Instruction Grant of the Caribbean and Pacific Universities Consortium (CARIPAC). Participating teachers were mainly from the western region of the island (Aguada, Cabo Rojo, Lajas, Rincón, San Germán, San Sebastián) and Juncos, P.R. Hand-on experiences included disciplines such as Plant Pathology (i.e. Mycology and Virology), Entomology, Natural Resources and the Environment, Horticulture and Food Technology. Concepts and laboratory practices were conducted by faculty members of the College of Agricultural Sciences of the University of Puerto Rico-Mayaguez Campus, specialized in each discipline. The final intention was that each teacher will implement the experiences in their schools. A questionnaire was used to evaluate the different workshops, laboratory facilities and UPR faculty. Nine criteria were evaluated during the workshop, these were organization, audiovisual resources, faculty preparation at the moment of the workshop, competition in the use of terminology related with the discipline, skills learn in the used of materials and equipment and integration of the experiences to the classroom, among others. Each criterion was evaluated from poor to excellent. Faculty performance was also evaluated. In addition, teachers made comments in writing regarding the experience. The summer camp was evaluated excellent, 93% of the time and good the other 7%. Faculty evaluations were excellent, ranging from 95 to 99%. Teachers comments included: "improvement of public school classrooms equipment (i.e. pH meters, microscopes, analytical balances, digital projectors) is vital, references material are needed (i.e. books, brochures, CD, develop laboratory manuals for middle and high schools students), organize follow-up activities, among others. Overall, the experience was unique for many of the teachers and they were motivated to participate in this type of activity in the future. Ultimately the experience will enhance the recruitment of undergraduate students in the food, agriculture, natural resources and related fields at the UPR-Mayaguez Campus.

INTRODUCTION

Undergraduate student enrollment at the University of Puerto Rico - Mayaguez Campus (UPR-RUM) during academic year 2008-09 was 12,234 (OIPP-UPR-RUM, 2008). Of these, only 955 students or 7.8% were admitted at the College of Agricultural Sciences. Thus, promotion of Agricultural Sciences Curricula requires a series of strategies to reach and influence middle and high school student attitude. Change postures of school teachers towards agricultural sciences is particularly important, especially those incline to promote natural sciences. In addition, middle and high schools requires professional teachers with skills in the different disciplines that comprise the agricultural sciences, besides the principles and methodology required for teaching and learning processes. As natural sciences, agricultural sciences demand continuing learning and training in current trends and techniques that eventually will be implemented in the classroom. Thus to become effective, teachers need to improve their knowledge and competency in agricultural sciences. Effective teachers are and will be instrumental in the promotion of different disciplines comprehend in agricultural sciences as viable choices for middle and high school students that will continue higher education programs. The objective of the 2008 summer camp was to offer a series of workshops with hands-on experiences on Concepts and Laboratory Practices in the diverse disciplines of Agricultural Sciences. This summer camp was sponsored by USDA Residence Instruction Grant of the Caribbean and Pacific Universities Consortium (CARIPAC). Through this approach the UPR-RUM will enhance its recruitment and retention of students in the food, agriculture, natural resources and related fields.

MATERIALS AND METHODS

A two-week period summer camp for science teachers sponsored by USDA-CARIPAC was organized from June 30 to July 11, 2008 at UPR-RUM. Middle and high school teachers were selected mainly from the western region of the island of Puerto Rico. Hand-on experiences included disciplines such as Plant Pathology (i.e. Mycology and Virology), Entomology, Natural Resources and the Environment, Horticulture and Food Technology. Materials on concepts and laboratory practices were prepared by faculty members of the College of Agricultural Sciences of the UPR-RUM, specialized in each discipline. The final intention was that each teacher will implement the experiences in their schools (Fig 1). A questionnaire was used to evaluate the different workshops, laboratory facilities and UPR faculty (Fig 2). Nine criteria were evaluated during the workshop, these were organization, audiovisual resources, faculty preparation at the moment of the workshop, competition in the use of terminology related with the discipline, skills learn in the used of materials and equipment, and integration of the experiences to the classroom, among others. Each criterion was evaluated from poor to excellent. Faculty performance was also evaluated. In addition, teachers made comments in writing regarding the experience.

RESULTS AND DISCUSSION

Eleven teachers were selected mainly from the western region of the island (Aguada, Cabo Rojo, Lajas, Rincón, San Germán, San Sebastián) and Juncos, P.R. (Fig. 1A). Teachers were provided with a series of hand-on experiences in diverse disciplines that included Entomology (Fig. 1. B and C), Horticulture (Fig. 1 D), Natural Resources and the Environment (Fig. E and F), Food Technology (Fig. G and H) and Plant Pathology [i.e. Mycology (Fig. I and J) and Virology (Fig. 2)]. The summer camp was evaluated excellent, 93% of the time and good the other 7%. Faculty evaluations were excellent, ranging from 95 to 99%. Teachers comments included: "improvement of public school classrooms equipment (i.e. pH meters, microscopes, analytical balances, digital projectors) is vital, references material are needed (i.e. books, brochures, CD, develop laboratory manuals for middle and high schools students), organize follow-up activities, among others. Overall, the experience was unique for many of the teachers and they were motivated to participate in this type of activity in the future. Ultimately the experience will enhance the recruitment of undergraduate students in the food, agriculture, natural resources and related fields at the UPR-RUM.

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REFERENCES

Oficina de Investigación Institucional y Planificación. 2008. Matrícula General Subgraduada y Graduada. Universidad de Puerto Rico, Recinto de Mayagüez. Mayagüez, Puerto Rico. <http://oiip.uprm.edu>.



Fig. 1. A) Group of teachers from middle and high schools participating in the summer camp 2008 at UPR-RUM. Hands-on experiences in Entomology (B and C); Horticulture (D); Natural Resources and the Environment (E and F), Food Technology (G and H) and Plant Pathology (i.e. Mycology, I and J).

University of Puerto Rico-Mayaguez Campus
College of Agricultural Sciences
CARIPAC Summer Camp for Teachers
Workshop Assessment

Workshop Title: _____ Professor: _____

Introduction: _____

Answer (1) your experience during the workshops on concepts and laboratory practices in Agricultural Sciences:

Criteria	Excellent	Good	Poor	Very Poor
Workshop organization and audiovisual resources				
Faculty preparation at the moment of the workshop				
Integration of the experiences to the classroom				
Competition in the use of terminology related with the discipline				
Skills learned in the use of materials and equipment				
Integration of laboratory practices to school curriculum				
Faculty performance				
Integration of laboratory practices to school curriculum				

Suggest areas for workshop improvement in the future: _____

Workshop general evaluation from 0 to 100: _____

Fig. 2. Questionnaire used by teachers to evaluate the workshops during the summer camp.

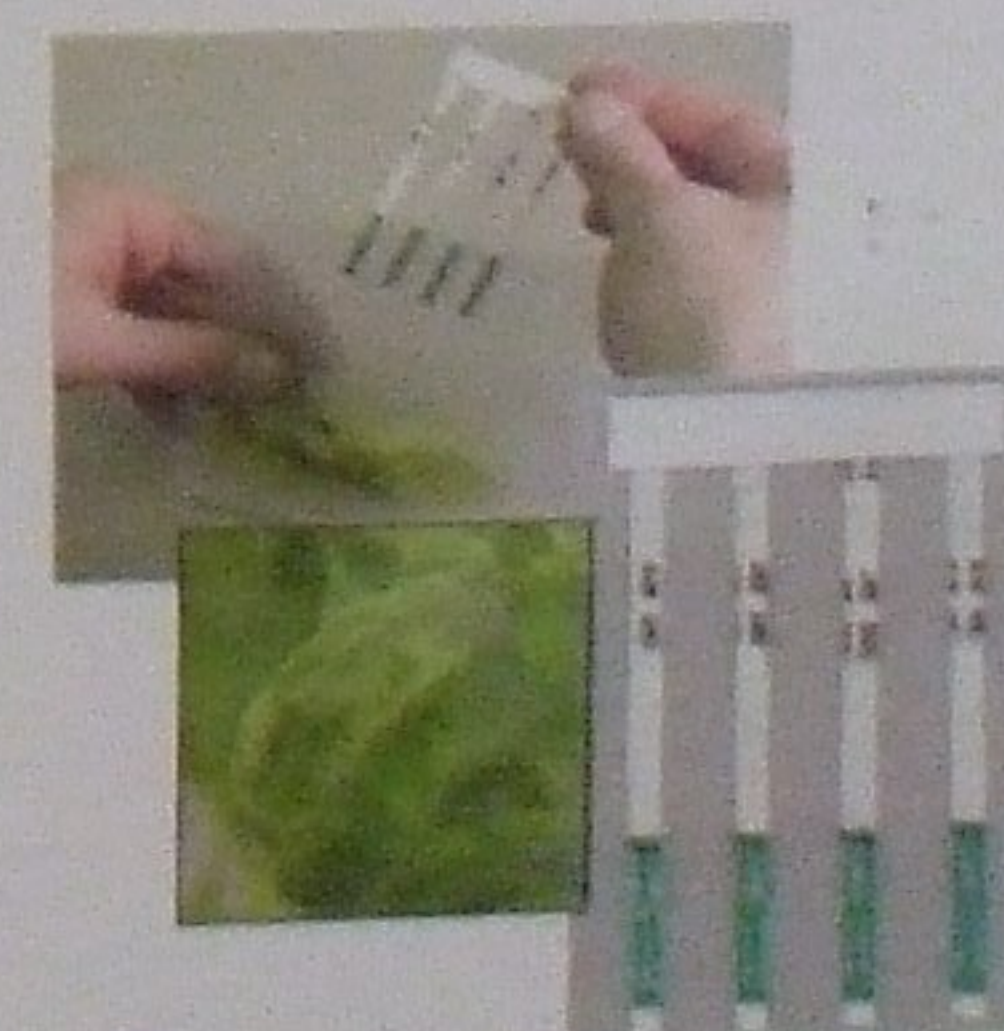


Fig. 3. Hands-on experiences in Plant Pathology (i.e. Virology). Included a practice with immunostrips used to diagnose viral diseases in plants. (Foto from AGDIA®)