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CROPS SOCIETY**

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CAPACITIES AND SPECIALIZATION OF HUMAN RESOURCES IN THE AGRICULTURAL SECTOR OF SURINAME

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ABSTRACT: Agricultural institutions are becoming increasingly aware of the fact that HRD is crucial in their success and survival. To measure improved performance of farmers, field extension agents and researchers, variables proposed by Ali et al. (2009) and others (Biemans et al., 2004) were incorporated in a questionnaire which was developed to assess agricultural/professional competencies such as subject matter expertise, skills, attitudes, attributes and communication skills of farmers, field extension agents and researchers. Decision on this approach was based on the characteristics of the three populations, the facilities and the infrastructure. Descriptive statistics were used to analyze the data. Results indicated that: (1) agricultural knowledge should be diffused in a proper way; (2) service level upgrade of farmers is needed and extension workers should support farmers in their needs; (3) Extension Agents need a professional training program in which all of the occupation competences are exercised; (4) information sources should be managed better with the use of information and communication technology for farmers; and (5) capacity building for graduate training is needed in several disciplines.

INTRODUCTION

Education, training, extension and research form the basis for the agricultural development. Improvement of the social-economic situation will lead to an increased service of the local market with products from agriculture, stock breeding and the fisheries sector. Furthermore, a better basis arises also for the development of non-traditional plants and the agro-industry.

Agricultural based training offered in the Caribbean continues to perform poor due to limited opportunities for trainers and researchers, limited resources for the maintenance of service laboratories, limited teaching resources and delivery modes, low student enrollment in agricultural careers, and below performance standards of students in scholastic achievements tests (Private Sector Commission of Guyana, 2007). Therefore, in February 2008, the Inter American Development Bank (IADB) and the Caribbean Council of Higher Education in Agriculture (CACHE) signed an agreement formalizing a grant which allowed CACHE to carry out a study on the capacities and specialization of the Human Resources (HR) in agriculture in five participating countries including Suriname (CACHE, 2004). The study in Suriname started in September 2010.

Purpose of the study:

The purpose of this study was to assess the capabilities and specializations of the human resources in the agricultural sector of Suriname.

Objectives of the study:

Specifically the proposed study included the following objectives:

1. An assessment of the current characteristics and competences of farmers
2. An assessment of the current characteristics and competences of field extension agents
3. An assessment of the current characteristics and competences of researchers

MATERIALS AND METHODS

The sample population in this study included: twelve Research staff /Teaching staff /Administrators of Agricultural Institutions, seventy field extension workers from the Extension Service, and sixty farmers.

The questionnaire that was developed consisted of two parts. The first part contained demographic data and questions related to participants' experiences in the agricultural sector. The second part of all three questionnaires contained questions concerning agricultural practices (competencies) needed for sustainable agriculture and improved performance of the individual respondent and the agricultural sector as a whole.

The respondents were asked to rate each competency statement on two similar 1-4 points on the Likert scale. One rating was for the possessed level of competency and the other for the needed level. A validation panel was used to validate the questionnaires. It was tested for reliability and validity.

Data were collected and questionnaires interview schedules were organized and administered for farmers and extension workers by the researchers engaged in the study. The researchers, however, did fill out the questionnaire by themselves. Follow-up procedures included e-mails and telephone calls to the respondents.

Each questionnaire was coded and descriptive statistics such as percentages and frequency counts were applied to measure some of the variables. The data was analyzed (SPSS) and saved in Microsoft Excel.

RESULTS AND DISCUSSION

Farmers characteristics

All respondent farmers were engaged in vegetable production, and more than half (73.3%) earn an income of less than US \$500, while the rest (26.7%) earns an income between US\$ 500-US\$1,500. About 68.0% of the respondents are in agriculture part time, and are working about 3-4 hours a day on their land. The rest (32.0%) of the farmers are full-time and work about 8 hours a day on their farm. The size of 68.4% of the respondents' farmland varies from 1.1 to 6.0 ha. The rest (31.6%) varies between 0.1 to 1 ha. However, the total area under cultivation of most farms (84.4%) varies from 0.1 to 1 ha. Only 13.6% of the farmers had an arable area in excess of 1 ha (1 to 3 ha). All farmers use their personal experience as an agricultural knowledge base and at meetings they prefer to communicate on a one on one basis with other farmers.

Field extension agents characteristics

The age range of 80% of the field extension agents varied between 41 and 50 years. Most Applicant Extension Agents (48.6%) and Junior Extension Agents (7.1%) have attended secondary school, while most Seniors (35.7%) have had higher education (level NATIN, VWO - pre-university education-) whereas the Area Managers (8.6%) are college educated or have attended IOL (Teachers Training Institute) and/or MO-A (Qualified Secondary Teacher).

Data analysis showed that the major tasks of extension agents include extension, training, and research. All extension agents have been engaged in these tasks from less than two years to more than 15 years, and the occupation in which they currently work include extension, horticulture, agronomy, crop protection, animal science, dairy science, food technology, and soil science. Most field extension agents (91.2%) have received training in disease and pest control, water management, integrated pest management, Good Agricultural Practices, marketing of agricultural products, hydroponics, and greenhouse management and have attended 5 to 10 trainings, while on the job. The majority of extension agents (64.3%) have a background in farming and most of them (75%) have more than 15 years of farming experience under their belt. The most important source of agricultural information for extension agents are the Extension Publications, followed by short terms in service training, seminars and conferences and establishing discussions and lectures at work.

Characteristics of researchers

The age of the majority of the researchers (66.6%) ranged between 41 and 50 years. All have university degrees and are employed at the University of Suriname, Center for Agricultural Research in Suriname (CELOS), and the Ministry of Agriculture, Husbandry and Fisheries. Their main tasks include research, training, lab supervision and teaching, in which they have 3 to 15+ years of experience. Currently, the survey respondents are working in research, training and education, extension, agronomy, horticulture, animal science, crop protection, agro-forestry, and soil science. Of the respondents, 57.2% participated in 2 to 3 projects in about the last five years while only two of the respondents participated in more than five projects in the same period of time.

Some projects on which researchers work include cabbage cultivation; storage insect pests in paddy and repellency effect of selected plants; poultry research program focused on reduction of input component in poultry, feed, and cost effective production; jatropha curcas as a biofuel crop; regional survey on cottonseed bug; strengthening of the Amazon initiative consortium for sustainable use of natural resources. CBN-Training in implementation of tailor-made guidelines as a method for evaluation/implementation of agro-forestry results, rapid agricultural baseline assessment in Commewijne and monitoring crops at sites at selected growers in Commewijne, and improving soil methodology at the soil lab of ADEK University. The researchers listed a number of fields/courses which ADEK/FTeW (Faculty of Technological Sciences) does not include in their curricula but are necessary for succeeding in their teaching and research efforts.

The courses/fields which are lacking at ADEK include: controlled-environment agriculture, sustainable farming systems, value added agricultural commodities, agribusiness and trade, biochemistry, biotechnology, organic/sustainable agriculture, agricultural marketing, soil chemistry, virology, field trial statistics, sociology, bio-engineering, soil data interpretation, soil physics, detail simulation in greenhouses, irrigation water management and crop modeling, and

epidemiology (animal diseases). Most researchers (66.6%) are interested in training for more than one month and less than six, and they prefer to go for training to Europe or the USA.

The prioritized areas in which researchers would like to receive training include: Agro-forestry (certificate), Poultry Production (certificate), Biofuel management (certificate), Post Harvest Production and Agro-processing, Protected Agriculture (certificate, MS), Integrated Pest Management (MS), Organic Farming (certificate), Field Trial Statistics (certificate), Gene Banks (MS), Plant-insect interactions (certificate), Plant chemical defenses and use of natural enemies in biological control of insect pest (certificate), agricultural extension topics (certificate).

The majority of the respondents (75%) think that the infrastructure at the department is inadequate. Concerning HRD, faculty members observed that there were no positive changes regarding HRM at the department but some respondents made remarks to the contrary. Most respondents (90%) indicated that the national press is considered the most important source of information about agricultural development in Suriname. The Worldwide web (Internet) and television were also considered an important source of information. Half of respondents in this study said that availability and access to research information has remained about the same in the last five years. Most respondents (66.6%) mentioned that they do share information with other researchers from both national and international organizations.

The majority of respondents (75%) said that they have frequent interaction with the management, and a few stated that their interaction was occasional. They also said that they interacted with the management through meetings. Most respondents considered project funding and government budget allocation to the institute as the most important sources of finance to the department. The researchers (66.6%) rated universities/institutions in the USA and Europe as important sources of technical assistance to the university, national research institutions, and the Ministry of Agriculture.

Required competencies

Farmers rated the levels of competencies they possessed and the required levels of these competences for their job performance. The discrepancy values (DVs) were calculated on the basis of differences between the needed levels of competencies for the job performance of the respondents and the possessed levels. These differences were considered as felt levels of training needs in the identified competencies (Khan et al., 2007). The discrepancy values based on the mean perceptions of the farmers were positive values for all technical competencies in the various agronomic categories. These values suggest that farmers need training in all aspects of vegetable production, fruit and field crops cultivation, crop protection, and in farm machinery.

Field extension agents required competencies

The discrepancy values based on the mean perceptions of field extension agents were positive values for all technical competencies in the following subjects: understanding human behavior, administering properly, conducting program planning effectively, executing program effectively, teaching effectively, communicating properly, exhibiting professionalism, and evaluating effectively.

Researchers required competencies

Based on the positive discrepancy values on the mean perceptions of researchers, the researchers need technical competencies in their ability to use: statistical packages and database operations, GIS, fluent command of one or more languages beside English, facilitate groups to write in-depth research reports, manage creative processes, work under tight deadlines, work well in teams, be self motivated, be flexible in assignments, understand program management, formulate and analyze budgets, understand administrative law, be knowledgeable in design and planning, understand transportation and infrastructure planning, conduct strategic planning, understand demographic analysis, demonstrate knowledge of program evaluation and understand cost and benefit analyses.

Conclusions-farmers:

1. Fragmentation in vegetable production should not be encouraged
2. Earning capacity of farmers should increase to US \$ 500 +/-month
3. Status of part-time farmers should be changed to full-time farmers
4. Agricultural knowledge should be diffused in a proper way (knowledge management)
5. Networking groups should be established with links with product vertical organizations (fruit, dairy, fish, meat, vegetables, etc.).

Conclusions-field extension agents:

1. Service level upgrade for farmers is needed and field extension workers should support farmers in their needs.
2. Extension agents need a professional training program in which the occupation competencies are exercised.
3. Information sources should be managed better with the use of information and communication technology (internet, media, etc.) so that it becomes better available and payable for farmers.

Conclusions-researchers:

1. Several research staff are lacking skills/knowledge in various subjects/fields in agriculture.
2. Capacity building in graduate training is needed in several disciplines including biotechnology, business and technology, poultry production, IPM, extension animation and communication, poultry production, agro-forestry, protected agriculture, field trial statistics, plant-insect interaction, plant-chemical defenses, biological control of insect-pests by means of plant extracts, natural enemies (parasitoids, predators, and entopathogens, livestock production research, and agro-climatology.
3. Development of a training policy within a framework of HRM and development of training programs for faculty members at the University of Suriname (ADEK) in several subjects is necessary.
4. ADEK, Faculty of Technology, Department of Agricultural Production needs to help facilitate training that is linked to Suriname's agricultural sector objectives and should assist with agricultural skills and new innovation technologies.
5. The HRM department at ADEK should promote education of people and improvement of competency, enable better service for department's staffs and faculty members and develop a strong HRM strategy to guarantee a competent and skilled agricultural sector.

6. The aim of the ministry of Agriculture is to improve the image of agriculture and facilitate equal access to training and education opportunities in the agricultural sector through harmonization of training programs and curricula (low/midlevel, high level).
7. A HRD strategy for the Ministry of Agriculture is needed, which means maximizing people development, management, and empowerment through quality skills development.
8. The agricultural sector needs institutional strengthening to achieve the government of Suriname objectives: sustainable agriculture and economic growth and food security.

Recommendations based on the outcome of this study

1. A HRD strategy must be developed to transform the agricultural sector into a more competent and skilled branch of economic activity, better equipped to serve the core strategies of the sector. This transformation could be reached by several plans of action: access and optimal utilization of international training opportunities, build capacity, enrich skills, develop competencies for empowerment, transformation and development of human capacity in the sector. Areas of focus: technicians, students, researchers, policymakers, specialists, administrators.
2. Technical and general competencies which are lacking among farmers, extension field workers and researchers need to be made up for by training, extension instruction and other rural educational services which concentrate on these critical elements. This should be conducted from the perspective of organizational (farm or agri-business) and individual (farmer, entrepreneur or employee) performance improvement, since competence development only makes sense if this perspective is used.
3. A structural revision of the preparation and planning of various courses is needed to support the competence development of farmers through exchange programs, vocational training, undergraduate studies, post-graduate studies, short courses, and conferences and seminars.
4. It is imperative to develop job competency profiles for the personnel involved in extension and research and other groups of personnel of the Ministry of Agriculture.

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