

TROPICAL AGRICULTURE

The Journal of The Faculty of Agriculture (Imperial College of Tropical Agriculture),
University of The West Indies
Incorporating Oil Palm News

Volume 63

Number 2

April 1986

Reviews

- Microbiology of tropical soils – a historical review
P.S. Nutman 90
- Experimental design: the first sixty years
S.C. Pearce 95

Research Papers

- Dry matter yield and *in vitro* dry matter digestibility of winterhardy *Panicum maximum* Jacq. selections
W.W. Hanna, W.G. Monson, J.W. Dobson Jr. and R.R. Duncan 101
- The effects of phosphorus and nitrogen fertilizer level on nodulation, growth and dinitrogen fixation of three bean cultivars
H. Ssali and S.O. Keya 105
- Edible fruit productivity and harvest duration of okra in southern Nigeria
M.O. Akoroda, O.A. Anyim and I.O.A. Emiola 110
- Survival of blue-green algae in various carrier media
S.I. Kotb and J.S. Angle 113
- Leaf characteristics for the identification of the banana cvs 'Robusta' and 'Giant Cavendish'
G.D. Holder and G. Taylor 117
- Effect of cutting management and nitrogen fertilization on yield and quality of *Pennisetum pedicellatum* Trin. (Diananath grass)
G.D. Tyagi and V. Singh 121
- Effect of cassava peel processing on the performance, nutrient utilization and physiopathology of the African giant rat (*Cricetomys gambianus* Waterhouse)
O.O. Tewe and O.B. Kasali 125
- Number and effectiveness of cowpea rhizobia in soils of Guyana
A.A. Trotman and R.W. Weaver 129
- Growth of wheat with heavy lime application
W.J. Folscher, R.O. Barnard, J.J. Bornman and J.A.J. van Vuuren 133
- Phosphorus status of some Ethiopian soils
A. Piccolo and G. Huluka 137
- Effect of fertilizers on yield and leaf nutrient concentrations in coconut
P. Loganathan and P.P. Atputharajah 143
- Background of factors related to the job satisfaction of extension field staff in Trinidad
J. Seepersad 149
- Insecticidal control of sweet potato weevils (Coleoptera: Curculionidae) in Hawaii
D.A. Muruvanda, J.W. Beardsley and W.C. Mitchell 155
- The adoption of innovation by cooperative farmers in Nigeria
A. Osuntogun, R. Adeyemo and E. Anyanwu 158
- Sumarios** 161
- Book Review** 165
- Calendar** 168

TROPICAL AGRICULTURE is glad to receive and consider for publication manuscripts in English on topics concerning tropical agriculture with particular emphasis on subjects such as agronomy, crops and pastures, biology and physiology of economic crops, biomass for energy (production and conversion), crop breeding, ecology of the tropics and land-and-water-use capability, economics and sociology of agriculture, farming systems (analysis and development), horticulture, livestock breeding, management and nutrition, plantation crops, post-harvest technology, protection against pests, diseases and weeds and soil science and management. Authors wishing to submit review articles should first consult with the Editor-in-Chief. Intending contributors may submit their manuscripts to the Editor-in-Chief, care of the Guildford office, to the appropriate Regional Editor or to the University of the West Indies.

Background factors related to the job satisfaction of extension field staff in Trinidad

Joseph Seepersad

Department of Agricultural Extension, University of the West Indies, Trinidad & Tobago

Received February 1985; revised July 1985

The study examined the relationships between selected background characteristics of agricultural extension field staff (the independent variables) and (a) satisfaction with selected job facets and (b) overall job satisfaction (the dependent variables). Stepwise multiple regression analysis was used to test the significance of these relationships, several of which were found to be statistically significant. However, except for satisfaction with competency, the contributions of such variables to the variances in overall job satisfaction and satisfaction with the various job facets, were generally low (less than 35%). In the case of competency, background variables accounted for 84.7% of the variance in satisfaction with this facet. Most of the variance was accounted for by years of extension experience (33.4%) and percentage time spent on extension activities (26.2%). The former was positively related, and the latter, negatively related to satisfaction with competency.

Keywords: Extension education; Job satisfaction

Agriculture and related activities are critical to the welfare of many developing nations. National agricultural extension systems have a key role to play in any drive towards increased agricultural production and productivity since these are the units which have first line contact with the primary producers, the farmers. The effectiveness of such systems, however, depends to a large extent on the field staff who are responsible for the actual delivery of a wide range of agricultural and related services to farm families.

The management of field staff has been identified as a major problem affecting the performance of extension organizations in developing countries by a number of writers (e.g. Jiggins, 1977; Chambers, 1974; Lele, 1975). The areas of job satisfaction and motivation have been specifically singled out as causes for concern. For example, Montgomery (1982) in looking at problems most commonly encountered in the implementation of rural development projects found that "two-thirds of the generic problems reported by management pertain to staff morale and management".

The concept of job satisfaction

Vroom (1964) pointed out that the concepts of job satisfaction, job attitudes and morale are essentially similar to one another. He further defined these as "affective orientations on the part of individuals toward work roles which they are presently occupying". Positive attitudes are equivalent to job satisfaction and negative attitudes, job dissatisfaction. March and Simon (1958) referred to job satisfaction as the "motivation to participate"; others refer to it as "the motivation to attend" (Lawler III, 1973) and "attendance motivation" (Sutermeister, 1976). Thus, the lower the level of job satisfaction, the less will be the motivation to participate in the organization's activities and the greater the likelihood of job absenteeism and turnover. In the extension setting,

job satisfaction has also been linked to the motivation and performance of field staff.

Study objectives

Seashore and Tabler (1976) identified three groups of determinants of job satisfaction: (a) the job and job environment, (b) demographic or background factors and (c) personal characteristics. This study looked at the relationships between selected background factors (e.g. age, experience) – the independent variables – and (a) satisfaction with the various facets of the job and job environment (e.g. salary, work itself) and (b) overall job satisfaction. The study attempted to answer the following questions:

- (1) Which persons tend to be more/less satisfied with each of the various job facets selected for study?
- (2) Which persons tend to be more satisfied with the job and job environment overall?

Dependent variables

The job/job environmental factors (dependent variables) were as follows: salary and fringe benefits, promotion, security, image, work itself, accomplishment, competency, supervision and co-workers. A brief rationale for each of the variables selected for study is presented below:

Salary and promotion. These two factors have been cited by a number of writers (Chambers, *op. cit.*; Jiggins, *op. cit.*; Leonard, 1977) as major problems affecting extension field staff. Specific concerns regarding salary are its absolute amount (generally low), the structure of salary scales, and its perceived inequity compared with what people with similar training and experience receive in the surrounding job market. With regard to promotions, problems centre around the lack of opportunities for advancement and promotion criteria, which are often not related to performance.

Other terms of service. As civil servants, extension staff usually enjoy a considerable degree of job security. Leonard (*ibid.*) pointed out that this may be perceived as an advantage by some staff. However, Chambers (*op. cit.*) emphasized that, in terms of postings, staff may not feel as secure since transfers can be frequent and sudden. Chambers further noted that other allowances and benefits such as housing also constitute causes for concern.

Image. The overall problem here is that many societies accord low status to agriculture and related occupations. Problems specific to the image of extension work and extension workers have also been cited by some writers. For example, Chambers (*ibid.*) pointed to the "widespread belief that field staff are idle, venal and incompetent".

Work itself. The work itself can either be a source of satisfaction or frustration for extension workers. Workers may enjoy their contacts with farmers and the opportunity to work outdoors, among other things. On the other hand, staff are often required to perform many and varied tasks, resulting in conflicting expectations and demands from the various relevant groups in the extension system. This can eventually lead to role conflict and job dissatisfaction.

Accomplishment. Montgomery (*op. cit.*) pointed out that staff derive considerable satisfaction when they feel they are producing beneficial results for their clientele. Conversely, programmes that are perceived as not significantly impacting on the welfare of the farming community are less likely to give them feelings of accomplishment; consequently, job dissatisfaction can arise.

Competency. Benor and Harrison (1977) have noted that in many developing countries, pre-service training is generally designed to cover a broad range of subject matter and is, more often than not, academic rather than practical in nature. Also, in-service training has tended to be irregular, *ad hoc*, and not necessarily tied to any specific priorities for agricultural development. In such situations, therefore, staff who are required to discharge educational responsibilities are likely to feel they are not adequately trained to do a good job.

Supervision. With regard to this job facet, Chambers (*op. cit.*) noted that the tendency was towards non-participative authoritarian styles of management in many extension organisations in developing countries. Jiggins (*ibid.*) emphasized the need for supervisors to play a more supportive role with adequate attention to each individual's work problems.

Co-workers. Billings (1978) pointed out that in many work situations the competence, friendliness and helpfulness of co-workers are important to the job satisfaction of employees.

Independent variables

The background factors examined were age, years of extension experience, level of academic education, level of formal training in agriculture, rank, race, percentage time spent on extension education activities, percentage time spent on non-extension education activities, and percentage time spent on activities related to the distribution of State Lands. A brief rationale for each of the various background factors selected for study is presented below:

Age. Lawler III (*op. cit.*) pointed out that age and seniority are, generally, positively related to satisfaction. This, he stated, seems to be produced by "the effects of selective turnover and the development of realistic expectations about what the job has to offer". Herzberg *et al.* (1957) have explained the relationship by pointing out that among older persons there is a concurrent upward trend in adjustment and satisfaction with life.

Experience. In Trinidad, Thomas (1976) found that both age and years of extension experience were strongly correlated in the positive direction with performance of extension staff. A similar relationship could be expected to hold for job satisfaction as well.

Level of academic education. Leonard (*op. cit.*) in a study in Kenya found that extension workers with secondary schooling had lower levels of job satisfaction than those with primary schooling. He attributed this to the limited number of opportunities available for promotion so that those with higher qualifications felt more disadvantaged in this situation.

Formal training in agriculture. The situation here could be similar to that for level of academic education – that is, those with higher levels of training may feel more disadvantaged particularly in terms of salary, promotions and the like. However, those with a higher level of formal training are likely to feel more competent and better able to deal with their job responsibilities.

Rank. The interest here was in determining the extent to which overall job satisfaction and satisfaction with the various facets varied with rank.

Race. Rogers and Shoemaker (1971), among others, have suggested that communication is facilitated when the source or sender of a message and the receiver are homophilous – that is, they are alike in certain essential characteristics. In terms of racial composition, the farming community is dominated by groups of East Indian descent (60%); the other major racial groups are Africa (28%) and Mixed (10%) (Thomas, *op. cit.*). The interest here was in determining the extent to which racial background of the extension staff was related to satisfaction with the job and job facets, particularly to satisfaction with the work itself.

Nature of job activities. The major responsibilities of the extension field staff can be classified as follows: (1) extension education activities such as training courses, demonstrations, farm tours, etc., (2) non-extension education activities such as subsidy inspections, distribution of planting material etc. and (3) matters related to the distribution of State Lands for agricultural purposes. Some writers (Henderson, 1970; Chambers, 1976) have pointed out that certain kinds of activity, such as regulatory activities, require a style of operation, in this case a disciplinary style, which may impair the extension worker's relationship with farmers and adversely affect job satisfaction. The concern of the study here was, therefore, to ascertain the extent to which the kinds of activity carried out by extension staff was related to their satisfaction with various facets of the job and job environment.

Methodology

Study population. The study population consisted of

all agricultural extension field staff in the Extension, Information, and Training Services of the Ministry of Agriculture, Lands and Food Production in Trinidad. The ranks of those included ranged from Agricultural Officer I (County Officer) to Agricultural Extension Aides.

Research instrument. A Likert-type rating scale was developed and used for measuring overall job satisfaction as well as satisfaction with the various job facets. It consisted of 53 statements to which respondents were required to indicate whether they *strongly agree, agree, are undecided, disagree, or strongly disagree* with each statement.

Sub-scales were formed by combining scores on individual items related to a particular job facet. The overall scale was formed by combining scores on the various facets. A section with items relating to the various background factors was also included. The instrument was pilot tested with eight undergraduate students in Agriculture at the University of the West Indies; they all had previous field experience in agricultural extension. The instrument was self-administered; anonymous responses were sought. 141 completed questionnaires, representing a response rate of 90.9%, were collected.

Data analysis. Stepwise multiple regression analysis was used to test the significance of relationships between the independent and dependent variables. Independent variables that were neither dichotomous nor interval-level, were dummy coded along the lines suggested by Cohen (1968); the direction of the relationships could not be ascertained for these. Variables thus affected were as follows:

- (1) **Rank:** The five ranks – Agricultural Extension Aide (A.E.A.), Agricultural Assistant I (AA I), Agricultural Assistant II (AA II), Agricultural Assistant III (AA III), and Agricultural Officer I (AO I) were represented by four dummy variables, D1 to D4.
- (2) **Race:** The three categories of race (East Indian, African, and other) were represented by two dummy variables, D5 and D6.
- (3) **Formal training in agriculture:** The three categories (no ECIAF, ECIAF, and B.Sc.) were represented by two dummy variables, D7 and D8. The “no ECIAF” category includes persons without a Diploma from the Eastern Caribbean Institute of Agriculture and

Forestry (ECIAF) or its equivalent; “ECIAF” includes those with Diploma. The “B.Sc.” category includes all those with at least a Bachelor’s degree in Agriculture.

Interval-level variables were: age, years of extension experience, and percentage time spent on extension education/non-extension education/lands activities. Level of academic education was dichotomous – less than five Ordinary Level GCE passes and five or more.

Results

Accomplishment. This sub-scale included items relating to the extent to which respondents obtained feelings of accomplishment from their jobs. Table 1 reports on the results of the regression of Accomplishment on the independent variables. The total variance accounted for by the independent variables was low (23.9%). The individual contributions of each of the significant variables also was quite low; the highest was experience (3.7%).

Image. The items in this sub-scale related to the extent to which respondents perceived their jobs as having a positive or negative image. None of the relationships was significant.

Work itself. The items in this sub-scale related to the extent to which various aspects of the work itself were perceived by respondents as interesting, challenging and satisfying. Table 2 reports on the results of the regression of Work Itself with the independent variables.

The total variance accounted for by the independent variables was 33%. With regard to individual contributions of the significant variables, rank contributed the highest amount 10.2%; the contribution of the others ranged from 5.3% to 1.1%.

Co-workers. The items in this sub-scale related to the extent to which respondents were satisfied with relationships with their co-workers. None of the relationships was significant.

Salary and Fringe Benefits. The items in this sub-scale related to the extent to which respondents were satisfied with various aspects relating to salary and fringe benefits such as leave arrangements and

Table 1 Regression of accomplishment with all independent variables

Variable	Mult-R	R ²	Change	r ^a	Overall F	P
D1 (A.E.A.)	0.111	0.012	0.012	0.111	1.358	0.254
D2 (AA III)	0.169	0.028	0.016	0.112		
D3 (AA II)	0.176	0.031	0.003	0.009		
D4 (AA I)	0.222	0.049	0.018	-0.078		
D5 (East Indian)	0.227	0.052	0.003	0.040	0.959	0.457
D6 (African)	0.230	0.053	0.001	-0.036		
D7 (no ECIAF)	0.234	0.055	0.002	0.114	0.889	0.529
D8 (ECIAF)	0.256	0.066	0.011	0.001		
Extension	0.367	0.135	0.069	0.203	1.727	0.092
Age	0.412	0.170	0.036	0.210	2.030	0.038*
Education	0.438	0.192	0.022	-0.079	2.119	0.026*
Experience	0.478	0.229	0.037	0.153	2.400	0.009**
Lands	0.482	0.232	0.003	-0.242	2.232	0.013*
Non-extension	0.489	0.239	0.007	0.070	2.133	0.016*

^a Values under this column represent bivariate correlation coefficients

* $P < 0.05$; ** $P < 0.01$

Table 2 Regression of work itself with all independent variables

Variable	Mult-R	R ²	Change	r ^a	Overall F	P
D1 (A.E.A.)	0.228	0.052	0.052	0.228	2.951	0.023*
D4 (AA III)	0.240	0.058	0.006	0.045		
D3 (AA II)	0.252	0.064	0.006	0.017		
D2 (AA I)	0.318	0.101	0.038	-0.118		
D5 (East Indian)	0.326	0.106	0.005	-0.102	2.323	0.038*
D6 (African)	0.345	0.119	0.013	0.059		
D7 (no ECIAF)	0.388	0.151	0.032	0.167	2.613	0.012*
D8 (ECIAF)	0.414	0.171	0.021	-0.031		
Non-extension	0.472	0.223	0.051	-0.124	3.187	0.002**
Lands	0.501	0.251	0.028	0.020	3.313	0.001**
Extension	0.532	0.283	0.033	0.096	3.522	0.000**
Age	0.542	0.294	0.011	0.175	3.368	0.000**
Experience	0.564	0.318	0.024	0.083	3.446	0.000**
Education	0.576	0.331	0.013	-0.167	3.364	0.000**

^a Values under this column represent bivariate correlation coefficients

* P < 0.05; ** P < 0.01

allowances. None of the relationships was significant.

Promotion. The items in this sub-scale related to the extent to which respondents were satisfied with promotional opportunities in the job as well as the basis for promotions. Table 3 reports on the results of the regression of Promotion with the independent variables.

The total variance accounted for by the independent variables was 24.2%. With regard to the individual contributions of the significant variables, three were generally quite low, except in the case of rank (10.4%).

Security. The items in this sub-scale related to the extent to which respondents were satisfied with job security. None of the relationships was significant.

Competency. The items on the competency sub-scale related to the extent to which respondents perceived themselves as adequately trained and competent to do a good job. Table 4 reports on the results of the regression of Competency with the independent variables.

The findings indicate that quite a high proportion of the total variance (84.8%) could be accounted for by the independent variables. In terms of individual contributions, years of extension experience (33.4%) and percentage time on extension activities

(26.2%) contributed heavily to the variance in satisfaction with the competency job facet.

Supervision. The items in the supervision sub-scale related to the extent to which respondents were satisfied with various aspects related to supervision. The regression of Supervision with the independent variables revealed a significant positive relationship (P < 0.05) between supervision and age. The individual contribution of the age variable was 9.5%.

Overall job satisfaction. Table 5 reports on the regression of Overall job satisfaction with the independent variables. Independent variables accounted for 34.7% of the variance in overall job satisfaction with rank (11%) contributing the highest individual amount.

Summary of significant findings. Table 6 is a summary of the significant relationships between the various dependent and independent variables in the study.

Discussion and implications

The study was expected to identify what patterns exist among extension field staff regarding their levels of satisfaction with the job overall and with

Table 3 Regression of promotion with all independent variables

Variable	Mult-R	R ²	Change	r ^a	Overall F	P
D1 (A.E.A.)	0.283	0.080	0.080	0.283	3.048	0.020*
D4 (AA III)	0.304	0.093	0.013	0.076		
D3 (AA II)	0.305	0.093	0.000	-0.080		
D2 (AA I)	0.323	0.104	0.011	-0.149		
D5 (East Indian)	0.349	0.122	0.018	-0.171	2.429	0.031*
D6 (African)	0.352	0.124	0.002	0.150		
D7 (no ECIAF)	0.376	0.142	0.018	0.194	2.130	0.040*
D8 (ECIAF)	0.380	0.144	0.003	-0.136		
Non-extension	0.425	0.181	0.037	-0.105	2.456	0.014
Experience	0.431	0.186	0.005	0.053	2.252	0.020*
Lands	0.433	0.187	0.002	0.142	2.055	0.031
Extension	0.448	0.201	0.014	-0.036	2.035	0.029
Education	0.458	0.210	0.009	-0.217	1.965	0.032*
Age	0.491	0.242	0.031	0.084	2.161	0.015*

^a Values under this column represent bivariate correlation coefficients

* P < 0.05

Variable	Mult-R	R ²	Change	r ^a	Overall F	P
D1 (A.E.A.)	0.082	0.007	0.007	-0.082	1.506	0.206
D4 (AA III)	0.091	0.008	0.002	0.050		
D3 (AA II)	0.141	0.020	0.011	0.116		
D2 (AA I)	0.233	0.054	0.034	0.048		
D5 (East Indian)	0.235	0.055	0.001	0.042	1.008	0.424
D6 (African)	0.236	0.055	0.000	-0.044		
D7 (no ECIAF)	0.240	0.058	0.002	-0.025	0.929	0.496
D8 (ECIAF)	0.262	0.069	0.011	0.171		
Age	0.403	0.162	0.094	0.252	2.153	0.032*
Education	0.447	0.200	0.037	0.028	2.469	0.011*
Lands	0.478	0.229	0.029	0.150	2.641	0.005**
Non-extension	0.502	0.252	0.024	0.017	2.725	0.003**
Extension	0.717	0.514	0.262	-0.159	7.807	0.000**
Experience	0.921	0.848	0.334	0.217	37.884	0.000**

^a Values under this column represent bivariate correlation coefficients

* $P < 0.05$; ** $P < 0.01$

Table 5 Regression of overall job satisfaction with all independent variables

Variable	Mult-R	R ²	Change	r ^a	Overall F	P
D1 (A.E.A.)	0.298	0.089	0.089	0.298	3.243	0.015*
D4 (AA III)	0.303	0.092	0.003	0.021		
D3 (AA II)	0.307	0.094	0.002	-0.026		
D2 (AA I)	0.332	0.110	0.016	-0.163		
D5 (East Indian)	0.352	0.124	0.014	-0.159	2.656	0.020*
D6 (African)	0.366	0.134	0.010	0.117		
D7 (no ECIAF)	0.385	0.148	0.014	0.230	2.453	0.018*
D8 (ECIAF)	0.403	0.163	0.015	-0.131		
Non-extension	0.444	0.197	0.034	-0.094	2.726	0.007**
Age	0.460	0.212	0.015	0.204	2.662	0.006**
Experience	0.499	0.249	0.037	0.061	2.959	0.002**
Education	0.547	0.300	0.050	-0.229	3.459	0.000**
Extension	0.548	0.300	0.000	-0.009	3.165	0.001**
Lands	0.589	0.347	0.047	0.093	3.609	0.000**

^a Values under this column represent bivariate correlation coefficients

* $P < 0.05$; ** $P < 0.01$

Table 6 Summary of significant relationships between dependent and independent variables

Dependent Variables	Independent Variables								
	Age	Experience	Education	Agricultural training	Rank	Race	Lands	Extension	Non-extension
Accomplishment	+	+	-				-		+
Image									
Work itself	+	+	-	Sig.	Sig.	Sig.	+	+	-
Co-workers									
Salary and fringe benefits									
Promotion	+	+	-	Sig.	Sig.	Sig.			
Security									
Competency	+	+	+				+	-	+
Supervision									
Overall satisfaction	+	+	-	Sig.	Sig.	Sig.	+	-	-

Note: + indicates a significant positive relationship was found

- indicates a significant negative relationship was found

Sig. indicates a significant relationship. The independent variable in this case was dummy coded and thus the direction of the relationship could not be determined

various aspects of their jobs. Such information would assist extension management to pinpoint which specific groups of persons (e.g. younger, less experienced) should be targeted in any effort to increase job satisfaction and motivation of the staff.

Although several relationships among the independent and dependent variables were found to be statistically significant, the individual as well as total contributions of the former to the variances in

overall job satisfaction and satisfaction with the various facets were low, except in the case of competency. This suggests that in improving job satisfaction, it will not be worthwhile to focus a great deal of attention on the background characteristics of the field staff. As a matter of interest, though, it should be noted that the study findings are generally consistent with previous research already discussed, particularly for age and experience.

With regard to competency, background variables accounted for quite a high proportion of the variance (84.7%) in satisfaction with this job facet. Those accounting for most of the variance were experience (33.4%) and percentage time spent on extension activities (26.2%).

In the case of experience, the relationship is what would normally be expected – the more the experience the greater the perceived competency. However, the fact that the relationship was highly significant ($P < 0.01$) and that it explained quite a large proportion of the variance suggests, perhaps, that experience plays too large a role in satisfaction with this job facet. Thus, a greater role for pre-service and other types of training is indicated; experience will then become a less important factor related to satisfaction with competency.

The relationship between satisfaction with competency and percentage time spent on extension education activities was negative, indicating that the greater the time spent on such activities the less did staff feel adequately prepared and sufficiently competent to do a good job. On the other hand, the greater the time spent on non-educational activities, which are generally more routine and structured, the more competent they felt to deal with such responsibilities.

Extension staff are regarded as “generalists” and are thus expected to be knowledgeable in a broad range of subject matter. This, however, is a difficult expectation to fulfill in any circumstance. Pre-service training at both the para-professional (sub-university) and professional (university) levels are general in nature. It seems, therefore, that the best way to handle the situation at this time is to provide appropriate in-service training and adequate back-up support such as opportunities to consult with resource personnel, adequate reference and instructional material and so forth. Of course, good extension programming will also help since the competence of staff can then be upgraded in line with priorities established by the programmes.

References

- Benor, D. and Harrison, J.Q. (1977) *Agricultural extension: The Training and Visit System*, Washington D.C., The World Bank
- Billings, R.S. (1978) Job satisfaction and performance measures: the state of the art, in: *Interpreting Outcome Measures in Vocational Education: A Final Report*, (McKinney, F., Gray, K.E. and Abram, M., Eds.), Columbus, The Ohio State University, National Center for Research in Vocational Education
- Chambers, R. (1974) *Managing Rural Development: Ideas and Experience from East Africa*, Uppsala, The Scandinavian Institute of African Studies
- Chambers, R. (1976) Two frontiers in rural management: agricultural extension and managing the exploitation of communal natural resources, in: *Policy and Practice in Rural Development*, (Hunter, G., Bottrall, A. and Bunting, A.H., Eds.), London, Croom Helm
- Cohen, J. (1968) Multiple regression as a general data-analytic system, *Psychological Bulletin* **70** 426–443
- Henderson, T.H. (1970) *Conflicts in the Role of the Agricultural Extension Officer in the Windward Islands*, Trinidad, Department of Agricultural Extension, University of the West Indies
- Herzberg, F., Mausner, B., Peterson, R.O. and Capwell, D.F. (1957) *Job Attitudes: Review of Research and Opinion*, Pittsburgh, Psychological Service of Pittsburgh
- Jiggins, J. (1977) Motivation and performance of extension field staff, in: *Extension, Planning and the Poor*, London, Overseas Development Institute
- Lawler III, E.D. (1973) *Motivation in Work Organizations*, Monterey, California, Brooks/Cole Publishing Company
- Lele, U. (1975) *The Design of Rural Development*, Baltimore, The Johns Hopkins University Press
- Leonard, D.K. (1977) *Reaching the Peasant Farmer*, Chicago, The University of Chicago Press
- March, J.G. and Simon, H.A. (1958) *Organizations*, New York, John Wiley and Sons, Inc.
- Montgomery, J.D. (1982) Managing integrated rural development: views from the field, *Rural Development Participation Review, Special Supplement*, Spring 1982, 6–9
- Rogers, E.M. and Shoemaker, F.F. (1971) *Communication of Innovations* (2nd ed.), New York, The Free Press
- Seashore, S.E. and Taber, T.D. (1976) Job satisfaction indicators and their correlates, in: *Measuring Work Quality for Social Reporting*, (Biderman, A.D. and Drury, T.F., Eds.), New York, John Wiley & Sons
- Sutermeister, R.A. (1976) *People and Productivity*, New York, Mc-Graw Hill Book Company
- Thomas, B.A. (1976) An Analysis of the Relationships between Selected Variables and Job Performance of Agricultural Extension Officers in Trinidad, *Master's Thesis*, University of the West Indies, Trinidad, unpublished
- Vroom, V.H. (1964) *Work and Motivation*, John Wiley and Sons, Inc.