

Information management in agriculture: a study of information flow between extension services and farmers

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Presentation outline

- Sustainability in agriculture
- Changing demands & decision-makings
- The role of extension
- Objectives
- Propositions
- Questionnaire constructs
- Conclusion

Emerging challenges for agriculture

- Expanding world population
- Higher income levels among many former developing countries
- Increased global demand for more and better quality food
- Increased pressure on the planet's natural resources and leading to environmental degradation
- Emphasizing external inputs as the means to increase food production such as:
 - pesticides
 - inorganic fertilizer
 - animal feeds
 - machinery
 - fossil fuel

Towards sustainable agriculture

- Making better use of internal resources such as:
 - biological, cultural, and mechanical methods for controlling pests, weeds, and diseases
 - livestock manures, composts
 - local energy resources
- Regenerating internal resources more effectively, or by combinations of both
- Emerging evidence - regenerative and resource-conserving technologies and practices can bring both environmental and economic benefits for farmers, communities, and nations (Röling & Pretty, 1998)

Sustainability in agriculture

- Many definitions of sustainable agriculture
- E.g., as the use of farming systems and practices which maintain or enhance:
 - the economic viability of agricultural production
 - the natural (or internal) resource base
 - other ecosystems which are influenced by agricultural activities (SCA, 1991)

Sustainability in agriculture

- One that produces abundant food without depleting the earth's resources or polluting its environment
- Follows the principles of nature to develop systems for raising crops and livestock that are, like nature, self-sustaining
- Also the agriculture of social values, one whose success is indistinguishable from vibrant rural communities, rich lives for families on the farms, and wholesome food for everyone (Earles, 2005)



Sustainability in agriculture

- 'Farming today for tomorrow' (Kondinin, 1997)



Objectives of sustainable farming

Economic profit

- savings/net worth consistently going up
- debt consistently going down
- farm enterprises consistently profitable from year to year
- purchase of off-farm feed and fertilizer decreasing
- reliance on government payments decreasing

Social benefits to the farm family and the community

- the farm supports other businesses and families in the community
- dollars circulate within the local economy
- number of rural families going up or holding steady
- young people take over their parents' farms and continue farming
- college graduates return to the community after graduation (Sullivan, 2003)



Contemporary trends in Japanese agriculture

- Not affected by recent food supply shortages (especially rice – surplus)
- Agricultural community concerned for food safety and quality (e.g. the case of imported rice)
- Moving towards positive indicator of agricultural sustainability
- Need data to support



Changing trends

- Shifting work & life styles
- Decision-makings
- Increased needs for information
- It has been addressed that farmers need integrated information
- This in turn implies an increased need for information among the providers of information in order to support the farmers



The role of extension

- Agricultural extension has a very crucial role to play
- The tasks and responsibilities need to be broad-based and holistic in contents and scope
- Beyond transferring and disseminating agricultural technology transfer
- Beyond the normal Scientist-Extension-Farmer model
- More proactive and participatory role and serve as knowledge/information brokers
- '... researchers play the glory role of creating breakthroughs ... [which] are transferred to extension for delivery to users ... and extension has to sell it' (Roling, 1990)
- Provide services to farmers and disseminate innovations (Roling, 1990)



Questions

- How do extension professionals cope with these new demands, as information intermediaries?
- What information do farmers want? What are the areas/subject matters do they most require?
- To what extent are extension professionals able to gather relevant information to satisfy those needs?
- How do they communicate with the farmers? What influence has ICT on the way they communicate with farmers?
- Where do they get their information from?
- What do they think of the Agricultural Information System provided by the Prefectural Agricultural Center?



Past studies

- Studies on farmers' information needs
- Agricultural scientists' information needs
- Studies focused on situations in developing countries
- Documents on information handling and management within the extension services has been very scarce
- From their own view point as service providers
- It would be interesting to discover the phenomenon in a developed country like Japan



Objectives

- This study is undertaken to understand how is information managed within the agricultural extension services, with a focus on the pattern of information flow



Information quality

- "The nature of agricultural information poses problems for its efficient management. It is often highly specific and fragmented, though what is usually needed by farmers is multidisciplinary [and integrated] packages of information, adapted to meet the needs of particular users in their farming systems, evaluated and combined from many different sources" (Jones et al., 1987)
- Indicators:
 - Comprehensiveness (breath of scope and content)
 - Integrated (source, form, location)
 - Multi-disciplinary
 - Depth



Proposition 1

- The comprehensiveness of information relates positively to the extension professionals' perception of the quality of information (multi-disciplinary, integrated, comprehensive, depth) that they acquire



Agricultural information system

- 'one-stop' center for agricultural information
- Using ICT as a tool
- As those who grew up using electronic technology begin to dominate the ranks of extension professionals, bound volumes of printed material are likely to be less in demand (Shaklee et al., 2004)



Proposition 2

- Their perception of the importance of the Prefectural agricultural information system (available at www.pref.ibaraki.jp/nourin/noucenter) reflects their positive perception of the comprehensiveness of the contents of the system



Sources of information

- Increased productivity and other agricultural successes could “suggest that farm decision-makers have either been using more and better information, or becoming more knowledgeable [and] there has been pressure to consult and consider sources of information more, and an exposure to a greater flow of information” (Jones et al., 1987)
- Data and information are increasingly becoming available online (Kallioranta et al., 2006)



Proposition 3

- There is a significant relationship between extension professionals' preference to use online information sources (e.g. the Internet) and their perceived quality of online information
- Quality is perceived through:
 - contents: currency, relevency
 - ease of handling: speed of delivery, convenience for keeping and sharing with others



Channels of communication

- Multiple channels of communication
- Extension must seek the most effective means of reaching farmers based on their preferences for receiving information (Cartmell II et al., 2006)
- Personal contacts remain useful in the wake of participatory program offerings



Proposition 4

- Their preference to acquire information through personal sources relates positively to the extension professionals' preference to communicate with farmers through personal contacts



Population & samples

- All of the 232 extension professionals in Ibaraki Prefecture, with the cooperation of the Ibaraki Agricultural Institutes



Instruments

- Questionnaire
- 18 questions
- Distribution through the Prefectural Agriculture Center
- Stamped self-addressed envelopes



Summary of constructs

- Number of farmers under patronage
 - How many farmers are assigned to you as clients within your scope of job?



Summary of constructs

- Personal contacts (frequency) with farmers
 - 3 items with 4-point scale
 - 1-at least once a week
 - 2-at least once a fortnight
 - 3- at least once a month
 - 4-at least once in 6 months
 - How many times do you normally visit them in person?



Summary of constructs

- Personal contacts (location) with farmers
 - 3 items with 4-point scale
 - 1-my office
 - 2-their house
 - 3-their farm
 - 4-other
 - Where do you normally meet with them?



Summary of constructs

- Areas/disciplines
 - 45 items with 5-point Likert scale
 - 1-most frequently asked
 - 2-frequently asked
 - 3-sometimes
 - 4-rarely
 - 5-never
 - Please indicate the areas in which they would normally seek advice from you



Summary of constructs

- Sources of information
 - 38 items with 5-point Likert scale
 - 1-extremely important
 - 2-very important
 - 3-important
 - 4-somewhat important
 - 5-not important
 - Please indicate the importance of the following sources of information in providing you with information needed to perform your professional tasks



Summary of constructs

- Communication channels
 - 13 items with 5-point scale
 - 1-most frequently used
 - 2-frequently used
 - 3-sometimes
 - 4-rarely
 - 5-never
 - Please indicate how you would normally interact and communicate with the farmers



Summary of constructs

- Comprehensiveness of information
 - 24 items with 4-point Likert scale
 - 1-strongly agree
 - 2-agree
 - 3-disagree
 - 4-strongly disagree
 - In the course of providing advice and information to farmers, please indicate to what extent you agree or disagree with the following statements



Summary of constructs

- Library visits
 - 3 items with 4-point frequency scale
 - 1-at least once each week
 - 2-at least once each month
 - 3-at least once a fortnight
 - 4-never
 - How frequently do you visit your Institute's main library in person?
 - How frequently do you visit other agricultural special libraries in person?



Summary of constructs

- Perceived role of information in carrying out their professional tasks & responsibilities (open-ended)



Summary of constructs

- Challenges faced by extension professionals (open-ended)



Summary of constructs

- Demographics
 - Age
 - Gender
 - Educational & professional attainment
 - Career goals
 - Membership of association



Significance

- Could assist in the identification & development of:
 - extension training needs (especially on information handling & management)
 - availability of information resources on different subject matters
 - agricultural information systems (content development & coverage)



Thank you very much