

## Capacity Building: Key to Agricultural Extension Survival

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**Abstract:** The agricultural sector is under increasing pressure to bridge a growing concern for hunger and economic deprivation. At the centre of discussion is increase in agricultural productivity at a scale increasingly complex. This complexity challenges the capacity of both extension workers, farmers, farming systems and even the environment. This means that what matters for agricultural development and achieving the above situation is the capability of people to be effective and productive economic agents. It is here that capacity building comes in. Therefore, building and strengthening organizational and institutional capacity is seen as the heart of development practice. There is hardly anybody who is a fully-fledged adviser having completed a technical school, college or university course. And throughout the persons life, innovations and changes of all kinds mean that additional or different knowledge, skill, and attitudes are required to face the new challenges posed by our changing environmental conditions. It is therefore crucial for any extension organization to think about how to qualify its staff for the tasks ahead of them. Enhanced food production is essential to food security. Human capacity building is key to efficient food production as well as rural development, especially for developing countries. Solving the problem of food security needs a forceful infusion of developed human resources, otherwise food production will be hindered. Extension professionals are increasingly required to have well developed technical skills across a broad range of farming systems, well developed socio-political perspectives on the place of farming in society through constant building process. This paper outlines the importance of capacity building to rural development and agricultural extension, capacity building methods for agricultural extension workers.

**Keywords:** Capacity building, extension, training, organization, personnel.

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### INTRODUCTION

There is increasing evidence and recognition that what matters for development, more than natural resources and man-made physical capital, is the capability of people to be effective and productive economic agents, in short, human capital [1]. In the particular case of agriculture, most studies on the subject establish that the education and skills of agricultural people are significant factors in explaining the inter-farm and inter-country differences in agricultural performance, along with the more conventional factors such as availabilities of land and water resources, inputs, credit[1].

With the shrinking of per caput agricultural resources following demographic growth, with the agricultural labour force in the developing countries projected to continue at positive (though declining) growth rates and with the share of young people in the total also continuing to grow, the task of upgrading the literacy, the skills and other capabilities of the agricultural people is enormous, for coping with both

the increases in numbers and the backlog inherited from the past[1]. Moreover, the increasingly binding character of natural resource scarcities imposes severe limits on the extent to which production increases can be had through expansion of extensive agriculture. The generation and diffusion of technology and management capabilities for more intensive and modernized agriculture and supporting services become imperative. This can only be achieved through the upgrading of the quality of human resources employed in agriculture.

It is noted that many dimensions of the human resources development (HRD) issue are final end-objectives of development, e.g. literacy, better health and nutrition, etc. Although this is concerned with policies to upgrade the quality of people to become more productive and more energetic economic agents, the need to make progress in literacy, health, nutrition, etc., as objectives in their own right, should not be lost sight of. This is important, since it implies that evaluation of returns to investment in these areas must

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take into account the value of improvements in literacy, as increasing the welfare of individuals directly and not only indirectly through making them more productive economically. These considerations can influence the criteria for making decisions concerning the allocation of scarce resources, e.g. between promoting basic education versus creation of more directly productive agricultural skills.

The agriculture sector is under increasing pressure to bridge a growing tension between a neo-classical economic view of farming as a small business food and fibre factory; and a liberal socialist view of farming as one of several 'multi-functional' uses of landscapes. The latter view requires land managers to recognize the ecological, social, educational, aesthetic, and local economic development attributes (e.g. tourism, food services etc.) that at times require the development of sophisticated collective methods in communities[2]. The growing influence of consumers and urban interests in debates about the merits of the food derived from our farming systems, and the sustainability of these systems, is resulting in more voluntary regulations (through pricing instruments) and compulsory regulations (using legislation) impacting on farming practices. Further, with the growing privatization of knowledge resources farmers also find themselves adapting their practices to comply with patents and property right regulations over genetic resources, or to register procedures and maintain individual animal records to meet traceability requirements for market access. These and other issues such as the use of biotechnology in production systems and global markets for agricultural products, make the prevailing imperative the world over to increase agricultural productivity at a sector scale increasingly complex. This complexity challenges the capacity of farmers, farming systems and the environment[3,4].

Although many farming systems have developed to be highly productive - they have also become more susceptible to shock. It is significant shocks such as drought and more gradual changes such as climate change that have increased the interest of scientists, policy makers and farmers in resilient farming systems-viewed as a necessary attribute to assist agricultural industries manage through future challenges and shocks. Resilient farming systems are conceived as those which can cope with change and maintain productive capacity in the face of ongoing variability in factors such as commodity prices, climate, regulation and input availability[3]. A resilient farming system will have the buffering ability to absorb and respond to change. Whilst some may view farming systems resilience as purely the function of technical or ecological attributes, we argue that the human capacity to respond, manage and adapt is also a fundamental attribute. A focus solely on the techno-science aspects of farming systems without giving consideration to the social dimension risk missing key opportunities to

understand and add to whole of system resilience[4]. An important social dimension of resilience in farm systems is the need to build and support farmer learning and flexibility[5].

Röling [6] suggests that the challenges of managing the competing interests of productivity growth, environmental concerns, landscape change and societal expectations can only be met through a 'new' agricultural science that involves 'learning and organizing to make optimal use of ecological services', thereby placing human activities (both the individual and collective) with an adaptive (i.e. resilient) character as central to coping with uncertain futures. Wenger [7] goes further by suggesting that extension professionals are increasingly required to have well developed technical skills across a broad range of farming systems, well developed socio-political perspectives on the place of farming in society, and a competency to debate these perspectives across diverse social forums.

This places the capacity building challenge for the extension profession into the domains of multi and inter-disciplinary work[6,8-9], the supply chain and not just the farm 'system' [10-11] and human 'capacity building' as an improving ability to learn and adapt through change [8]. The question that emerges from such challenges is: how can the capacity of extension match the challenge of supporting learning and resilience in farming systems across these domains?

#### **LEARNING PROCESSES AS A RESPONSE TO THE EXTENSION DEVELOPMENT CHALLENGE**

The challenge of multi-disciplinary work, supply chain issues and human capacity building for resilient farming systems requires extension to focus on its practices rather than the production of knowledge (predominantly technical) alone. This is not to undermine knowledge as an important part of dealing with farming systems complexity, but highlights the need to think about the type of knowledge required in extension.

Röling [6] says technical and market knowledge are not enough for the complexity in farming systems, with social systems knowledge of equal importance. This type of knowledge focuses on the reasons for people to act and shape their networks the way they do. Applied knowledge and information become 'building blocks' for local-level innovating involving numerous knowledge 'transactions' and exchanges, and not ready-made 'end-products'.

To Burns [12] learning is therefore viewed as a fundamental process for managing change[13] and learning processes as central to the production and utilization of knowledge. Although learning theories have been central to the development of extension practice and its tools and techniques, such theories are

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normally applied in the development of products and services for farmers, rather than a focus for building the capacity of extension itself. This is despite developments in the conceptualization of experiential learn, professional service provision and the role of science in society[14]. Learning strategies are central for building capacity of extension in farming systems to meet the challenges of continuous change and complexity.

Learning strategies involve the design of activity systems that foster some form of critical reflection amid the routine work of practitioners and their ‘community of practice). Such strategies are not ‘off-the-shelf’ products or ‘how-to’ manuals for extension practitioners-but developed using principles of learning processes. This is the capacity building challenge for extension-capacity in farming systems is built through extension engaging in reflective learning activities with peers, farmers and other disciplines. Therefore, farming systems extension is less about ‘new’ knowledge (i.e. tell me something I don’t know), and more about, ‘having the confidence to follow through on what I know I need to do’, or, ‘providing the support to implement changes’, or, ‘having the flexibility to adapt any good ideas seen on other farms to my situation.’ All these orientations to activities culminate in changes on farm [15].

Crawford *et al.*, [16] in a study of learning relationships in farming systems projects found that the learning process itself becomes a complex issue as different knowledge types need to interplay with each other in a common purpose from the farming system. Under these situations, extension is challenged to choose and develop processes and learning tools critical in supporting the learning partnership between different disciplines (knowledge types). International studies on advisory relationships support this work. Andersen [17] found that advisors need to be both reflective specialists and reflective listeners in their routine work and Cerf and Hemidy [18] found that experimenting on the advisory relationship (i.e. trying different learning processes) supported innovation. Therefore, learning processes and the development of learning relationships is seen as a crucial resource in farming systems-and a key to building capacity in the extension profession. Further, in some sectors, learning has been identified as a sector-wide strategy for capacity building of producers and service providers[19].

### **BUILDING CAPACITY IN FARMING SYSTEMS THROUGH LEARNING RELATIONSHIPS**

There are two key levels of learning relationship that extension needs to consider to build capacity to support resilience in farming systems: the relationship between extension and farmers (i.e. the advisory relationship), and the relationship between extension and other disciplines (i.e. the multidisciplinary relationship). Although the extension

professional needs to work at both levels, each level has its unique challenges requiring different strategies to improve the quality of the learning relationship. The next section deals with these levels separately.

To build capacity in farming systems requires a good comprehension of what extension does in the learning relationship with farmers. Nettle and Paine [20] describe three attributes of extension practice: (a) extension focuses on actions of the farmer; (b) on intentions of the farmer (c) and it appreciates the worldviews of farmers and others involved in the learning relationship.

Generally learning begins with some action being taken in the field or farm situation. The relative richness of a learning experience varies with the degree of reflection on the performance of this action. We also know that learners (farmers, extension practitioners) need to establish their own learning challenges. Effective mediation in learning (i.e. the advisory role) therefore depends on an ever-improving appreciation of the farmer’s knowledge, an ever expanding ability to identify farmer learning needs and better position service provision to meet intentional change sought by farmers as learning partners [20, 21]. This is how both farming and extension are changed - through the interplay of professional practices in shared learning experiences[22].

### **THE LEARNING RELATIONSHIP BETWEEN EXTENSION AND OTHER DISCIPLINES-LINKING WITH OTHER PROFESSIONS TO COPE WITH COMPLEXITY**

The farmer-extension relationship is central to increased capacity to deal with complex farming systems, however extension is also required to work with other disciplines. Knowledge for improving farm and industry performance and environmental management does not reside in any single discipline, it resides in many disciplines and improving farm and advisory practices relies on suitable connections existing between disciplines[23]. Extension can be viewed as the professional intermediary between science and practice[24] and a central profession in the interplay between groups of people influencing farm management[25]. Extension is being challenged by farming systems research to be integrated into the research process and to initiate interdisciplinary coordination[21]. This section of the chapter highlights case studies of multi-disciplinary work in farming systems and the role and capacity of extension in this intermediary role.

For the extension professional, mediating and brokering other professions to improve situations increases the need for skills like

- a) Negotiation (negotiating goals, roles and expectations of disciplines;
- b) Creating effective learning environments;

- c) Designing and using appropriate learning tools,
- d) Critical questioning skills, and
- e) High-level facilitation competence. The stakes are high. Recent research suggests that effective learning processes contribute directly to the management of complexity [16] extension as the profession responsible for effective learning processes needs to get it right!

Extension's role in multidisciplinary endeavour is a challenging one. Klein[[26] argues that multidisciplinary thinking requires a new discourse be established and a 'set of language games with rules and practices'. Oksen [27] believe that multidisciplinary approaches in NRM often end up being an 'ad hoc' compromise between practical problem solving and scientific problem analysis. They suggest that the composition of disciplines present in multidisciplinary approaches depends on how problems are defined at the outset, and problems often turn out to be less specific than originally presumed. They add that there is also little understanding or recognition of the conceptual and practical implications of multidisciplinary work.

One of the catalysts or cues that extension can use to facilitate the alignment between farming systems research and extension is systems thinking itself- because it is shared by both practices. However dealing effectively with complexity in farming systems requires participating disciplines to be changed or enriched - and not just able to work together, no matter how beneficial and cumulative working together may be. Nettle and Kenny[23] suggest extension can play a key mediating role to increase the capacity of all disciplines (including their own) to innovate together, expand the boundary of each discipline and fast-track research outcomes.

Key features of the role of extension in multidisciplinary work have been identified[16]. These include:

1. Supporting clarification of the orientation and purpose for learning together;
2. Facilitating multidisciplinary teams in selecting rules and patterns of behaviour that help decision making and action in real time; and,
3. Designing effective communication cycles for multidisciplinary teams to develop and retain new repertoires for managing complexity.

Extension therefore plays a significant role in the outcomes of multidisciplinary work and focusing on these areas to build capacity of the profession to work in this domain is essential for increasingly complex farm systems situations.

### Definitions of capacity building

Hilderbrand [28] said, capacity is the mean or the ability, to fulfill a task or meet an objective effectively. It refers to the skills of staff and strength of specific organizations; thus, training staff and creating or strengthening single organizations is equated with

capacity building. Capacity building means a new build-up of capabilities [29]. Capacity building also increases the abilities and resources of persons, communities and organizations to manage change [30]. Capacity building refers to activities that improve an organization's ability to achieve its mission or a person's ability to define and realize his/her goals or to do his/her job more effectively[31]. Capacity building is as important as capital investment and infrastructure[32].

UNESCO (2006) reports that capacity building focuses on increasing an individual and organization's abilities to perform core functions, solve problems, and objectively deal with developmental needs. This is supported by Morgan [33] who referred to capacity building as improving or upgrading the ability of the person, team and institutions to implement their functions and achieve goals over time. Capacity building is important for all levels, from individuals to national organizations [33]. Capacity building also alludes to building the organizational capacities of communities, and supports the formation of non-profit organizations[34].

### Needed Areas of Competence for Extension Workers

Byrnes [35] noted that extension workers must demonstrate sufficient competence in :

- **Communication:** The extension worker must be able to convey agricultural information to all categories of farmers rich and poor, learned and illiterate, as well as possess the disposition to mildly persuade them to adopt innovations.
- **Farming:** The change agent must be able to demonstrate new technologies to the farmers even if involves physical work and practice.
- **Science:** The ability to read and understand professional literature as well as the ability to carry out field experiments are needful assets for the extension worker.
- **Economics:** The change agent must be able to analyze and recommend cost-benefit strategies based on knowledge of prevailing market situations, agricultural policies, availability of credit, cost-benefit ratio, interests, etc.
- **Social:** The extension worker must be familiar with the customs, values and ways of thinking of the farming population as to work in tandem with the realities of the people and thus avoid socio-cultural conflict.

According to Byrnes [35] the extension worker must possess the basic disposition and attitude (congruency, empathy and appreciation), content competence (credible and knowledgeable in the subject matter), methodological competence (must know how to use specific communication techniques, appropriate media and communication aids) and managerial and organizational competence (able work within the framework of facilitation and guidance) Information



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Communication Technologies (ICTs) is improving and changing how extension work is carried out. The use of electronic media for extension teaching can assist extension agents reach their clientele across different location with agricultural information. Entrepreneur extension agents can record and produce videos in local dialects with local farmers featuring in the videos thereby making it easier for farmers to understand. Farmers on their own can identify the practices as authentic and replicable in their context and package same in Double Video/Compact Disc (DVDs/CJs) or uploaded online for farmers and other users of agricultural information[36] achieve these and other uses of ICTs, capacity is therefore needed in computer multimedia production, video production, E-journalism, photo journalism, etc, in order to bring the earlier barriers of research information dissemination through electronic media collapsing. Gender mainstreaming in extension, entertainment education for extension work, climate change, among other evolving issues in extension also offer need dimensions to capacity building in extension.

#### **Why capacity building is important for rural development**

Many countries and communities have remained poor and still have weaknesses in their development. Rural communities often become dependent, waiting for donors and government sectors to continue to support them, because the development projects did not maintain activities and facilities[33]. Projects are often expensive, donor-driven, depend on outside experts and don't follow the national priorities of the country[37]. Eade [38] concluded that the sad reality is that most development aid has precious little to do with building the capacities of 'The Poor' to transform their societies.

Therefore, improving the capacity building of individuals, groups, organizations and communities is necessary for rural development, poverty alleviation and environment protection[39]. Investment alone cannot lead to the desired level of development." Therefore, building the capacity of local people, groups and organizations is vital because they must have the ability and responsibility to resolve their problems and develop their communities.

Many international studies indicate that smallholder and poorer farmers could make a major contribution to national economic growth if they received opportunities to become more productive [40]. Poor rural people are a high priority for donors and international NGOs focused on building capacity. For example, in the Lao PDR, target groups are upland people, particular minority ethnic groups and district, provincial and national government staff [41]. The basis of development is strengthening people's capacity to determine their own goals. The focus has been on encouraging participation and giving opportunities for

participation by the poor. There has been somewhat less attention to the other side of the equation- helping the poor to build capacities that enable them to participate effectively.

Along with men, women play an important role in contributing to all activities in rural development, particularly in agriculture areas such as livestock production, fisheries, cropping, forestry, irrigation and horticulture. Women who are living in remote areas, especially ethnic group minorities work hard in the field. Their products are low in quantity and quality because they use traditional methods. Women are faced with selling raw materials for low prices and experience food shortages, particularly of rice for consumption. Swanson [42] explained that smallholder farmers particularly women have little access to farm inputs. Lack of marketing information, products of low standard and difficulties in transporting goods to market are other constraints. In addition, women farmers lack technical knowledge and skills to produce their products (e.g. technical skills in harvesting or value adding).

#### **Why capacity building is important for rural extension**

Building the capacity of rural extension staff is central to making extension services effective in helping poor farmers. However extension capacity building is often overlooked in the rush to get the results of research and development products out the door and taken up by rural communities[43]. Public and private agricultural extension play a major role in the capacity building of rural people[44]. Their mandate is to facilitate farmer learning and decision making regarding changes to farming systems including trying out of new technology and overcoming problems such as food security, poverty reduction, environmental management and marketing of products[45].

However, extension services often have some weaknesses such as lack of timely information and input supply, less accountability of public extension personnel, the blanket nature of recommendations, and the absence of extension personnel during office hours, which make clientele become less committed to the service [46].

Building the capacity of rural extension staff is important because they can help poor farmers. Extension is concerned with building capacity for change through improved communication and information flow between industry, agency and community stakeholders." Dwarakinath [47] explained that extension is a major vehicle for rural development because it transfers new technical knowledge to farmers and then farmers can feedback problems from the field to extension staff and researchers to consider. There is a need for a capacity building role for extension that includes farmer training but that also includes

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strengthening the innovation process and building linkages between farmers and other agencies to support the bargaining position of farmers[48].

In agriculture, especially in livestock activities, extension staff work closely with farmers in the fields of animal feed, animal health and animal marketing. Their role is to strengthen farmers' abilities, and help them gain empowerment and ownership. The extension workers need to understand farmers' opportunities and problems and help them to find the best way to make decisions for their future. In working closely with farmers the extension staff can better understand the farmers' needs. For example, if the farmers need to improve their animal feeding, the extension workers can work with them on this activity. The extension workers are then in a position to introduce appropriate technologies or information relevant to farmer's situation. As Hassanullah[49] stated; people prefer to solve their problems more than to merely be informed, or adopt or buy a technology with somewhat vague or diffused perception of their purposes or benefits which may or may not relate to their problems.

Karbasioun, Biemans & Mulder [52] found that information sources such as governmental extension agents and farmers' own experiences are the most important information for farmers. Van Linh [[50] and Martinez[51] believed that "capacity building opportunities should focus on young people who are not burdened with administrative or other duties and have more time to drive developments from the bottom up." Supporting younger extension staff who have just finished Agriculture Colleges and Universities is necessary because young extensionists will run extension in the future, However, not all young people are suited to extension roles, as they depend on personality and commitment.

### **Capacity building methods used for staff involved in rural development and extension**

Capacity building methods may include conferences, workshops, consultations, study tours, participatory research and extension, on-the job training, demonstration plots, coaching and mentoring[41]. Providing formal and informal training, on-the-job training, workshop/meeting, seminars and conferences, cross visits/study tours are the main methods to build the capacity of extension staff to guarantee a good mix of theory and practice.

The main sources of information that capacity builders use to support capacity building are training, international NGO project material, general text books, workshops, meetings, exposure visits, project/NGO documents, national networks, state/national sources, own research, on-the job learning, using Internet and other (e.g. many sources, friends, facilitators, advisers and consultants).

There are four main tools for the development of capacities: information dissemination, training, facilitation and mentoring, networking and feedback to promote learning from experience[53]. Each have advantages 'and disadvantages.

Training is often used as the main capacity building method in developing countries or regions[41]. Training, on-the-job training and workshops are important activities of capacity building in the field of agricultural research, extension and development [41]. Training is often about the need for staff to be competent in one or more areas, including program management, proposal writing, -accounting procedures, general administration and so forth (Low and Davenport, [53]. However, once the training is finished, there is often no follow up support for district extension staff or farmers.

Of central importance to most capacity building is 'learning-by-doing' [40]. The learning-by-doing approach has been an important part of education to develop capacity and insights in a wide range of settings[54]. Learning-by-doing is one of the most commonly quoted processes through which partners' capacities are understood to develop, and it is a good way for people to learn. Individuals, groups, and some organizations can learn- by-doing [55]. Learning-by-doing or experiential learning is at the heart of capacity development. New knowledge is quickly applied to the benefit of individual and organizational goals. However, Owen et al. [56] argued that "... not every problem can be easily dealt with by a "learning-by-doing" approach. For example, dealing with contagious diseases is not suitable for on-farm experimentation".

Experiential learning is a very powerful method and appropriate for people who work with groups. It is an excellent way to develop good insights into the ways groups work [54]. Demonstration plots, cross visits, study tours and Farmer Field School are useful methods to transfer information and technology to staff and farmers, particularly in remote areas. The advantages of FFS are that both farmers and staff are able to gain knowledge, skills, good relationships, facilitator skills, communication skills and experiences.

Mentoring is an important method for capacity building in extension. Mentors are senior research and extension staff who are experienced persons. Mentors are people who have more experience in livestock production and extension methodology. Mentoring involves passing on skills, attitudes and knowledge from experienced staff to newer extension workers. Hopkins-Thomson[57] asserted that "mentoring and coaching processes can serve to augment the succession planning and professional development of districts."

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Millar & Connell [58] stated that building the technical and extension skills of staff using experienced people as mentors is a key element of scaling out impacts. They can provide the support trainees need in order to become responsible as they acquire new skills and adapt to change. Mentors should be highly skilled in communicating, listening, analyzing, providing feedback and negotiating with less experienced persons[57]. Nowadays, mentoring is commonly used for academic, job and personal development[59].

According to Abbott, Stening, Atkins & Grant [60], many organizations need mentors or coaches who have tertiary qualifications of at least Masters level. Evidence-based coach-specific training and a background in the behavioural sciences is often preferred. Eade[30] summarized the requirements of a mentor with “you can’t build capacities in others that you don’t have your self. And if you can’t learn, you can’t teach either.”

### CONCLUSION AND RECOMMENDATION

The needs of farmers are constantly changing with time and farmers’ socio-economic attributes. The implication of this is that extension needs to periodically upgrade in knowledge, skills and attitudes in order to keep pace with the emerging challenges and dynamics of extension work. Capacity building is essential in ensuring that the initial extension job training is provided as well as ensuring coping to the job changes and the varied needs of the clients. The overhead cost and demands of follow-up session should be embedded in the training programme such that the same training facilitators are engaged to carryout the follow-up session in order to ensure stability and continuity.

Funding of extension training programmes by the government, organizations intervention agencies and private extension organizations should be made adequate and steady. Existing training facilities across institutions and centres teaching extension should be upgraded and seemingly nonexistent ones, such as audio-visual studios should be setup to create adequate environment where materials and tools used to reinforce or facilitate extension teachings are found.

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