

## **Output 2: Organizational Procedures, Institutional Mechanisms and Policies for Using Participatory Methodology in the Co-Development of Technologies Designed and Tested with National and Local Innovation Systems in Latin America and Africa**

### **Knowledge Management: A Participatory Approach to Farmer Appropriation of Technological Innovations**

*Vicente Zapata S.*<sup>26</sup>

#### **Summary**

A Knowledge Management (KM)<sup>27</sup> approach has been applied through a project financed by DFID in Bolivia. Under the name of *Facilitating Technological Innovation* (FIT for its Sp. Ac.)<sup>28</sup> a series of action-research initiatives have been conducted during a two year period (2004-2006). One of these, the *Knowledge Sharing methodologies for Pro-poor Agricultural Innovation Project* has developed and validated a new participatory approach to conduct extension processes which promises to contribute to capacity development of three main SIBTA<sup>29</sup>'s actors: the Agricultural Technology Development Foundations (FDTA<sup>30</sup> Sp. Ac.), the agricultural technology service-providing institutions and farmer organizations, by improving their capacity to facilitate resource-poor farmers' access to agricultural innovation.

This Project proposes to re-train extension workers into "knowledge managers" who are experts in promoting technology appropriation<sup>31</sup> by farmers, through the application of a variety of farmer-centered "methodological arrangements". This KM approach has now been tested in ten sites throughout the four agro ecological regions of Bolivia with a variety of actors, commodities and rural contexts.

Research results render their impact as the different institutional and local actors assimilate the methodological approach. This project has undertaken to collect field-based evidence by means of numerous visits, on-site videotaping<sup>32</sup> of applications and testimonies from users and beneficiaries of this approach. Evidence will help SIBTA decision makers to reflect on the ways planning, contracting, monitoring and evaluation of agricultural technological innovation projects (PITA<sup>33</sup>s, Sp. Ac.) are carried out. Evidence is helping to

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26. Senior Research Fellow, IPRA Project – Rural Innovation Institute.

27. KM: Knowledge Management is a process, which has been defined and used in a variety of institutional contexts. In this project it acquires a particular definition as a participatory methodology, which has shown to improve technical assistance processes, as observed in ten different cases in Bolivia.

28. *Facilitando la Innovación Tecnológica* (FIT).

29. SIBTA: Sistema Boliviano de Tecnología Agropecuaria (Bolivian Agricultural Innovation System).

30. FDTAs: Fundaciones para el Desarrollo Tecnológico Agropecuario.

31. Technology appropriation: incorporation of technology components or technologies to the personal repertoire of farmers' responses to production and commercialization problems. This incorporation implies the ability of farmers to adapt and adjust technologies without external dependence.

32. A twenty-two minute video will be available on April 5, 2006.

33. PITAs: Proyectos de Innovación Tecnológica Agropecuaria.

build arguments in favor of the use of the KM approach in the implementation of these projects.

## ***Background***

The KM approach, as defined in this project, departs from a critical assessment of traditional approaches to technology transfer. These emphasize the role of deliverers and the importance of content-delivery in the dissemination of agricultural technologies. The so-called “technology transfer” process has been based on assumptions which have proved to hinder “technology appropriation”. Assumptions refer to (a) farmers having the necessary resources to apply technologies, regardless the size and cost of inputs, (b) farmers and their communities not having the necessary knowledge or experience to manage their farming problems, (c) farmers understanding technical jargon and easily translating it to their local language as delivery takes place, (d) farmers accepting information based on the authority of technical personnel and quality of delivery (e.g. excellent delivery-support materials), (d) extension agents interpreting their role as lecturers and demonstrators, and farmers the secondary role of following their recommendations, (e) putting aside any efforts to improve farmers’ abilities to learn.

SIBTA was also established under two assumptions that proved to be wrong: (a) the existence of a large national body of qualified agricultural technology transfer professionals, with expert knowledge of prioritized agricultural production chains, and (b) the existence of organized farmer groups able to identify and express their technological demands and exercise control over external interventions generated by the Agricultural Innovation Projects, (PITAs).

Several DFID funded projects such as FOCAM<sup>34</sup>, have made important contributions to strengthen the capacity of different actors of the SIBTA system to match technological demand and supply. Much has been done in terms of improving the local capacities to exercise control over external interventions. Nevertheless, the interaction mechanisms and strategies among professionals and farmers for a true appropriation of technologies needs to be re-engineered, to incorporate endogenous knowledge and experience to the participatory construction of agricultural innovations.

FIT 8 has developed a glossary to describe the new methodological components of an approach that responds to identified weaknesses. Terms such as “knowledge managers”, “methodological arrangements”, “knowledge construction encounters”, and “development of field competencies” have been introduced as research has evolved. On the other hand an intentional move away from terms such as “technology transfer”, “extension”, “technical assistance”; “training”, “teaching” and “coaching” has been promoted among knowledge managers. It is not only new words, but also an effort to review and renew attitudes regarding the relationship between “facilitators and learners”.

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34. FOCAM: Fomentando Cambios. A DFID funded project which has promoted the use of participatory monitoring and evaluation among Bolivian farmer organizations and local institutions. Carlos Arturo Quirós IPRA-CIAT is the current project manager of FOCAM.

## ***Conceptual framework***

The design and implementation of this project has been accompanied by a review of literature on critical aspects of extension methods and knowledge sharing methodologies and approaches: (Angel 1979); (Swanson y Peterson 1991); (Roling 1991); (Elliot 1994); (Berdegué 2001); (Engel 1995) and (McMahon y Nielson 2004), all of them providing ideas for a re-definition of the role of agricultural extension. Other insights on the most significant participatory methodologies such as the Participatory Rural Appraisal, (PRA) developed by Chambers et al. (Chambers, 1992); as well as other agricultural extension experiences summarized by Berdegué and Ramírez (1995); and others compiled by Jiggins, J. and De Zeeuw *et al.* (1997) have been reviewed. Other research experiences with farmer participation include the “Programa de Granos Básicos” (PRIAG), and the Participatory Development of Technology (DPT) (Reijntjes *et al.* 1992) and the Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) developed at the University of Wageningen (Engel and Salomon, 1997). Other methodologies from which contributions were drawn for this project include the Local Agricultural Research Committees (CIALs for the Sp.Ac.) developed by the International Center for Tropical Agriculture (Ashby, 1998), the Farmer to Farmer Methodology (Medinacelli y Peigné, 1999), and the Farmer Field Schools (Okoth, 2003)

## ***Agricultural knowledge systems***

The so-called agricultural extension is a component of a larger system in which agricultural education and research are present. This triad is what FAO has called the AKIS/RD or Agricultural Knowledge and Information Systems for Rural Development, called by the OECD countries AKS or Agricultural Knowledge Systems. At the center of this triad is the clientele: farmers and other local actors who play important roles in rural-agricultural development, as is clearly the case in production postproduction and commercialization chains. These components are viewed by Eicher (2001) as involving complementary investments which need to be planned as a system. Nevertheless, the review of literature regarding AKS ( Pray and Echeverría, 1990; Kaimowitz, 1990, Crowder and Anderson 1997) shows that integration of these three pillars has not been very successful.

Maguire (2000) suggests a change in the agricultural education subsystem in developing countries to make a clear emphasis on rural development and food security. Nevertheless the traditional view of education does not allow a closer linkage between education and extension. The same is true for research and extension. Even though, in the classical paradigm, agricultural research provides inputs to extension agents, the truth is that research institutions have agendas, which are not necessarily linked to farmers needs.

The KM project assumes ag-extension with a broad perception (Rivera, 1987), which is interpreted as not only taking from the education and research sub-systems inputs to deliver them to farming communities, but generating knowledge by means of a participatory merge of local experience and information with technical information coming from the research and education sub-systems.

## ***Knowledge management***

There are several interpretations of the term “Knowledge Management”. Some call it the act of translating knowledge from one level of technical complexity to another to make it accessible to other clients. Others call it the process of collecting information and

experiences, organizing them in manageable clusters (paper, magnetic or digital collections) for people to find them when needed. Still others call knowledge management a process by which people make use of information -as well as wisdom and experience- to create new knowledge. In the organizational scenario, knowledge management is the process by which people make the best use of available knowledge in order to develop new knowledge.

Scholars have made a distinction between two different branches of knowledge management. “First generation KM” involves collecting information and experience so that it is available to users. The idea was to collect technological information, store it and retrieve it at will. This trend gave way to the so called “knowledge technologies”. Essentially knowledge management implied developing sophisticated data analysis and retrieval systems giving little thought to how the information they contained would be used or further developed.

At the turn of the twentieth century, theorists became more interested in the ways in which knowledge is created and shared. Organizations were now seen as capable of learning. This idea gave way to a linkage between learning theory and management. At the same time, new organizational structures were responsive to continuous structural change to adapt to rapidly changing environments.

“Second generation KM” gives priority to the way in which people construct and use knowledge. It is closely related to organizational learning and recognizes that learning and doing are more important to organizational success than dissemination and imitation. These ideas from the second generation KM theory provided the motivation to prepare and develop this project. We have tested several ideas that stem from second generation KM.

The KM project has trained teams of “knowledge managers” who are groups of professionals and farmers, who have developed abilities to elicit tacit knowledge from farmers, validate it under the light of successful experience and current scientific theory and practice, and merge it with explicit knowledge in order to formulate a “new response” to overcome agricultural problems.

Participants in this project have learned to design learning strategies to carry out field experiences useful for farmers to develop “agricultural competencies”, which are complex tasks involved in the application of a technology component or a technology. Appropriate performance of these tasks requires the development of an array of mental abilities, physical skills and attitudes, to which no attention is paid in traditional approaches to technology transfer.

## **Objectives**

**Development objectives:** Development objectives go hand in hand with research objectives. In this highly meaningful activity CIAT has the opportunity to answer research questions regarding participation with an ample group of national partners, as it develops international public goods that can be assimilated not only by the Bolivian SIBTA but by other National Agricultural Innovation Systems - NAIS<sup>35</sup> in the Andes and Africa.

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35. NAIS - National Agricultural Innovation System, an ample denomination of National Agricultural Research and Development Systems (NARDS) as traditionally called in the literature.

Development objectives for this project are:

- To build local capacity to adapt and appropriate technological innovations by re-training agriculture professionals and farmer-leaders to use the principles and strategies of knowledge management.
- To promote an institutional dialog about knowledge management, its applications and advantages in agricultural innovations to influence SIBTA decision makers to incorporate lessons learned from the application of the KM approach, into the system.
- To strengthen the capacity of FTDA's to monitor KM results and accompany innovation projects executing groups in the application of innovative learning methodologies.

### ***Research objectives***

Action research activities are geared to:

1. Make a theoretical and strategic contribution to the development of new knowledge sharing methodological alternatives
2. To provide the National Agricultural Innovation System with field-based evidence regarding the usability and efficacy of new methodological arrangements as to motivate their use in the development of agricultural innovation projects.

During the last phase of the project, a study was conducted to respond to the following specific questions:

- Were there previous experiences in the system regarding the application of the KM approach?
- Was the training provided to knowledge managers sufficient for an adequate performance in accompanying farmers in technology appropriation processes?
- What were the contextual and institutional factors, which facilitated or inhibited the application of the KM approach?

Evaluator Gabriela Silva<sup>36</sup> will present a final report on the answers to these questions in April 2006. Gabriela has worked with project participants in providing answers to research questions. A separate document on the methods used for this analysis is also presented in 2006 RII Annual Report.

### ***Methodology***

The project leaders, to achieve the stated objectives, carried out a series of steps, which are briefly presented in the following paragraphs:

***Establishing the project's platform:*** The action-research process started by the socialization of the project among different stakeholder groups (FTDA's, technology service providers, MACA<sup>37</sup>) and the organization of the project platform which included the signing

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36. Gabriela Silva is the Assistant to the FIT 8 Project at Fundación Valles.

37. MACA Ministerio de Asuntos Campesinos y Agropecuarios (the Bolivian Ministry of Agriculture).

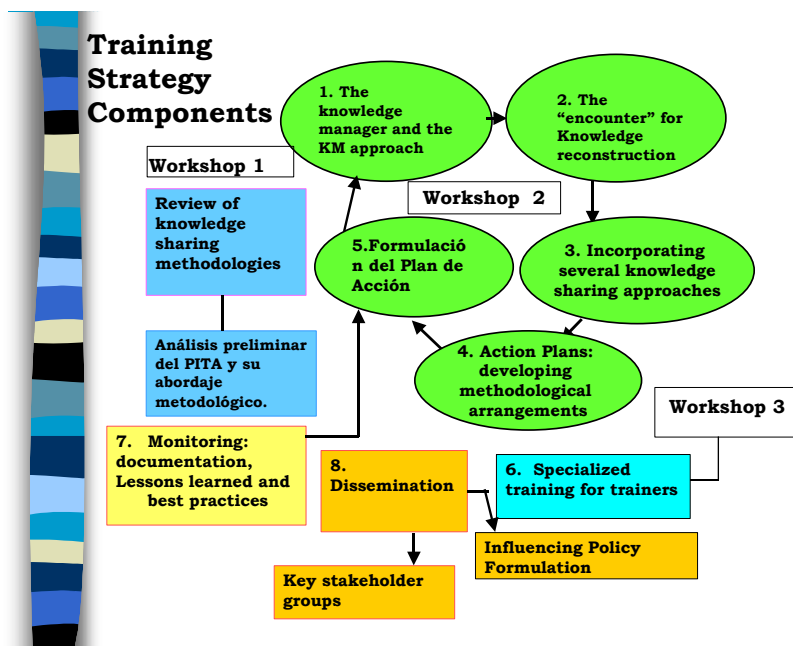
of contractual agreements with the Foundations and partners who were to incorporate the trials of various methodological arrangements within the KM approach while carrying out the agricultural innovation projects.

**Training knowledge managers:** Between the months of December 2004 and May 2005 a series of five workshops was carried out to train knowledge managers. More than 150 professionals from the four macro-eco-regions were trained. Workshops were carried out in Cochabamba (2) Oruro (2), and Tarija (1). Additional reinforcements were conducted in several visits to a variety of groups interested in the methodology to cover over five-hundred people influenced by the project in two years.

During the workshops, action plans to test the KM approach and specific methodological arrangements were prepared by participants, integrating them to the execution of innovation projects.

The training curriculum for knowledge managers is presented in a *Manual to Train Knowledge Managers* to be published in April 2006, along with a *Guide to KM: Basic Principles and Application*, a video that presents local evidence of KM applications and a CD with project's documentation to be released on the same month.

The following diagram shows the different types of training events carried out to train knowledge managers.



**Training in participatory evaluation of technologies:** Methodologies to improve communication processes must be evaluated under the light of the relevance of technologies supplied. This has to do with the appropriateness of a given technology in a particular context for a particular group of farmers. Knowledge managers need to be aware of the fact that a communication technology can be very effective to “sell” a technology that farmers, at the end, will not apply given the difficulties they face to use its technological components. A

resource-reach project may convey an impression on the feasibility of application. Once the project's resources are spent and the project closed, farmers may not be able to apply the technology for whose "transference" several thousand dollars were invested.

A CIAT expert was hired by this project to conduct two workshops (Tarija and Santa Cruz – July and August 2005) for knowledge managers and other technical personnel invited, on this topic. This additional reinforcement provided our people with new tools to conduct knowledge managing activities with a critical view of the viability of technologies being exposed by innovation projects.

**Monitoring action plans:** A total of ten action plans were monitored and results recorded for evaluation purposes (see Appendix 1: Action Plans). During the second half of 2006 twelve field-visits were paid to knowledge managers. In each of these sites videotape recordings of experiences were made. Feedback sessions were also conducted with knowledge managers to reflect upon their experiences and adjust means and ways to apply the approach.

**Meeting the "accompanying team":** The accompanying team for FIT projects -an initiative of the FIT Program Facilitator- is a group of people with expert knowledge and experience on topics related to the FIT themes. They are external to the particular interests and activities of projects and fulfill the function of providing advice to FIT Project coordinators to ensure good project performance.

These meetings were particularly interesting and helpful. Participants brought up issues to take into consideration, such as the need to involve universities in the topics dealt with in FIT projects. This idea, in the case of this project made the coordinator search for universities interested in a training program leading to a "diploma certificate" for a variety of potential users of the methodology, among them university professors. The proposal for such a program has been submitted to three Bolivian universities for their consideration.

**Creating CIALs to improve a Farmer Field School performance:** One of the most significant developments of the application of the KM approach took place in Sucre with a group of oregano growers, (Executing UNEC-Agrocentral<sup>38</sup>) by creating a Local Agricultural Research Committee - CIAL, in Sillani – Padilla. The training of UNEC professionals and oregano growers in the CIAL methodology conducted by a CIAT expert, the organization of the Local Agricultural Research Committee and the seed-money to start off with the first research topic (roya in oregano) were activities financed and accompanied by this project's coordinating team. One month later, the president of the newly appointed research committee reported progress made on six different treatments with three repetitions in one of the farmer's fields. The financial support provided to the CIAL committee was a motivating factor to encourage farmers in the region to start making contributions to support this service for the community of oregano growers.

This is a living example of a combination of methodologies: the existing farmer field school which was reinforced with the knowledge management methodology and with the CIAL, now in charge of responding to questions the farmer field school was not fit to answer.

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38. UNEC-Agrocentral is a cooperative of oregano growers in Sucre.

**Participation in the FIT mid-term evaluation:** By the end of May 2005, the FIT Program evaluators carried out a visit to one of the sites where the methodology was being experimented (Trópico Húmedo – La Guardia. Honey Extraction - Execution group: ADAPICRUZ). The perceptions from the evaluators (Jonathan Woodsworth and Pierre de Zutter) shared with this project coordinator were positive in general. It provided important pathways to integrate several FIT projects in the extension phase of the FIT Program.

## **Outputs**

The following outputs can be reported at the end of the project's two-year period:

- Output 1: Project's institutional platform (Foundations, extension service providers and farmer participating groups) agreed upon including responsibilities of participants at each level, to ensure sharing of knowledge management strategies and results.
- Output 2: A digital document dedicated to knowledge sharing methodologies and their application in marginalized contexts published (April 2006). Document recollects experiences with ethnic groups (aymara, quechua and guarani communities).
- Output 3: A group of forty knowledge managers trained in the four agro ecological regions of Bolivia. These knowledge managers belong to nine extension service providing organizations in the country.
- Output 4: Ten different participatory methodological arrangements tested in the same number of sites with a variety of nine commodities and species.
- Output 5: National Agricultural Innovation System (SIBTA) leaders, Foundations' directors and technical personnel sensitized to the potential of the KM approach to improve extension processes in terms of higher levels of technology appropriation by farmers.

## **Bibliography**

Ashby, Jacqueline Anne; Gracia, Teresa; Guerrero, María del Pilar; Quirós Torres, Carlos Arturo; Roa Velasco, José Ignacio; Beltrán Giraldo, Jorge Alonso. Agricultural Research and Extension Network. 1995. [Institutionalising farmer participation in adaptive technology testing with the 'CIAL'](#) . Overseas Development Institute (ODI), Agricultural Research and Extension Network (AGREN), London, GB. 43 p. (Network paper 57 0952-2468)

Berdegúe, J. 2001 Systems-oriented Agricultural Extension and Advisory Services for Small Farmers in Latin America. Santiago, Chile: RIMISP.

Berdegúe, J. and Ramírez, E. 1995 Investigación con enfoque de sistemas en la agricultura y el desarrollo rural. Santiago, Chile: RIMISP

Chambers, R., Pacey, A. & Trupp, L.A., (Eds.). 1989. Farmers First, Farmer innovation and agricultural research. London: Intermediate Technology Publications.



- Crowder, L. van & Anderson, J. 1997 Linking research, extension and education: why is the problem so persistent and pervasive? *European Journal of Agricultural Education and Extension*,3:4.
- Engel, P.G.H. (1995) From teaching to facilitating joint inquiry and learning. An appraisal of the changing role of agricultural education. In *Revista Terra, Organo Científico de la Sociedad Mexicana de la Ciencia del Suelo*, 111-125.
- Engel P.G.H. and Salomon, M. (1997). *Facilitating Innovation for Development. A RAAKS resource box*. Amsterdam: KIT Press.
- Jiggins, J. and De Zeeuw *et al.* (1997)
- Kaimowitz, D. (ed.). 1990. *Making the Link: Agricultural Research and Technology Transfer in Developing Countries*. Boulder: Westview Press. pp. 197-226.
- Maguire, C.J. 2000 From agricultural education to education for rural development and food security. Paper presented in the 5<sup>th</sup> European Conference on Higher Agricultural Education, Plymouth, U.K.
- McMahon, M.A. and Nielson, D. 2004 *La Modernización de los Sistemas Públicos de Extensión Agrícola en America Latina. Porqué y Como?* Banco Mundial. Washington D.C.
- Okoth, J. R., Godrick S. Khisa and Thomas Julianus 2003 *Hacia Escuelas de Campo de Agricultores Autofinanciadas*. IFAD. FAO. Uganda.
- Pray, C. and Echeverría, R. 1990 “Private Sector Agricultural Research and Technology. Transfer Links in Developing Countries” In D. Kaimowitz (ed.). *Making the Link: Agricultural Research and Technology Transfer in Developing Countries*. Boulder: Westview Press. pp. 197-226.
- Roling, N. and Pretty, J.N. 1997 *Extension’s Role in Sustainable Agricultural Development: a reference manual* (Eds: B.E. Swanson, R.P. Bentz and A.J. Sofranko). Rome. FAO.
- Swanson, B.E. 1997. *Changing Paradigms in Technology Assessment and Transfer*; unpublished paper. Urbana, IL: University of Illinois. INTERPAKS.

## **Application of the Knowledge Management Approach in the SIBTA<sup>39</sup>'s PITA<sup>40</sup>s: A Progress Report**

*Gabriela Silva Andreu<sup>41</sup>*

### ***Achievements***

The evaluation process of the Knowledge Management (KM) Project reported in this progress report intends to provide KM learners with (a) a synthesis of testimonies from people who applied the KM approach to extension work and (b) an analysis of success-case stories useful to FDTAs<sup>42</sup> and the SIBTA as a whole to evaluate the use of the KM approach in the planning, contracting, monitoring and evaluation of agricultural innovation projects. A complete study report will appear in April 2006, which summarizes an ample number of testimonies and evidence.

The KM approach has been successfully applied by ten different knowledge managers' teams, in a variety of cultural, social and geographic settings, in different agricultural market chains, dealing with a variety of agricultural and livestock development topics, within the four agro ecological regions in which Bolivia is divided for agricultural development purposes. Evidence suggests that the KM approach can be very useful to improve technical assistance and extension practices within the SIBTA system.

### ***Summary***

The KM approach to technical assistance takes the form of a variety of "methodological arrangements"<sup>43</sup> for knowledge sharing in agricultural innovations dissemination settings, which are (a) participatory, (b) based on local knowledge and experience, (c) client-centered for the development of field competencies and (d) reflexive –as they provide opportunities for practitioners of this approach to reflect on their experience and results and continuously improve methodological arrangements.

The Success-Case Method<sup>44</sup> was selected for it allows for a rapid, efficient and credible way to estimate the impact of a particular intervention isolating those aspects which really work from those that do no. Highlighted aspects become lessons learned for the organization. An assumption regarding the application of the KM approach was that some of the people trained in its use, would certainly apply it with positive results and others would not. The application of this method would allow us to clarify the reasons why the application had been successful or unsuccessful.

By means of a structured interview, applied to different groups of knowledgeable stakeholders, we could be certain that the KM approach had been successfully applied, with

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39. SIBTA: Sistema Boliviano de Tecnología Agropecuaria.

40. PITA: Proyecto de Innovación Tecnológica Agropecuaria.

41. Gabriela Silva es técnico para el Proyecto FIT 8 de la FDTA Valles y colabora en el desarrollo del proyecto de Gestión de Conocimientos a nivel nacional.

42. Fundaciones para el Desarrollo Tecnológico Agropecuario.

43. Methodological arrangements are sets of learning and knowledge sharing strategies designed to improve technology appropriation by farmers.

44. Robert O. Brinkerhoff, (2002) The Success Case Method.

different degrees of success, in all ten cases studied. As interviews were administered certainty about success grew. Then we proceeded to apply some of the principles and tools of the Most Significant Change<sup>45</sup> methodology. This methodology is a participatory monitoring and evaluation instrument, which involves gathering and selecting stories that tell about significant changes that participants (users, beneficiaries, and others) have witnessed or modification in perceptions or practice that have occurred, in this case, after the introduction of the KM approach in the development of agricultural innovation projects. Farmers, technological services providers and supervisors in the four FDTAs wrote concrete stories which were later classified by the type of stakeholder who wrote the story:

Farmers significant changes refer to motivation growing among participants in learning and applying a given technological component or technology, knowledge interchange, a difference marked with the traditional (what technical assistants did before), ease to learn and technology being easier to adapt.

Technical personnel most significant changes related to greater trust on the part of farmers, the deviation from traditional models to technology dissemination, the move away from the academic style and the possibilities to institutionalize the KM approach

Supervisors of field personnel from FDTAs, identified as most significant changes evidence that shows this approach promotes adoption and greater sustainability of technical assistance work due to the innovative and participatory character of this approach

## ***Background***

The Bolivian Agricultural Technology System – SIBTA, created by Decreto Supremo 25717, March 30, 2000, and hosed by the Ministry of Rural and Agricultural Affairs (MACA for its Sp.Ac.) is a governmental initiative, which pursues to promote and provide support to agricultural innovation and sustainable development of the agricultural sector, with an important participation of the private sector.

SIBTA is facing the challenge to facilitate agricultural innovation among poor farming communities. It has chosen to work through two different strategies: the chain-oriented Agricultural Innovation Projects (PITAs for their Sp. Ac.) and the Strategic Innovation Projects (PIENs, for their Sp. Ac.) which cut across regional boundaries to advance innovation in areas of national strategic importance.

The Department for International Development (DFID) of the U.K. decided to provide economic support a series of projects to strengthening the SIBTA, through the Program to Facilitate Agricultural Innovation (FIT for its Sp. Ac.). This program expects to develop new capacities in SIBTA's actors to enable them to forge new innovation pathways for the benefit of poor farming communities. At present the FIT Program is providing support to six FIT projects and three consultantships for SIBTA. New methodologies, training processes, instruments and synergisms are being developed by these initiatives. Among these is the Knowledge Sharing Methodologies Project for Pro-poor Agricultural Innovation Project (FIT 8) which has been led by CIAT<sup>46</sup>.

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45. Rick Davies and Jess Dart, *The Most Significant Change Technique* (2005).

46. CIAT International Center for Tropical Agriculture.

The KM project has presented the different SIBTA actors with a new approach to technical assistance (also called technology transfer and extension) that can be incorporated to the execution of the PITAs and other agricultural innovation initiatives. Through a systematic training process, the project has trained at least one professional of each of the four FDTAs and ten teams of knowledge managers composed by professionals and farmers, who, in turn have applied the KM methodology in ten different sites of Bolivia.

Two process components are the essence of this approach: (a) knowledge reconstruction, a process by which local and technical knowledge merge through active participation of farmers and knowledge managers taking advantage of encounters that take place among them in FFS, CIALs, FTF and other forms of sharing agricultural technology; and (b) the “development of field competencies” a process that departs from the identification of the key competencies expected from farmers to take a particular agricultural innovation in their hands (appropriation). These two components are used to design learning experiences. As competencies are analyzed, it is possible to identify the technical information that needs to be shared, the mental abilities and perceptual or physical skills farmers need to strengthen or develop in order to make an efficient use of technology. From this analysis learning objectives are designed, learning and facilitation strategies identified and evaluation instruments designed.

Knowledge managers are experts in the design of this type of methodological arrangements for knowledge sharing. Their performance and the perceptions of different stakeholders about this approach were the focus of evaluation. Appendix A is a list of the institutions that participated in training and application, the project in which the approach was inserted and the eco-region in which the PITAs were located. Participating PITAs were selected by FDTAs, using a variety of selection criteria.

### **Objectives**

To evaluate the use of the KM approach, as proposed by the FIT 8 Project, in the PITAs developed by the SIBTA system.

Some of the questions we expected to answer were the following:

1. What are the methodological components of the KM approach which show to improve the development of PITAs?
2. What are some of the contextual factors, which facilitate or inhibit the application of the KM approach in different settings?
3. What positive and negative factors in the use of the KM approach do the SIBTA officers perceive?
4. Is the KM approach universally applicable to the PITAs of the SIBTA system and is this application sustainable?
5. Can an applicable and sustainable KM model be derived from experiences in the FIT 8 project?

## **Methodology**

**1. The Success-case Method:** This analytic methodology, as presented by Brinkerhoff (\_\_\_\_)<sup>47</sup> is an effective way to evaluate organizational change. It has been designed to analyze impact of project implementation and uses results of this analysis to introduce organizational change and in their learning capacity. The questions this method helps to respond are the following:

1. What are the results this project is generating?
2. What is that aspect which works better?
3. What are the factors, which facilitate implementation?
4. How can success factors be disseminated
5. What are the benefits for this organization?
6. What is the value added when using this approach?

The application of this method includes five steps:

1. To focus the cases and plan their study
2. To design the model for a success case
3. To apply a survey instrument to identify the best cases (and therefore those which are not best).
4. To interview and document successful and non-successful cases
5. To report results and draw conclusions and recommendations

**2. The Most Significant Change Technique:** Davies (2005) explains that the most significant change (MSC) technique is a form of participatory monitoring and evaluation, in which stakeholders are involved in deciding the changes that are to be recorded as well as the analysis of data. It is also a monitoring tool for it helps identify how a process is being implemented and it is also an evaluation strategy for it provides data about outcomes and impact to assess a project or program as a whole.

The methodological process involves the collection of significant change stories about what is happening on the field and the systematic selection of the most significant of these stories by panels of designated stakeholders. These people are in search of project's impact. Once the changes have been identified through stories, analysts read the stories and discuss about the value of reported changes.

Thorough implementation of this technique follows a series of ten steps, which can be reviewed by reading Davis' cited document. For this evaluation, only three steps were followed: (a) collecting the success case reports, (b) selecting the most significant of these reports and (c) feeding back the results to the project and to people who generated the reports.

**3. Data Collection:** Interviews were carried out to collect information regarding successful experiences. Even though there were not stories written for the higher level (Foundations) , the reporter collected valuable information based on a series of questions designed to elicit stakeholder evaluation of the KM approach. Three groups of stakeholders were interviewed: farmers who had participated in the knowledge management process,

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47. Brinkerhoff, Robert (\_\_\_\_) The Success Case Method. CITA.

professionals who applied the approach and supervisors of field personnel in the FDTAs. The data collection was not an easy task due to the fact that interviewees were located in the four cardinal points of Bolivia and also that these type of data collection exercises are not highly valued by many.

The following table shows the different questions asked to stakeholders to develop reports on the application of the KM approach:

<b>Farmers who took part in the PITAs where the KM Approach was applied</b>	<b>Professionals who applied the KM Approach</b>	<b>Supervisors who reviewed professionals' performance on the field</b>
What do you understand by "knowledge management"?	How can you describe your experience using the KM approach?	Does the KM approach responds to any demand at the FTDA?
What differences do you see between the performance of a knowledge manager an a traditional extension agent?	What are the most significant changes you have perceived taking place since the introduction of the KM approach?	What criteria did you (or the FDTA) use to select the project that was to participate in the KM project?
What are the most significant changes you have perceived taking place in the development of the innovation project in which you are participating since the introduction of the KM approach?	What are changes you may call "significant" in terms of what the farmers do, since the introduction of the KM approach?	What factors of any type have you found to contribute to the implementation of the KM approach in your FDTA?
If you have identified any changes, what are the benefits for farmers derived from them?	Looking at what is usually done in extension processes, can you make a parallel between this activity using the KM approach and using other approaches?	What are the key lessons drawn from the FIT 8 project and from the KM experience in terms of benefits for the FDTA?
Do you see it feasible for farmers to continue using this type of method for other projects?	How do you evaluate the future use of this approach in your organization?	How do you think this approach could be institutionalized at the SIBTA level?

**4. Interpretation of Reports:** Interpretation of reports pursues the identification of common themes across stakeholders. Even though each stakeholder group has a preferable way to express its perceptions about any issue, it is possible to identify themes that repeat along several reports. These constitute the key aspects of success-failure of a particular intervention.

## **Results**

All stories obtained with the help of interviews are not here related. The evaluation study is still underway and a final report will be presented in April 2006. A couple of examples will demonstrate the type of perceptions the KM approach has prompted and the corresponding issues that are included in the stories. Producers and professional from the technology service providers were most active in the writing of stories. We expect to collect a series of reports drawn from a participatory analysis of interviews along with interviewees. Stories are kept in Spanish to maintain the original flavour of perceived changes.

## **Historia de un productor**

*“Mi nombre es Milton Perez, soy productor de uva desde hace 15 años. En estos últimos tres años la FDTA-Valles nos está apoyando con un proyecto para mejorar nuestra producción. Los técnicos que trabajan directamente con nosotros son los de AGRO XXI, algunos de ellos son hijos de productores de la zona que han podido ir a la universidad a estudiar y ahora nos vienen a enseñar como podemos mejorar.*

*El año pasado recién ha entrado el proyecto FIT 8 con la Gestión del Conocimiento. Yo nunca había escuchado de ese tema, pero he participado con otros de mis compañeros y los técnicos de AGRO XXI en talleres aquí en Tarija y otro en Cochabamba. A partir de estas capacitaciones que hemos recibido he visto que los técnicos más se esfuerzan para que nosotros entendamos lo que nos quieren enseñar, además también nos preguntan sobre lo que sabemos.*

*Hay muchas cosas que nosotros sabemos hacer y que hemos aprendido de nuestros abuelos, pero como nadie nos pregunta tampoco les decimos. Antes los talleres eran bien aburridores, ahora los talleres que vienen a darnos, esperamos todos impacientes, y el tiempo se nos va rápido, al final parece que el taller lo hemos dado nosotros los productores. Quiero agradecer a estos técnicos que han hecho unas maquetas de los sistemas de conducción que se han quedado en la escuela de mi comunidad y mis compañeros que me han convencido de cambiar mi sistema de conducción, porque estaba perdiendo platita. Yo quiero pedirles a mis compañeros que sigamos así compartiendo nuestras experiencias y vamos a crecer juntos, ya que uno piensa que callándonos vamos a ser los más beneficiados, pero no nos damos cuenta que lo que ustedes saben, yo no lo sé, pero hay cosas que yo sé y ustedes no las saben y si juntamos todo eso, podemos mejorar nuestra producción y tener más platita.”.*

**Interpretation by the evaluator:** This fragment of a story shows how motivation has grown among participants in the workshops coordinated by the PITA executing organization. Motivation is related to the importance given to participation of farmers to share what they know about the production of grapes. Another important aspect is the fact that the farmer has come to change his traditional ways of managing the cultivar to install a new conduction system, which is a technological component shared by the professional team. The farmer reveals that this change has been significant for him.

## **Historia de técnico oferente de servicios de asistencia técnica**

*“Mi nombre es Ricardo Paita, soy Ing. Agrónomo y tengo 10 años de experiencia realizando asistencia técnica. Actualmente me desempeño como coordinador del PITA: Manejo agronómico de los procesos productivos del cultivo de maní en la región indígena del Itika Guasú en la empresa CER-DET, con el apoyo de la FDTA-Chaco. Antes de recibir las capacitaciones en GC del proyecto FIT 8, yo desconocía totalmente el enfoque que se proponía. En todo caso, sí tenía algunos conocimientos sobre metodologías participativas, a partir de mi formación académica en la universidad y de algunos cursos y seminarios. Casualmente en la empresa en la que trabajo, el año pasado se contrataron algunas personas para que hicieran una sistematización y documentación sobre las metodologías que utilizamos los diferentes técnicos para homogenizar el uso de ellas y justo llega la propuesta del proyecto FIT 8 que encajó como anillo al dedo para el desarrollo de este PITA.*

*Me siento profundamente agradecido por habernos tomado en cuenta para estas capacitaciones, ya que el enfoque aprendido no solo nos sirve para ejecutar mejor nuestro PITA. Para mi caso particular, estas enseñanzas me han ayudado en mi vida personal, en mi forma de relacionarme con las personas, en mi forma de enfrentar la vida. Yo diría que es un enfoque de vida. Yo soy parte de un equipo de 4 personas que ejecutamos este PITA y a nombre de ellos puedo decir que el enfoque nos ha ayudado a replantearnos las actividades programadas y el tiempo que invertimos en las mismas. El enfoque nos ha permitido contar con la confianza de los productores, la cual, ahora no estamos dispuestos a perder. Nos sentimos profundamente comprometidos a seguir adelante con esta nueva forma de hacer asistencia técnica. Los resultados intermedios que se analizan en la ejecución del PITA han sobre pasado lo esperado. Conversando con mi jefe acerca de las razones de este éxito, es que él ha llegado a la conclusión y determinación de institucionalizar el enfoque y que mi equipo sea el líder para difundir nuestros conocimientos y experiencias acerca del enfoque de Gestión de Conocimientos”*

**Interpretation by the evaluator:** This brief recollection tells about the benefits perceived by an extensionist. Trust-building is identified as a key component of the approach employed. A reflection about the new role of the extensionist is also presented. Traditional education did not make a contribution to carry out client-centered extension work. The KM project made a contribution that is recognized to have an impact beyond the working environment and enters the aisle of personal life. Another important issue is the perception of leaders in this organization (Agro XXI) to expand the use of the KM approach and institutionalize it.

## **Conclusions**

Two-way knowledge sharing and interchange does not belong to traditional technical assistance models, non-participatory and vertical. Nevertheless, it is evident that, once this interchange is successfully practiced it contributes to a change of attitude supported by the idea that the two faces of knowledge (explicit and tacit) when taken together are the bases for greater interest in technology and its adoption.

Professionals from the technology service providing institutions express that the use of this approach is viable, simple and does not imply greater costs. It contributes to farmer motivation and greater appropriation of technology components by farmers.

Scaling out and scaling up of the use of KM approach depends on the decisions made by technological service providing organizations' leaders that gains are made in terms of efficiency, adoption and satisfaction of farmers by using the KM approach. Larger validation efforts might be needed to convince the more skeptical about the benefits of this approach.

Narratives and qualitative information regarding the use of the KM approach are valid means to demonstrate its usability in technology dissemination. Training of new knowledge managers will greatly benefit of these stories in terms of motivation and interest to use the KM tools.

New evidence and further analysis is required to have a better picture of the impact this approach is making at different levels of actors in the SIBTA system. New studies need to be undertaken to improve the quality of evidences to be presented to authorities to



influence their decisions regarding the use of new methodological approaches such as the KM methodological arrangements.

### ***Bibliography***

- Alem Rojo, Ricardo. 2003. Un modelo moderno para la generación y transferencia de tecnología para Latinoamérica. Ponencia, III Simposio Internacional "Globalizacáo e pobreza o papel da Ciencia". Recife, Brasil.
- Berdegúe, Julio. 2002. Las reformas de los sistemas de extensión en América Latina a partir de la década de los 80. RIMISP, Santiago, Chile. 20 p.
- Brinkerhoff, Robert. 2002. The success case method. San Francisco, USA. 220 p.
- Gandarillas, Humberto. 2001. Historia de la Investigación para el Desarrollo Agropecuario de Bolivia. Memorias de un Investigador. Cochabamba, Bolivia. p. 50-70.
- Lacki, Polan. 1998. La formación de técnicos agropecuarios para el nuevo mercado de trabajo. Oficina regional de la FAO para América Latina y el Caribe. Santiago, Chile. 21 p.
- Lacki, Polan; Marcenado, Luis. 2003. ¿Gastar en Actividades o invertir en resultados? ¿Problematizar las soluciones o solucionar los problemas?. Boletín electrónico del Consorcio para el Desarrollo Sostenible de la Eco región Andina (CONDESAN). Nodo Regional del Foro de Montañas en América Latina. Departamento de Desarrollo Sostenible de la FAO. 10 p.
- Murphy, Anne. 2001. Metodología cualitativa para el análisis de género en las organizaciones. Emakunde/Gobierno Vasco.
- SIBTA. 2003. Reglamento Operativo del Fondo Competitivo de Innovación Tecnológica. Ministerio de Asuntos Campesinos y Agropecuarios (MACA). La Paz, Bolivia. 52 p.
- Davies, Rick; Dart, Jess. 2005. The Most Significant Change Technique. CARE International, United Kingdom. 105 p.
- Van Immerzel, Willem; Cabero, Javier. 2004. Pachamama Raymi, la fiesta de la capacitación. Teoría y práctica de un sistema de capacitación campesino-a-campesino. Anexo 11. El paradigma de Gestión del Conocimiento. Cuzco, Perú. 10 p.
- Zapata, Vicente. 2004. Proyecto FIT 8 "Metodologías para la gestión Pro-pobre de conocimientos para la innovación Agropecuaria". Guidelines for preparation for research proposal. Centro Internacional de Agricultura Tropical (CIAT). Cali, Colombia. 23 p.
- Zapata, Vicente. 2005. Manual para la formación de gestores de conocimiento. Proyecto FIT 8 – CIAT. Cali, Colombia. 181 p.

**Appendix A: Institutions, Projects and Corresponding FDTA  
Participating in the KM Initiative**

<b>Equipo Oferente</b>	<b>Título del PITA</b>	<b>FDTA</b>
1. CEHERKA	Producción de semilla de para y MIP	Altiplano
2. SEMTA	Manejo Integral del Ganado Lechero	Altiplano
3. SEMTA	Mejoramiento de especies animales (llama)	Altiplano
4. ESERMA	Mejoramiento genético de la raza criolla de ganado porcino para APROMAP	Chaco
5. AGROXXI	Manejo del cultivo de uva de mesa	Valles
6. UNEC	Apoyo a la producción y comercialización de especias y condimentos en los valles de Chuquisaca	Valles
7. ADAPICRUZ	Mejoramiento de la productividad y rentabilidad de la colmena	Trópico Húmedo
8. GAIA S.R.L.	Mejoramiento de la productividad y rentabilidad de la colmena	Trópico Húmedo
9. CER-DET	Manejo agronómico de los procesos productivos del cultivo de maní en la región indígena del Itika Guasú	Chaco
10. COACO	Producción y comercialización de semilla de maíz en comunidades guaraníes del Itika Guasú	Chaco