

Territorial perspective of agricultural extension policies in Colombia

Perspectiva territorial de las políticas de asistencia técnica agropecuaria en Colombia

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ABSTRACT

This article presents a historic perspective of agricultural extension in Colombia and highlights its scope in relationship to regional development. Four periods are identified, which show that policies have evolved towards a territorial and decentralized agricultural extension, although this trend could not be consolidated in recent years. It is suggested that Colombia should recover an approach of agricultural extension that integrates the productive dimension with a territorial perspective.

Key words: production, region, development, rurality.

RESUMEN

El artículo presenta una visión histórica de las políticas de asistencia técnica agropecuaria en Colombia y destaca sus alcances en relación con el desarrollo territorial. Se identifican cuatro periodos que evidencian que los planteamientos de política evolucionaron hacia una visión territorial y descentralizada de la asistencia técnica, sin que esta tendencia se lograra consolidar en los últimos años. Se recomienda que el país recupere el enfoque de una asistencia técnica que integre, además de lo productivo, una perspectiva amplia del territorio en el que se ubican las unidades de producción.

Palabras clave: metodología de sistemas blandos, sistemas complejos adaptables, delimitación de territorios.

Introduction

During the last 60 years, approaches of agricultural extension in Colombia have varied according to the particularities of the prevailing development model and its policies. The purpose of this article is to examine, from a historical perspective, the evolution and reach of the agricultural extension policies from the point of its insertion in processes of territorial development².

Even though the traditional approach of agricultural extension has been the productive process, the importance of its territorial perspective lies in that greater agricultural competitiveness demands understanding productive problems, both of the agricultural exploitation and of the territory serving as its support. Agricultural extension can contribute for producers to visualize their production unit in a way that is more integrated to their territory and understand that the close relationship between both is decisive for their wellbeing. These affect their decision making, particularly strategic decisions. Regarding the latter, it is convenient for producers, through their organizations, to construct a long-term strategic vision of their productive activity, which must agree with the developmental priorities of their territory. This is a fundamental input to determine their

necessities for agricultural extension and other complementary needs. Hence, in this process it is indispensable to have the participation from the municipalities and departmental governments, who are undertaking diagnosis and exercises for territorial planning.

Centralized agricultural extension (1950 – 1968)

This period coincides with the import substitution approach of development, during its phase of stimulus to the production of industrial raw material for the domestic market.

With the creation of the Colombian-American Technical Agricultural Service (STACA for its name in Spanish) in 1952, an agricultural extension service was established in Colombia gathering elements from the Land Grant Colleges in the United States, which assumed functions of universities in technological development in their geographical areas of influence. While this was not possible to apply in Colombia, the nation opted for U.S. advice in training personnel from the Ministry of Agriculture via extension (Ocampo *et al.*, 1992). The approach was based on research, education, and extension, which meant that STACA, in addition to contributing to increased productivity and to the

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² This article is based on a study by the author for Midas program on agricultural extension to small farmers in Colombia (Molina, 2009).

integration to markets of a peasant economy very marginal from these dynamics, it was also concerned with the social problems of the rural families.

In 1961, the Agrarian Reform policy (Ley 135 de 1961) introduced the services of agricultural extension, agricultural credit, and strengthening of markets for agricultural products, promoted under the new land property distribution model. To generate a social benefit, aspects like the organization of the producers and improvement of their health and housing conditions were also tended to by the State through the extension service.

In 1959 forceful investment by banks was established to capitalize agricultural credit, without it being tied to agricultural extension (Brochero *et al.*, 1983), which did occur in 1966, when individuals were empowered to provide this service (Presidencia de la República de Colombia, 1966) and credit lines were created obligating their use (Banco de la República, 1966). For medium and large size producers, agricultural extension was projected as a specialized service offered by individuals, to meet their strictly productive problems.

Relevant aspects

The State assumed a leading role in agricultural extension that sought to attend to the productive and social problems of the small producers, through a centralized model in the Ministry of Agriculture, which during the 70s also incorporated the Colombian Institute for Agrarian Reform (INCORA for its name in Spanish) and the Colombian Agricultural Institute (ICA for its name in Spanish).

Two examples evidenced a projection toward processes of territorial development: i) the determination of agrarian reform zones, whose territorial homogeneity by productive lines would only be addressed later with policies of land markets and policies of agrarian reform centers during the 80s and 90s; and ii) the coffee-growing region in which the Coffee Growers Federation (*Federación de Cafeteros*) developed the product-region approach and established, since the 30s, its extension service.

Nevertheless, there are indicators suggesting the weakness during this period of integration of agricultural extension with territorial development. These refer to the separation that existed between agricultural extension and other relevant policies like rural research, credit, and planning. That separation did not favor the use of mutual interrelations, necessary to strengthen processes of territorial development.

The cutoff date for this period was 1968, when the Ministry of Agriculture transferred the service of extension to the ICA.

Territorialized agricultural extension (1968 – 1987)

During this new period the model of import substitution continued prevailing, but more focused on promoting exports, particularly transformed agricultural products.

ICA was created in 1962 with research, training, transference, and agricultural extension duties. Since 1968, it undertook agricultural extension for medium and large producers (MAC, 1968; Rico, 1980) and, as of 1971, for small producers. With support from international cooperation, during the 70s, five rural development projects were carried out with decentralized agricultural extension in Eastern Antioquia, Cáqueza, Santander, Nariño, and Northern Cauca. These projects were located in geographically defined areas. Their functions were: evaluation (diagnosis and monitoring); research (more agricultural than social); disclosure (extension); institutional coordination (offer of services from different institutions in the territory) (MAC, 1980). Upon multiplying these projects, ICA faced difficulties in addressing them and abandoned this option of agricultural extension that favored a territorial approach.

In 1973, the *Fondo Financiero Agropecuario* – FFA (Agricultural Financial Fund) was created (Ley 5 de 1973) which subsidized, with an active role from ICA, agricultural extension for small producers (Buenaventura, 1980). This fund, which lasted until 1989, when FINAGRO was constituted, was the main financial source for the sector. The FFA established that a percentage of the credit would finance technical aid, paid for by the user at a rate not exceeding 2% of the loan. Financial institutions and trade associations could provide the service or contract it with third parties.

As of 1976, the agricultural extension component was included for small producers in the recently created DRI zones (*Fondo Desarrollo Rural integral*). In its first (1976-1982) and second phases (1983-1990) new players came into the scene (MADR, 2010): in addition to ICA in DRI zones (technical and economic research) and INCORA in agrarian reform zones, there was participation from INDERENA (*Instituto Nacional de Recursos Naturales*) (issues on forestry, fishing, and soil conservation) and SENA (*Servicio Nacional de Aprendizaje*) (extension in agricultural organization, marketing, communications, and practices). Some Regional Development Corporations conducted agricultural extension with international cooperation (Corpourabá and CVC (*Corporación Autónoma Regional del Valle del Cauca*)).

In 1980, ICA introduced the concept of Integral Agricultural Extension, based on a communications model between the technician who represented research and scientific knowledge, and the producer, who had the productive experiences (Bermudez, 1980). This comprehensive approach of agricultural extension involved a diagnosis of the zone and of the productive unit; the validation of local technologies; the introduction of production plans; training of producers; planning and examination of the whole production unit, in addition to that corresponding to credit.

Led by trade associations, during the 80s, the research center per product (CENIs -*Centros Nacionales de Investigación*-) gained participation in research and technology transfer (Departamento Nacional de Planeación, 1984).

Relevant aspects

During this period, an agricultural extension approach was predominant emphasizing production. Understood as “the transmission to the countryside of the research results developed in universities, as well as in national and international research centers” (Buenaventura, 1980). This had to do with a unidirectional conception of transference, with the producer being a passive receptor (Cardona, 1975). The validation was performed on demonstration plots. Training communications technicians gained importance. But, because it was tied to the planned promotion credit, the technician’s work was affected when it was confused with that of credit supervision (Brochero *et al.*, 1983). Others understood agricultural extension as an additional financial cost and were skeptic of the skills of the technicians. Alternatively, the supervision contributed to decreasing credit deviation risks.

For the medium and big producers, the financial institutions and the trade associations were important players in agricultural extension. Such was centered on productive and commercial aspects. Thus, came to be the private agricultural extension different from state agricultural extension, which subsidized small producers to guarantee its free and obligatory provision as a public service.

Unlike the prior period, research and agricultural extension were institutionally integrated by ICA; however, without technology transfer as a bridging mechanism. Nonetheless, between the one and the other there were difficulties in articulation: while researchers expected an extension of their service, they did not commit to a sole source of research. The DRI experience revealed increased use of technology and recognition of agricultural extension as a productivity input (Harker, 1980).

Regarding territorial development, we must highlight the inclusion of zonal diagnostics for the comprehensive technical aid promoted by ICA. In the DRI districts, rural and participative diagnostics were also conducted. The valuable experience of the ICA regional projects and of the DRI zones was the introduction, in the 70s, of the agricultural extension model applied in geographically defined areas. This meant a significant change against the prior scheme.

This agricultural extension model headed by ICA, based on centralized-regionalized management, with a dominant role from the public sector, lasted during 20 years until 1987 when the municipal units for agricultural extension Aid (UMATA for its name in Spanish, *Unidad Municipal de Asistencia Técnica Agropecuaria*) were created and the model was decentralized, marking a new era for agricultural extension in Colombia.

Decentralized agricultural extension (1987 – 2004)

This period covers the new economic aperture model to promote exports and decentralization to strengthen the municipalities.

In 1987, as part of the decentralization policy, the municipalities were assigned the task of agricultural extension through the UMATAs (decree 77 of 1987), which would provide free services to small producers (with less than one Family Agricultural Unit (UAF for its name in Spanish), and paid services to medium and big producers (with two or more UAFs). The expectation was to broaden the coverage and quality of the service. This assumed the transfer of ICA and INCORA functions in this field to the municipalities. Financing of these units would be channeled by the national government through DRI (PRC, 1987).

With this distribution of competencies, with separation of institutional responsibilities between research and agricultural extension, it was necessary to establish a connection mechanism between both. In 1989, the National System for Agricultural Technology Transfer (SINTAP for its name in Spanish) came into existence (Decreto Ley 1946 de 1989), whose purpose was to promote the adoption of adequate technologies for local conditions and support the municipalities in the service delivery of agricultural extension. To strengthen SINTAP, a technology transfer fund operated since 1995 and for eight years. This fund was PRONATTA (*Programa Nacional de Transferencia de Tecnología Agropecuaria*), which funded through calls for projects that were appropriate for the regional needs (Meneses, 2000). The PRONATTA-UMATA

scheme would assume technological adjustment and validation, along with the assessment and dissemination of successful practices through a participative regional structure of prioritization of projects.

This SINTAP-PRONATTA-UMATA structure, with national coordination from the Ministry of Agriculture and regional coordination from the Departmental Secretaries of Agriculture, defined through PRONATTA some scenarios of regional necessities and participated in training and assessment of the UMATAs, who were working with the small producers and NGO's in executing projects. This structure lasted until 2003, when the last PRONATTA stage ended, which meant the elimination of SINTAP support, without which PRONATTA was no longer viable.

With the creation of the National System for Agricultural Credit (Ley 16 de 1990) in the 90s, FINAGRO (*Fondo para el Financiamiento del Sector Agropecuario*) was constituted to finance the sector through banks with promotion credit lines, and it is authorized to continue capitalizing the agricultural extension fund for small producers (decree 1778 of 1990), as was being done by the FFA. Agricultural extension, overseen by ICA, continued being obligatory to have access to resources offered by FINAGRO.

To strengthen technology transfer, in 1990, ICA created 65 Regional Centers for Training, Extension, and Dissemination of Technology (CRECED for their name in Spanish), responsible for identifying regional problems and constituting spaces of knowledge with small producers. This worked through a decentralized program: agriculture, fishing, technology transfer, and production systems.

In 1991, the functions of the sectional commissions on agricultural extension were stipulated headed by the departmental secretaries of agriculture, as coordination and planning instances (decree 2379 regulatory of decrees 77 of 1987 and 501 of 1989).

Agrarian legislation (101 of 1993) ratified the delivery of agricultural extension to small producers, acquiescent with decentralization and participation processes. The creation of UMATAs in all the municipalities became obligatory. The Municipal Councils on Rural Development (CMDR for the name in Spanish) were constituted, along with the Municipal Commissions for Agricultural Extension to guide and oversee the operations of the UMATAs; Para-fiscal Funds were also created with resources for technological development and to strengthen the role of the trade associations in specialized agricultural extension. Some trade

associations like *Fedecacao*, *Fedearroz*, and *Fedepanela* assumed it under the productive chains approach.

ICA, restructured in 1993, focused its responsibilities on areas of vegetable and animal health; while CORPOICA (*Corporación Colombiana de Investigación Agropecuaria*) was created as a mixed corporation for research and technology transfer.

The National System for Agrarian Reform and Rural Peasant Development (Ley 160 de 1994) was conformed in 1994, including the subsystem "of research, agricultural extension, technology transfer, and crop diversification", coordinated by CORPOICA and conformed by ICA, entities of agricultural extension and agricultural research, UMATAs, and the private entities recognized by the government. Thus, what was sought was to integrate initiatives, bearing in mind the existence of the SINTAP.

Other specific efforts sought to instrumentalize the policy. In 1989, *Caja Agraria* (agrarian bank) conducted agricultural extension for some years for small producers, who were its credit customers, through an approach of Extension Directed to Objectives (EDO), based on the Training and Visit methodology. In 1993, CORPOICA and FEDEPAPA implemented Field Schools for Farmers (ECAS for the name in Spanish), as a model of participative rural extension (FEDEPAPA, 2006). This continues being successful in terms of territorial development and technological change, with a methodology based on long-term work, focused on zones and with specific producers.

Since 1995, CORPOICA incorporated the Participatory Agricultural Research (IAP for the name in Spanish) through Local Agricultural Research Committees (CIAL for the name in Spanish). These constituted a permanent research service comprised of volunteer farmers to link local and formal research (Sierra, 2002). In addition to evaluating technological alternatives, the CIALs were a channel for communities to influence on the research and extension agendas (Braun *et al.*, 1999). In 1999, their coverage reached 35 municipalities (40 committees) (CORPOICA, 1999).

In 2000 the operations of the UMATAs were modified (Ley 607 de 2000) and the approach of Rural Direct Agricultural Extension was also introduced (ATDR for the name in Spanish). The two big purposes of the legislation were to offer agricultural extension with an interdisciplinary focus and contemplate broader territorial intervention scales (MADR, 2010). The ATDR had to be consistent with the National System on Agricultural Science and Technology

(decree 585 of 1991) and it was conceived as a sub-system of public and private entities seeking to identify technologies to be developed. The service had to be free of cost for small producers and its guidelines had to arise from the Municipal Development Plans and the CMDRs. The municipalities would guarantee the service through the UMATAs or by contracting service provider entities conformed of interdisciplinary teams. CORPOICA and SENA would be the entities in charge of articulating the ATDR with technology validation and adjustment. Monitoring of the ATDR would be done by the departmental secretaries of agriculture and their financing would come from national and departmental sources. Municipal funds would be created for the ATDR, and these would be administrated by the mayors' offices.

To territorially organize the ATDR activities, the General Plan for Direct Rural Agricultural Extension was introduced. The Municipal Commission on Agricultural Extension would determine the zones and productive systems to be addressed and would ensure effective service delivery, adhering to CMDR approaches. The ATDR was a condition for competitiveness within the context of regional development (Conpes, 2000).

Although since 1987 there was talk of the provision of agricultural extension by entities of territorial coverage, Decree 3199 of 2002 clarifies the figure of ATDR providing entities, its accreditation by the Departmental Secretaries of Agriculture, and its selection by the CMDRs.

Relevant aspects

In terms of regional development, with the CMDRs and the Municipal Commissions on Agricultural Extension a space for citizen participation in municipal planning was given, including agricultural extension, but it did not manage to generate a culture for such (Villarreal, 2004). Although diagnostics were made in many UMATAs and municipal agricultural plans were formulated as part of the development plan for each municipality, activities of technicians did not always include rigorous planning processes (Secretary of Agriculture and Rural Development of Antioquia). The importance given to the rural development planning activities must be acknowledged.

The UMATA model had the elements to make it sustainable within a regional development scheme. Technology transfer and its financing were vital; therein, the creation of PRONATTA. It expected to create dynamics of technology transfer in the regions, articulated to the generation

of technology and to agricultural extension: SINTAP as process coordinator, UMATAs as the means to reach small producers, and PRONATA (with the UMATAs) as the relationship mechanism with generators of knowledge (universities, CENI's and CORPOICA). Nevertheless, this comprehensive approach was not sufficiently developed; given that with the elimination of SINTAP PRONATTA, the UMATAs were left as disarticulate pieces. Upon the imposition of political interests, distortions appeared detracting from the benefits of the approach. The missionary purposes of the SINTAP were affected by the organizational weakness of the small producers and by their restrictions to formulate their own demands. These did not receive sufficient support from the UMATAs. Hence, SINTAP did not manage to adequately engage technological offer with technology transfer (Benitez, 2002). The technological products were poorly socialized by the UMATAs and adoption levels turned out low. While the UMATAs were conceived as service providers, they would also be channels for the research demands from farmers. Nonetheless, one of the difficulties they encountered was their lack of consultation to identify the type of research to promote (Benítez, 2002). Regarding PRONATTA, its projects did not always interpret the technological necessities of the small farmers. The SINTAP-PRONATTA connection with the CENIs was accomplished through specific projects, but it was not a structural connection, a detrimental fact, given the leadership reached by the private sector in agricultural extension, through para-fiscal funds and strengthening of the CENIs.

In synthesis, the weaknesses of the research and technological development program consisted in problems accessing the technological offer, disarticulation of universities, incoherence with regional demands, lack of strategic planning, and marked emphasis on production (Benítez, 2002).

This period covered the development and elimination of the SINTAP-PRONATTA-UMATA integrating model. The change of the model takes place with Legislation 607 of 2000 and guideline norms from 2002 and 2004, which introduce the Provincial Councils on Agricultural Business Management (CPGA for the name in Spanish) as alternative UMATA figures.

Agricultural extension per demand (2004 – 2010)

During this period, agricultural modernization efforts were made to strengthen exports. Income-protection policies were introduced for producers affected by distortions in foreign markets.

With the creation of the CPGAs in 2004, as planning and coordination spaces for management of regional rural development (decree 2980 on the association of municipalities to provide ATDR) (MADR, 2004), the mayors of the CPGA-associate municipalities agreed to the gradual elimination of the UMATAs to avoid duplicating operations (López, 2004). The departmental secretaries of agriculture would coordinate the constitution and operation of the CPGAs, incorporating the results of regional planning and competitiveness of production chains, adhering to the consolidation carried out by the Ministry of Agriculture. The responsibility of the municipalities, as ATDR planners and organizers, was circumscribed to their participation in the CPGAs. The ATDR provider companies would assume the service. To access the ATDR, users had to seek association according to potentialities. For the free service to small producers, internships became obligatory in the municipalities by students in the last semester of technical, technological, and university education in agricultural sciences and the like. These practices would be coordinated and certified by the CPGAs, ensuring training by the ATDR provider entities. The CPGAs would support the structuring of agricultural businesses with business management schemes.

The CPGAs had to formulate General Plans for Agricultural Extension (PGAT for the name in Spanish) per production system or concatenation (Ley 811 de 2003). Likewise, municipalities not associated to a CPGA, had to formulate their PGAT for review by the Ministry of Agriculture. Articulation of the PGATs with the demands from the farmers and the businessmen, and with the departmental and municipal plans was necessary.

As part of the “*Agro Ingreso Seguro*” program (agriculture sure income), created in 2007 (Ley 1133 de 2007), the approach per demand was introduced through the establishment of the Incentive to Productivity to Strengthen Agricultural Extension (IAT) as a subsidy to the demand for agricultural extension (up to 80% of its cost, resolution 140). According to AIT guidelines (resolution 0049 of 2010), this incentive would only cover the agricultural extension provided by an entity certified with the requirements of the Guide for the Implementation of ISO 9001:2000 Quality Management Systems for ATDR Service Provider Entities, issued by ICONTEC in 2007 (MADR, 2010). Likewise, at INCODER the Technological Modernization Fund was structured for the Rural Sector, to grant agricultural extension subsidies through public announcement to small producers and Indigenous or Afro communities.

The ATDR entities will serve producers tied to production projects on aspects like food quality; soil suitability; selection of activities, and exploitation planning; application of technologies; procedures to access credit; outfitting of the productive infrastructure; markets; business training; animal and vegetable health; transformation processes; forms of business organization; and management of needs for social services supporting rural development.

Relevant aspects

This new model of agricultural extension sought to construct a regional vision in general plans of agricultural extension, recognizing the potentials of the territory and the difficulties to overcome. Also, it sought to integrate the productive development to regional dynamics expressed in productive chains. This required agricultural extension organizations with local, regional, and national perspective (MADR, 2003). The CPGAs sought to overcome the agricultural extension approach centered on municipal production, to formulate service delivery projects with a broader and more comprehensive view of the territory. Producer association capabilities were also benefited, given that users had to associate according to their potentials and problems as a requirement to having access to agricultural extension, as well as to other mechanisms of productive leveraging.

Nevertheless, in practice, the CPGAs have encountered difficulties in harmonizing municipal interests and in complying with its missionary purposes, distorted by a lack of financing resources and because of contracts being carried out according to market demands, which were not always pertinent to the nature of these organizations.

During this period, policies of innovation were refocused, as they gained importance. The move was from direct financing of research centers and organisms responsible for technology transfer and extension to defining innovation priorities and leading sectors; to providing incentives for the private sector; to the functionality of the system and of the innovation networks by enhancing collaboration among producers, researchers, and commercial agents; and, creating and enhancing the skills of potential innovators (producers, etc.) (COLCIENCIAS, 2008).

The final years of this period completed the transition from an approach of agricultural extension offer by the State to one based on demand, in which producers (small, medium, and big) seek to have access to incentive resources to agricultural extension. Although the State has always

recognized its obligation regarding agricultural extension, its leading role has been waning by limiting its responsibilities to supplying monetary subsidies within a scenario in which power groups stake claims of said resources, against an incipient organization of small producers to generate a demand for these services. In effect, the IAT results are precarious in terms of placements to small producers, due to the lack of institutional accompaniment to encourage that demand. Furthermore, there is evidence of increasing fragmentation and dispersal of the players and programs, with growing importance of the privately paid, added to progressive deinstitutionalization of agricultural extension services, which in many instances are not part of a private or public institutional structure.

Conclusions

The trajectory of agricultural extension policies in Colombia indicates that the progress the country achieved in territorializing and decentralizing agricultural extension was not consolidated. Indeed, the country went from an extension service of broad geographic coverage to a territorialized service in defined geographical areas, and then advanced toward a decentralized service of national coverage, which in the last five years was replaced by a demand approach characterized by the fragmentation of the service, whose emphasis has been specialized agricultural extension to solve specific problems, without considering the broader view of the territory and with poor access for small producers.

In the future, it would be convenient to draw a policy on agricultural extension differentiated by the type of producer, *i.e.*, basic or induction to change, for subsistence farmers and with State leadership; intermediate or of technical business formation, for farmers in the process of business transformation; specialized or of strictly technical solutions, for entrepreneurially consolidated farmers and without State leadership (Perfetti *et al.*, 2009).

This agricultural extension should influence on territorial development through the construction of local producer networks in which the State participates as a facilitator, but which progress toward absolute autonomy. Commitment with territorial development must be expressed through identifying regional priorities for agricultural extension; tending to such with a territorial view; coordinating with other players related to technical aid to make network operations more effective; implementing actions coordinated with territorial governments, individuals, providers of complementary goods and services of agricultural exten-

sion; creating networks that formalize joint initiatives among players and among different sectors for the comprehensiveness of the agricultural extension service and to facilitate their expansion onto other territories.

It is also convenient for the policy to be aimed at structuring a agricultural extension system related with other pertinent systems like: education, information, research and territorial organization.

Thus, agricultural extension would become part of the dynamics of territorial management, so that the specialization process accompanying development has a strategic vision that includes agricultural extension as a driving element.

The construction of territories assumes the creation of increasingly strong links among its inhabitants; hence, the proposal for management of local networks of producers. Agricultural extension is not only a leveraging instrument for those processes, but it also depends on them to be successful.

Literature cited

- Benítez, V.R. 2002. Investigación y competitividad agropecuaria. *Economía Colombiana y Coyuntura Política* 292, 92-100.
- Bermúdez, H. 1980. Filosofía y objetivos de la asistencia técnica estatal. pp. 49-53. In: *Memorias del Seminario Internacional sobre Asistencia Técnica a Prestatarios del Crédito Agropecuario*, Bogota.
- Braun, A.R., G. Thiele, and M. Fernández. 1999. La escuela de campo para MIP y el comité de investigación agrícola local: plataformas complementarias para fomentar decisiones integrales en la agricultura sostenible. *Manejo Integrado de Plagas* 53, 1-57.
- Brochero, M.F., D.A. Molina C., and H.A. González H. 1983. Análisis de la asistencia técnica agrícola: sector empresarial en Colombia. Instituto Colombiano Agropecuario (ICA), Bogota.
- Buenaventura P., R. 1980. La Ley 5ª de 1973, su origen, el componente de asistencia técnica, su aplicación y metas organizadas. pp. 137-145. In *Memorias del Seminario Internacional sobre Asistencia Técnica a Prestatarios del Crédito Agropecuario*, Bogota.
- Cardona G., O. 1975. La asistencia técnica institucional. pp. 101-112. In: *Educación para el desarrollo*. Universidad Nacional de Colombia; ICA, Bogota.
- COLCIENCIAS. 2008. Colombia construye futuro, Política nacional de fomento a la investigación e innovación, Bogota.
- CONPES, Consejo Nacional de Política Económica y Social. 2000. CONPES No. 3076. 3 de mayo de 2000, aprobación del programa de oferta agropecuaria (PROAGRO). Presidencia de la República de Colombia, Bogota.
- CORPOICA. 1999. Investigación agrícola participativa con productores, Bogota.

- Departamento Nacional de Planeación. 1984. Plan nacional de desarrollo: cambio con equidad, Bogota.
- FEDEPAPA. 2006. Manual didáctico para agricultores. Escuela de Campo para Agricultores – ECAS. Bogota.
- Harker, B.A. 1980. La asistencia técnica particular en Colombia. pp. 147-149. In: Memorias del Seminario Internacional sobre Asistencia Técnica a Prestatarios del Crédito Agropecuario, Bogota.
- López M., F.J. 2004. Análisis socioeconómico de la actual política agraria. Universidad de Caldas, Manizales, Colombia.
- Meneses P., O. 2000. El fondo competitivo PRONATTA: una estrategia para la promoción del desarrollo tecnológico agropecuario desde el nivel local y regional. In: Seminario Internacional. Pontificia Universidad Javeriana. <http://bibliotecavirtual.clacso.org.ar/ar/libros/rjave/mesa4/meneses.pdf>; consulted: December, 2010.
- MADR, Ministerio de Agricultura y Desarrollo Rural. 2003. Asistencia técnica directa rural. Explicación y texto de la Ley 607 de 2000. Bogota.
- MADR, Ministerio de Agricultura y Desarrollo Rural. 2004. Centros provinciales de gestión agroempresarial (CPGA) marco orientador. Bogota.
- MADR, Ministerio de Agricultura y Desarrollo Rural. 2010. Perspectivas agropecuarias primer semestre de 2010. Bogota.
- Ministerio de Agricultura de Colombia. Decreto 2420 de 1968. Bogota.
- Ministerio de Agricultura de Colombia. Decreto 2645 de 1980. Bogota.
- Molina, J.P. 2009. La asistencia técnica a pequeños productores en Colombia. Midas, Bogota.
- Ocampo, C.M.J., J.E. Plaza M., L.E. Chávez E., and J.M. Peñuela V. 1992. Marco general de transferencia de tecnología en el ICA. ICA, Bogota.
- Perfetti, J.J., J.P. Molina, and J.C. Gallego. 2009. Propuesta de una política nacional de asistencia técnica agropecuaria. Midas, Bogota.
- Presidencia de la República de Colombia. Decreto 77 de 1987. Bogota.
- Presidencia de la República de Colombia. Decreto 219 de 1966. Bogota.
- Rico, C.A. 1980. Asistencia técnica al pequeño productor. pp. 82-100. In: Memorias del Seminario Internacional sobre Asistencia Técnica a Prestatarios del Crédito Agropecuario, Bogota.
- Sierra, F. and J. Alonso. 2002. Los comités de investigación agrícola Local, un modelo para resolver problemas tecnológicos con la participación de productores en Colombia. Corpoica, Bogota.
- Villarreal, M.N. 2004. Sectores campesinos, mujeres rurales y estado en Colombia. Ph. D. Thesis. Faculty of Sociology and Political Sciences, Ph. D. Program in Sociology. Universidad Autónoma de Barcelona, Spain.