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### **Agricultural Extension**

Drawing its name from the act of "extending" academic knowledge to the general public, agricultural extension serves as the bridge between scientific research and farmers. Beginning in the late 19<sup>th</sup> century, government-funded agricultural schools and research stations developed practices and technologies that were then transferred to farmers by extensionists. This top-down model was used to disseminate new agricultural technologies, and was vital to the scaling up of agriculture in the US. A similar model of extension was used in the global South by colonial administrations and independent governments alike in order to increase export crop production. Cuts in government spending under structural adjustment led to the decline of government-funded extension and a growing role for NGOs in many such countries. The failures of extension and new technologies to better the lives of small farmers led to calls for greater farmer participation and an overhaul of the top-down extension model. Its scope was expanded to include other aspects of rural development. While top-down transfer of research and technology—biotechnology, in particular—persists, agricultural extension has become a more collaborative and participatory practice, where farmer knowledge and experience play a significantly larger role.

The dissemination of agricultural information to farmers is as old as civilization itself. Bountiful harvests fed growing urban populations, provided tax revenue to governments, and fueled armies and the expansion of empire; rulers thus had a vested interest in ensuring good production. Examples of cropping calendars and recommendations for improved farming practices were widespread in ancient Mesopotamia, Egypt, Greece, Phoenicia, and Rome. Agricultural research and extension began in China as early as the late Han Dynasty. In Europe, the development of printing technology led to the widespread distribution of treatises on crop and livestock husbandry during the Renaissance. During the Age of Enlightenment, agricultural clubs were founded by gentlemen farmers interested in applying scientific methods to production on their estates. By the early 19<sup>th</sup> century itinerant agricultural teachers throughout Europe and North America were hired by landowners to educate their tenants on improved production techniques.

The financial support of the State was central to the development on modern agricultural extension. By the middle of the 19<sup>th</sup> century, most European countries had agricultural schools conducting training and research and disseminating ideas through publications and fairs. The first wholly state-funded agricultural extension service was established in France in 1879 to keep farmers up to date of the latest discoveries in agricultural science. Britain soon followed suit. In the US formal state-sponsored extension in the US began with a series of federal laws establishing an infrastructure for agricultural research, education, and extension. The Land Grant university system, a network of state colleges teaching agriculture and mechanical science, was created with the signing of the Morrill Acts of 1862 and 1890; state agricultural research stations were established under the Hatch Act of 1887. The Smith-Lever Act of 1914 formalized Cooperative Extension, an organizational hierarchy linking the federal and state Departments of Agriculture, and Land Grant universities. Under this system, a network of extension agents working from county offices disseminated agricultural research conducted at the universities and state research stations.

In the Global South, agricultural extension was central to European colonial projects during this period. Colonial economies in Africa and Asia were largely based on the export of raw

agricultural products destined for the factories and mills in the urban centers of Europe. Agricultural schools, research stations, and extension services were established by colonial administrations in order to increase production of commodity crops. The primary role of extensionists was to provide farmers with highly-subsidized inputs and credit. Despite being viewed by many as vestiges of colonialism, the extension infrastructure largely remained intact in many African and Asian countries following independence in the mid-20<sup>th</sup> century. Extension was also widespread in Latin America during this period, initiated to support export crop production.

A top-down “transfer of technology” model defined agricultural extension worldwide for much of the 20<sup>th</sup> century. In the US, Cooperative Extension played a central role in the development of industrial agriculture. Following Agriculture Secretary Ezra Benson’s warning in the 1950s to farmers to “get big or get out,” the scaling-up of production was made possible through the spread of new technologies to farmers. Mechanization, hybridized seeds, fertilizers, and pesticides were developed by Land Grants, promoted by extension agents, and sold by agricultural supply firms. By the late 1970s, however, the Land Grant-Cooperative Extension system was criticized for playing to the interests of agribusiness at the expense of the environment and small family farms unable to keep up with capital-intensive demands of the new technologies demanded by economies of scale. The unidirectional flow of technology ultimately privileged only the wealthiest farmers.

This same model of technology defined extension in the developing world during the Green Revolution. Working with researchers from a network of international agricultural research centers in Asia and Latin America (and modeled after the US Land Grant system), extensionists disseminated technology to middle- and large-scale farmers in the highly-productive “breadbaskets” of the developing world with the assumption that technologies would “diffuse” down to poorer farmers who were considered backwards and in need of modernization. Extension was highly centralized under this top-down model and was rarely present in more isolated areas. While the Green Revolution was widely successful for large-scale production on high-quality land, small-scale subsistence farmers living on marginal land reaped few of its benefits.

Changes in the global economy forced a massive transformation of agricultural extension in the Global South during the late 20<sup>th</sup> century. The debt crisis of the late 1970s and drop in commodity prices in the early 1980s undermined post-colonial agricultural export economies. Under the structural adjustment programs of the 1980s and ‘90s which followed, agricultural extension services were severely gutted or decommissioned. Finally, the restructuring of global agri-food commodity chains in the ‘90s saw demands for traditional export crops such as grains and fiber crops replaced by new “cool chain” markets for fruits and vegetables.

These structural changes, alongside the failure of small farmers to adopt new technologies, underscored the weaknesses of the top-down model and called for a more equitable partnership between agricultural extension and farmers. Beginning in the late 1970s, many rural development workers affiliated with peasant organizations and NGOs were heavily influenced by the popular education theories of Paulo Freire which underscored the primacy of local culture and knowledge. Incorporating his ideas of people-centered liberation, many NGO workers began to promote simple but effective farming techniques appropriate for local conditions, including biological soil and pest management and soil conservation. Agricultural extension slowly evolved to encompass rural development more broadly, emphasizing livelihoods, economic development, and women’s empowerment. Farmer participation began to take a more prominent role in research and extension.

Agricultural extension worldwide has been revolutionized by this populist “farmer first” approach. Considerably more participatory than its top-down antecedents, extension has become more horizontal in its approach both in the Global South and the industrial North. Farmer-to-farmer exchanges and field days serve as forums for information exchange. Indeed, the role of extensionist has shifted largely from teacher to facilitator, with an emphasis placed on communication, marketing skills, and networking rather than on transfer of technology. Nevertheless, echoes of top-down extension remain with the promotion of genetically-modified crops by the Land Grant system and the new Green Revolution for Africa.

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**Related Entries:**

adoption-diffusion; agribusiness; commodity chain; debt crisis; Dept. of Agriculture, US; export dependency; Green Revolution; Land Grant university; mechanization; peasant; structural adjustment

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