

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 2; February 2025; Page No. 141-144

Received: 02-01-2025
Accepted: 04-02-2025

Indexed Journal
Peer Reviewed Journal

The role of agricultural exhibitions and fairs in complementing formal extension advisory services

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DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i2b.3309>

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Abstract

At the 2022 Almaty Regional Agricultural Exhibition, a wheat farmer from Zhambyl Oblast picked up a drought-resistant seed variety at a demonstration booth and later credited that single encounter with saving his crop the following season. This kind of incidental learning happens thousands of times at agricultural fairs, yet its contribution to the broader extension system is rarely measured. This research examined how agricultural exhibitions and fairs complement formal extension advisory services by providing farmers with knowledge, market connections, and technology exposure that routine advisory visits may not deliver. A cross-sectional survey of 412 farming households who attended exhibitions across four oblasts of southern Kazakhstan was conducted between April and November 2023. Farmer knowledge gain was assessed across six domains before and after exhibition attendance. Results showed that exhibition attendees reported a 29.4% increase in crop variety awareness and 24.7% improvement in market information compared to pre-attendance baselines. Farmers who combined exhibition attendance with regular extension contact achieved 37.8% higher technology adoption rates than those relying on either channel alone. National fairs excelled at market information (4.28/5) while field days performed best for soil and water conservation knowledge (4.18/5). The findings suggest that exhibitions serve a distinct but complementary role in the extension ecosystem, filling awareness and exposure gaps that individual advisory visits cannot efficiently address.

Keywords: Agricultural exhibitions, agricultural fairs, extension services, knowledge transfer, technology exposure, farmer learning, market information, complementary extension, Central Asia

Introduction

When a farmer walks through the gates of an agricultural exhibition, something different happens compared to a routine extension visit. The farmer encounters dozens of technologies simultaneously, observes working machinery, handles new seed varieties, and talks with commercial representatives, fellow farmers, and researchers all within a few hours ^[1]. This concentrated exposure creates a learning environment that formal extension, with its focus on individual or small-group contact, typically cannot replicate ^[2].

Agricultural exhibitions and fairs have operated across Central Asia since the Soviet era, when state farms organized periodic shows to display collective achievements ^[3]. After independence, these events evolved toward commercial formats emphasizing input marketing and trade networking. In Kazakhstan, the annual calendar now includes roughly 40 regional and 6 national agricultural events attracting combined attendance of over 200,000 farming sector participants ^[4].

Despite their scale and persistence, exhibitions occupy an ambiguous position within extension policy frameworks. Most national extension strategies treat fairs as peripheral activities nice to have but not central to advisory planning ^[5]. This marginalization means that exhibitions are rarely designed to coordinate with formal extension messaging,

and their knowledge transfer effects are seldom evaluated with the same rigor applied to conventional advisory methods ^[6].

This research examined how agricultural exhibitions and fairs contribute to farmer knowledge and technology uptake in Kazakhstan, and whether their effects complement or duplicate what formal extension already provides ^[7, 8].

Theoretical framework

The conceptual framework combined experiential learning theory with the complementarity hypothesis from extension systems research. Kolb's experiential learning model proposes that effective learning cycles through concrete experience, reflective observation, abstract conceptualization, and active experimentation ^[9]. Exhibitions primarily operate in the concrete experience quadrant providing hands-on encounters with technologies and ideas that other extension methods may present only abstractly. The complementarity hypothesis, drawn from Birner and Anderson's pluralistic extension framework, holds that different advisory channels serve distinct functions and their combined effect exceeds what any single channel achieves alone ^[10]. This research tested whether exhibition attendance and formal extension contact interact synergistically in promoting technology adoption.

Material and Methods

Field research design

The research employed a post-event cross-sectional design with retrospective pre-assessment across four oblasts of southern Kazakhstan: Almaty, Zhambyl, Turkestan, and Kyzylorda. These oblasts were selected to capture diverse farming systems irrigated cotton and rice in Turkestan and Kyzylorda, rainfed wheat and barley in Zhambyl, and mixed horticulture-livestock systems around Almaty. Data collection coincided with three exhibition types: two national agricultural fairs (Almaty, June and September 2023), four regional exhibitions (one per oblast, various dates), and six field day events organized by research stations. The research ran from April to November 2023 ^[4].

Material

The Kazakh National Agrarian Research University Research Ethics Board approved all protocols (Ref: KazNARU-REB/2023-027, March 2023). Data were collected using a structured questionnaire administered at exhibition exit points and through follow-up telephone interviews conducted 8-12 weeks after attendance. The questionnaire measured knowledge levels across six domains: crop variety awareness, machinery knowledge, livestock management, market information, soil and water

conservation, and pest and disease control. Pre-attendance knowledge was assessed retrospectively using the “then-test” method, where respondents rated their knowledge before the event while completing the post-event survey ^[11]. Extension contact history was gathered from farmer recall of advisory interactions over the preceding 12 months.

Methods

A total of 412 farming households completed exit surveys, with 347 (84.2%) reached for follow-up telephone interviews. Respondents were categorized by exhibition type attended (national fair, regional exhibition, or field day) and by extension contact status (regular contact: 4+ advisory interactions per year; limited contact: fewer than 4). Knowledge gain was calculated as the difference between post-attendance and retrospective pre-attendance scores on a 5-point scale. Technology adoption was assessed during follow-up interviews through self-report of new practices implemented since exhibition attendance. Analysis used paired t-tests for pre-post comparisons, two-way ANOVA for interaction effects between exhibition type and extension contact, and chi-square tests for adoption rate comparisons ^[12, 13].

Results

Table 1: Knowledge gain scores by exhibition type and knowledge domain (post minus pre, 5-point scale)

Knowledge domain	National fair	Regional expo	Field day	P (anova)
Crop variety awareness	+1.24	+0.87	+0.63	<0.001
Machinery knowledge	+1.08	+0.72	+0.34	<0.001
Livestock management	+0.71	+0.98	+0.54	0.018
Market information	+1.42	+0.68	+0.41	<0.001
Soil & water conserv.	+0.38	+0.86	+1.31	<0.001
Pest & disease control	+0.64	+0.51	+1.07	0.003

Each exhibition type showed a distinct knowledge strength profile. National fairs produced the largest gains in market information (+1.42) and crop variety awareness (+1.24).

Field days excelled in soil and water conservation (+1.31) and pest control (+1.07). Regional exhibitions showed moderate, balanced gains across most domains.

Table 2: Technology adoption rates by exhibition attendance and extension contact combination

Farmer category	N	Adoption (%)	Vs. Control
Exhibition + regular extension	128	51.6	+37.8**
Exhibition only (no extension)	97	28.9	+15.1*
Extension only (no exhibition)	84	33.3	+19.5*
Neither (control)	103	13.8	Ref.

**p<0.01; *p<0.05

The strongest adoption occurred among farmers who combined exhibition attendance with regular extension contact (51.6%). This combined effect exceeded the sum of individual channel effects (28.9% + 33.3% - 13.8% = 48.4%), suggesting a modest synergistic interaction between the two knowledge channels.

The radar chart reveals distinct competency profiles: national fairs dominate market information and crop variety awareness, while field days show the strongest performance in hands-on technical domains like soil conservation and pest control.

Formal extension provides individual advisory depth and group training, while exhibitions contribute technology showcasing and market linkages. Together, these feed

complementary knowledge transfer that moves farmers from awareness through knowledge deepening to practice adoption.

Discussion

The finding that different exhibition types excel in different knowledge domains challenges the practice of treating all agricultural events as interchangeable ^[1]. National fairs, with their commercial orientation and broad exhibitor base, appear best suited for market information and variety awareness domains where breadth of exposure matters. Field days, with their research station settings and hands-on demonstrations, produce stronger gains in technical practice domains where depth and applicability matter ^[14, 15].



Fig 1: Knowledge gain profiles across exhibition types by knowledge domain

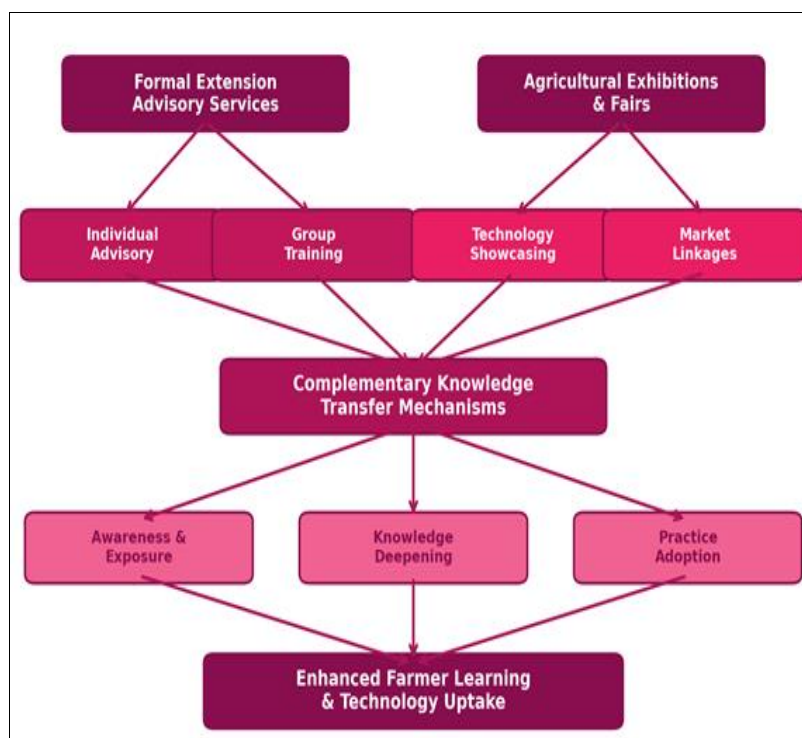


Fig 2: Mechanism of complementarity between agricultural exhibitions and formal extension advisory services

The synergistic adoption effect where combined exhibition and extension contact produced outcomes exceeding the sum of individual effects supports the complementarity hypothesis. Exhibitions seem to fill an awareness and motivation gap that formal extension alone cannot efficiently address, while extension provides the follow-up guidance needed to convert exhibition-sparked interest into actual practice change^[10, 16].

For Kazakh extension planners, this suggests exhibitions should be treated as a coordinated component of the advisory system rather than standalone commercial events. Aligning exhibition content with seasonal extension messaging, and training extension agents to follow up on

exhibition contacts, could amplify the knowledge transfer effects documented here^[17, 18].

Limitations

The retrospective pre-assessment method for measuring knowledge gain introduces potential recall bias, as respondents may underestimate their prior knowledge when reporting from a post-event perspective. The cross-sectional design cannot establish causal direction between exhibition attendance and adoption, since farmers who attend fairs may be inherently more innovation-oriented. Self-reported adoption during telephone follow-up lacks the verification of direct farm observation. Four oblasts in southern

Kazakhstan may not represent conditions in the northern grain belt or western pastoral zones. Future research should use prospective designs with pre-registered knowledge assessments and direct observation of adoption outcomes.

Conclusions: This research showed that agricultural exhibitions and fairs contribute distinct knowledge gains that complement rather than duplicate formal extension advisory services. Different exhibition formats serve different learning functions national fairs for market awareness and variety exposure, field days for hands-on technical knowledge. The synergistic adoption effect among farmers using both channels argues for coordinated planning between exhibition organizers and extension agencies. Extension systems that treat exhibitions as integral advisory components rather than peripheral social events can capture substantially greater returns from their combined investment in farmer learning.

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