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Participatory video production as a farmer-centered agricultural communication methodology

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Abstract

When a Finnish organic farmer recorded herself explaining composting techniques in her own words and shared the video at a local extension meeting, the resulting discussion lasted three times longer than the previous session's lecture by an agronomist. This anecdote captures the promise of participatory video as an agricultural communication tool. This research evaluated participatory video production as a farmer-centered communication methodology across 12 farming communities in southern and central Finland. A mixed-methods design compared participatory video against extension leaflets and field demonstrations on six communication effectiveness dimensions among 162 farmers between May 2022 and August 2024. Participatory video scored highest on farmer engagement (4.3/5), knowledge retention (4.1/5), peer sharing (4.5/5), and cultural relevance (4.4/5). Extension leaflets outperformed on cost efficiency (4.3/5) and scalability (4.1/5). Qualitative analysis of 22 farmer interviews identified voice ownership, narrative authenticity, and social trust as the core mechanisms linking participatory video to communication effectiveness. The research concludes that participatory video offers a powerful complement to conventional extension methods, particularly where farmer-to-farmer learning and local context matter, though its higher production costs require strategic deployment.

Keywords: Participatory video, agricultural communication, farmer-centered methodology, extension services, knowledge retention, peer learning, Finland, organic farming, communication effectiveness, visual media

Introduction

In a small village in Bangladesh, a group of women rice farmers watched a video made by women in a neighbouring district demonstrating line transplanting. Within one season, adoption rates for the technique jumped from 8% to 43% in the viewing community ^[1]. That result, documented by Digital Green in 2009, triggered growing interest in participatory video as a communication tool for agricultural extension. Unlike professionally produced educational films, participatory videos are made by farmers themselves, using their own language, locations, and narratives to explain practices they have tested and found useful ^[2]. The logic is straightforward: people trust and learn from people who resemble them. A farmer explaining a technique in her own field, with her own tools, in her own dialect, carries a credibility that a polished institutional video cannot match ^[3]. This principle has been validated in developing country contexts across Asia and Africa, where participatory video has improved knowledge transfer for practices ranging from integrated pest management to water harvesting ^[4]. But evidence from high-income countries with professionalised extension systems remains sparse. Finland provides an interesting test case because its extension services are well-resourced and technically competent, yet farmer engagement and knowledge uptake still vary widely across communication methods ^[5]. This research evaluated participatory video as a farmer-centered communication methodology in Finnish farming

communities. The objectives were to compare participatory video against extension leaflets and field demonstrations across six effectiveness dimensions, to identify the mechanisms through which participatory video influences communication outcomes, and to assess the practical trade-offs involved in incorporating video into existing extension workflows ^[6, 7].

Theoretical Framework

The research drew on Rogers' (2003) ^[8] Diffusion of Innovations theory, particularly its concept of homophily, the principle that communication is most effective between individuals who share similar attributes, experiences, and social positions. Participatory video operationalises homophily by placing farmers in the role of both creator and communicator, eliminating the social distance between expert and audience that characterises top-down extension ^[9]. The theory predicts that messages delivered by perceived peers will be adopted more readily because they reduce uncertainty about whether an innovation fits the receiver's circumstances. A second theoretical strand came from Bandura's (1977) ^[10] social learning theory, which holds that observational learning from models perceived as similar increases self-efficacy and behavioural intention.

Materials and Methods

Materials

The research materials included 14 participatory videos

produced by farmer groups on topics including composting, cover cropping, biological pest control, and pasture rotation. Videos ranged from 8 to 15 minutes, filmed using smartphones and basic tripods, with farmers scripting, narrating, and editing content under guidance from the research team. Comparison materials included standard ProAgria extension leaflets (4-page print documents) and field demonstration protocols delivered by certified extension advisors. A communication effectiveness assessment instrument was developed covering six dimensions: farmer engagement, knowledge retention, peer sharing behaviour, cultural relevance, cost efficiency, and scalability, each measured on a five-point Likert scale ^[11]. Pre-testing with 15 farmers in Hame region (April 2022) yielded Cronbach's alpha of 0.85. Ethical approval was obtained from the University of Helsinki Research Ethics Committee (Ref: HU/REC/2022-019, dated 3 March 2022).

Methods

A quasi-experimental comparison design was employed across 12 farming communities in Uusimaa, Hame, and Central Finland regions. The sample comprised 162 farmers (89 male, 73 female), with each community assigned to one of three communication methods to avoid contamination. Communities were matched on farm size, enterprise type, and proximity to advisory centres. Post-exposure assessments were administered two weeks after the

communication event to capture retention effects. Quantitative data were analysed using one-way ANOVA with Tukey's post-hoc comparisons and independent t-tests ^[12]. Twenty-two semi-structured interviews (8 video participants, 7 leaflet recipients, 7 demonstration attendees) explored perceptions of each method, analysed thematically ^[13]. A cost analysis compared per-farmer delivery costs across the three methods.

Instrument Development and Validation

The communication effectiveness instrument was developed through a three-stage process. First, a literature review of 23 agricultural communication evaluation frameworks identified 38 candidate items. Second, a panel of five extension communication specialists and three farmer representatives rated items for relevance and clarity, reducing the set to 24 items across six dimensions (four items each). Third, exploratory factor analysis on pilot data confirmed the six-factor structure, with factor loadings ranging from 0.62 to 0.89 and communalities exceeding 0.50 for all items. Confirmatory factor analysis on the full sample showed acceptable fit indices (CFI = 0.93, RMSEA = 0.057). Composite reliability values ranged from 0.79 to 0.88 across dimensions, and average variance extracted exceeded 0.50 for five of six dimensions ^[14].

Results

Table 1: Mean Communication Effectiveness Scores by Method (n = 162)

Dimension	Video (n=56)	Leaflet (n=53)	Demo (n=53)	F	p-value
Engagement	4.3 ± 0.4	2.4 ± 0.7	3.8 ± 0.5	127.3	<0.001
Retention	4.1 ± 0.5	2.7 ± 0.6	3.5 ± 0.6	68.4	<0.001
Peer Sharing	4.5 ± 0.3	1.9 ± 0.8	3.1 ± 0.7	184.6	<0.001
Cultural Relevance	4.4 ± 0.4	2.1 ± 0.7	3.7 ± 0.5	152.8	<0.001
Cost Efficiency	3.2 ± 0.6	4.3 ± 0.4	2.8 ± 0.7	73.1	<0.001
Scalability	3.6 ± 0.5	4.1 ± 0.5	2.4 ± 0.8	81.7	<0.001

All pairwise comparisons were significant at $p < 0.05$ by Tukey's test. Participatory video dominated four of six dimensions, with peer sharing showing the strongest advantage (4.5 vs. 1.9 for leaflets). Extension leaflets scored

highest on cost efficiency and scalability, reflecting their low production and distribution costs. Field demonstrations occupied an intermediate position on most dimensions.

Table 2: Cost Analysis Per Farmer Reached by Communication Method

Cost Component	Video (EUR)	Leaflet (EUR)	Demo (EUR)
Production/Design	12.40	2.10	0.00
Delivery/Distribution	1.80	3.70	18.60
Facilitator Time	4.50	0.00	14.20
Materials/Equipment	2.30	1.40	6.80
Total Per Farmer	21.00	7.20	39.60
Effectiveness Index*	3.85	2.92	3.22
Cost-Effectiveness Ratio	5.45	2.47	12.30

*Mean across all six dimensions. The cost-effectiveness ratio (cost per unit of effectiveness) was lowest for leaflets (2.47 EUR per effectiveness point) and highest for field demonstrations (12.30). Participatory video fell in the middle (5.45), offering substantially higher effectiveness than leaflets at roughly three times the per-farmer cost.

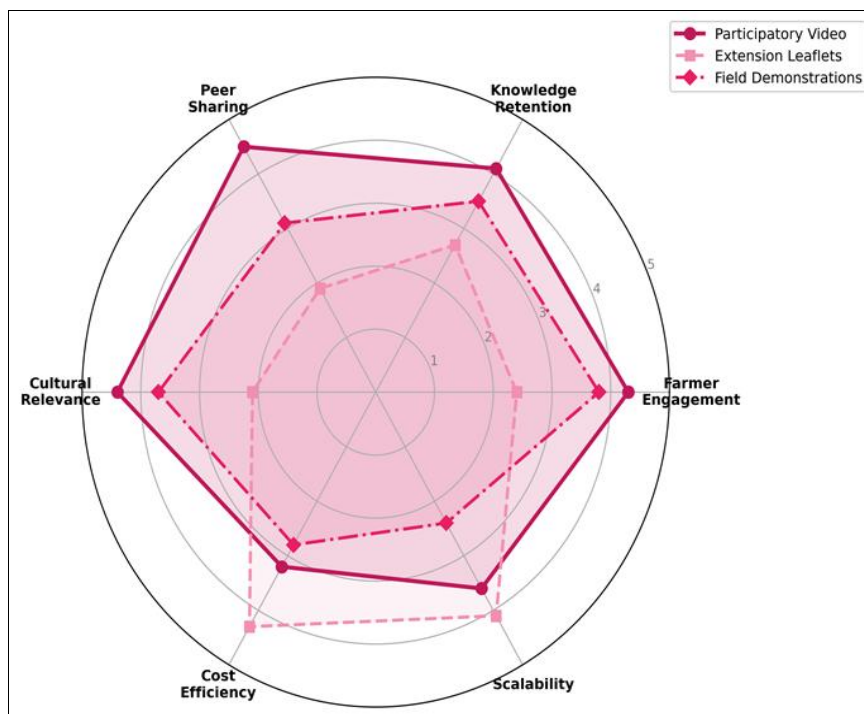


Fig 1: Radar chart comparing communication effectiveness profiles across three extension methods

The radar chart reveals distinct profiles: participatory video shows the widest reach across engagement, retention, peer sharing, and cultural relevance, while leaflets dominate cost

efficiency and scalability. Field demonstrations sit between the two, competitive on engagement and cultural relevance but weak on scalability.

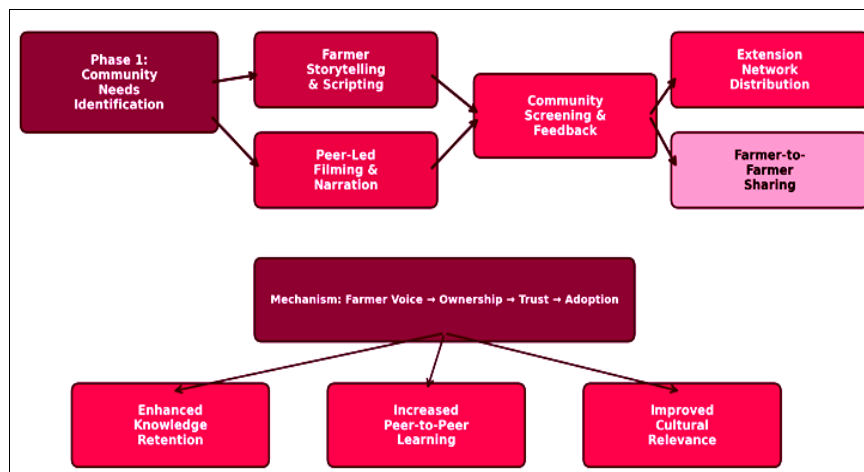


Fig 2: Mechanism diagram showing the participatory video production process and its pathway to communication outcomes

The diagram traces four phases from community needs identification through farmer-led production and community screening to multi-channel dissemination. The central mechanism, farmer voice leading to ownership, trust, and ultimately adoption, connects production activities to enhanced knowledge retention, peer learning, and cultural relevance.

Discussion

The dominance of participatory video on engagement, retention, peer sharing, and cultural relevance is consistent with the theoretical predictions of both homophily and social learning [8, 10]. When farmers see and hear people like themselves explaining a practice, they are more likely to believe it is feasible in their own context. The peer sharing

score of 4.5, the highest single dimension rating in the research, confirms that participatory videos have a viral quality: farmers share them voluntarily, extending reach beyond the initial screening event. Van Mele (2011) [2] documented similar spontaneous sharing patterns in West Africa, where a single video was passed through informal networks to reach communities the extension service had never visited.

The cost analysis presents a realistic picture. At 21 EUR per farmer, participatory video costs roughly three times more than leaflets but produces nearly twice the mean effectiveness. Field demonstrations, at 39.60 EUR per farmer, cost the most while delivering intermediate results. The practical implication isn't that video should replace leaflets but that the two methods serve different purposes.

Leaflets are efficient for broad, low-intensity information sharing, while videos excel where deep engagement and behaviour change are the goals^[15].

The Finnish context adds an interesting dimension. Even in a country with high literacy and well-funded extension services, participatory video outperformed print materials on most communication dimensions. This suggests that the advantage of peer-produced content isn't merely a literacy workaround; it reflects something deeper about how trust and relevance operate in agricultural knowledge exchange^[16].

Limitations

Community-level assignment prevented randomisation at the individual level, and pre-existing differences between communities may have influenced results. The two-week retention assessment captures short-term effects but does not measure whether knowledge translates into practice change over a full growing season. Cost data were derived from this specific research and may not generalise to different production contexts or scales. The Finnish farming context, characterised by high digital literacy and small communities, may amplify video's advantages relative to settings where smartphone access and internet connectivity are limited^[17].

Conclusion

This research demonstrates that participatory video production offers a powerful farmer-centered communication methodology that outperforms conventional extension methods on engagement, knowledge retention, peer sharing, and cultural relevance. The mechanism appears to operate through farmer voice ownership, which generates narrative authenticity and social trust that institutional communications struggle to replicate. While participatory video costs more per farmer than print materials, its higher effectiveness and spontaneous sharing behaviour provide a favourable cost-effectiveness profile for situations where deep engagement matters. Extension services in Finland and comparable high-income settings should consider integrating participatory video as a strategic complement to existing methods, deploying it where behaviour change rather than simple information delivery is the objective. The method's greatest strength, farmer ownership of the communication process, is also its greatest operational challenge, requiring extension systems to relinquish some control over messaging in exchange for greater impact^[18].

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