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FARM SIZE AND AGRICULTURAL PRODUCTIVITY IN AZERBAIJAN: CHALLENGES AND POLICY IMPLICATIONS

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Abstract

This study examines the relationship between farm size and agricultural productivity in Azerbaijan, using data from the Electronic Agriculture Information System (EAIS) and Farm Data Monitoring System (FDMS). The analysis reveals that medium and large farms achieve higher wheat yields compared to smallholders, primarily due to better access to irrigation and mechanization. Regression results indicate that farm size and irrigation have statistically significant positive effects on productivity, while fertilizer use shows no significant impact. Policy implications highlight the moderate importance of optimizing existing land use through voluntary land consolidation, strategic irrigation investments, and the adoption of precision agriculture. The study contributes to the debate on optimal farm structures in transition economies and provides evidence-based recommendations for agricultural development in Azerbaijan.

Keywords*: farm size, agricultural productivity, Azerbaijan, wheat yields, land consolidation, irrigation, precision agriculture, rural development.*

Introduction

Agriculture plays a vital role in Azerbaijan’s economy, contributing approximately 6-7% of GDP and employing around 37% of the labor force (State Statistical Committee of Azerbaijan, 2023). Since gaining independence in 1991, the country has undergone significant agrarian reforms, transitioning from large-scale Soviet collective farms to a more fragmented system dominated by small private holdings. The distribution of farm size has emerged as a critical factor influencing agricultural productivity, rural livelihoods, and food security.

The relationship between farm size and efficiency has long been debated in agricultural economics. While some studies suggest that smaller farms are more productive per hectare due to intensive labor use (Sen, 1962; Berry & Cline, 1979), others argue that larger farms benefit from economies of scale, better access to technology, and market integration (Eastwood et al., 2010). In Azerbaijan, the average farm size remains small (around 1-3 hectares) due to historical land privatization policies that distributed plots among rural households. This fragmentation raises concerns about mechanization challenges, limited access to credit, and low commercialization rates.

Recent years have seen notable improvements in Azerbaijan's agricultural productivity, supported by government investments in irrigation, mechanization, and farmer training programs. The rise of medium and large-scale agribusinesses, particularly in cotton, hazelnuts, and viticulture, demonstrates the sector's gradual modernization. Additionally, the growth of contract farming and cooperatives has helped smallholders integrate into commercial value chains, improving incomes and market access.

Despite government efforts to promote agricultural development through subsidies and infrastructure investments, land fragmentation and inefficient farm structures persist as key obstacles. Understanding the dynamics of farm size in Azerbaijan is essential for designing policies that enhance productivity while ensuring equitable rural development.

This study examines the current trends in farm size distribution, its impact on agricultural productivity, and the policy implications for Azerbaijan's agrarian sector.

Literature Review

The relationship between farm size and agricultural productivity has been extensively debated in agricultural economics, with varying perspectives on whether small or large farms are more efficient. This section reviews key theoretical arguments, global empirical evidence, and studies specific to Azerbaijan's agricultural structure.

The "Inverse Relationship" (IR) hypothesis, first formalized by Sen (1962) and later supported by Berry and Cline (1979), argues that smaller farms tend to achieve higher yields per hectare due to more intensive labor use, better supervision, and lower transaction costs. This theory has been influential in justifying land redistribution policies in developing countries.

However, critics argue that the IR may not hold in capital-intensive, mechanized agriculture, where economies of scale favor larger farms (Eastwood et al., 2010). Larger farms often benefit from better access to credit, technology, and market linkages, leading to higher overall production efficiency (Helfand & Levine, 2004). The debate remains unresolved, with contextual factors, such as land quality, labor markets, and institutional support playing a decisive role.

Empirical studies across different regions show mixed results. Smallholder-dominated systems (e.g., India, Bangladesh) often exhibit higher land productivity due to labor-intensive practices (Feder, 1985). Large-scale commercial farms tend to dominate, benefiting from mechanization and export-oriented production (Deininger & Byerlee, 2012). Land privatization led to fragmented smallholdings, but consolidation trends are emerging in countries like Ukraine and Kazakhstan (Lerman & Sedik, 2014).

Azerbaijan's agricultural sector underwent radical transformation after the dissolution of Soviet collective farms (kolkhozes). The 1996 Land Reform Law distributed land to rural households, leading to an average farm size of 1-3 hectares (Law on Land Reform, 1996). While this improved rural livelihoods, it also created challenges. Small plots hinder efficient use of machinery (Guliyev &

Hasanov, 2020). Small farmers struggle to obtain loans for inputs and technology (Aliyev et al., 2018). Fragmentation reduces bargaining power and commercialization rates (Bayramov & Abbas, 2021). Recent studies suggest that medium-sized farms (5-20 ha) may offer a balance between productivity and efficiency in Azerbaijan (Mammadov, 2022). However, land consolidation faces obstacles such as weak land markets, informal leasing arrangements, and resistance to cooperative farming (Sattarov, 2023).

Methodology

This study employs a mixed-methods approach, combining descriptive analysis of farm size distribution using the latest available data from Azerbaijan's Electronic Agriculture Information System (EAIS) and an econometric assessment of the relationship between farm size and wheat productivity using the Farm Data Monitoring System (FDMS).

EAIS Database (2024) – Farm Size Structure Analysis. Source: Ministry of Agriculture of Azerbaijan. It is a Nationally representative dataset on farm holdings, including land size, ownership type, and regional distribution. The variables of Interest are average farm size (ha) by region and distribution of farms by size categories (e.g., <1 ha, 1-5 ha, 5-15 ha, >5 ha).

FDMS Database (2023) – Farm Size and Wheat Productivity Analysis. Source: State-funded farm monitoring system tracking production inputs and outputs. It is a sample of farms across all the regions (excluding Nakhichevan AR). The variables of Interest are dependent variable (wheat yield (tons/ha)) and independent variables farm size (ha) and irrigation.

Econometric Model (FDMS Data) – Farm Size and Wheat Yield Relationship. We estimate a multiple linear regression model using cross-sectional data.

$$\text{Yield}_i=\beta_0+\beta_1\text{FarmSize}_i+\beta_2\text{Fertilizer}_i+\beta_3\text{Irrigation}_i+\epsilon_i$$

Where:

- Yield = Wheat productivity (tons/ha).
- FarmSize = Total cultivated area (ha).
- Fertilizer = Fertilizer (mixed) application rate (manat/ha).
- Irrigation = Dummy variable (1 = irrigated, 0 = rainfed).

Hypotheses

- Inverse Relationship (IR) Hypothesis: If $\beta_1 < 0$, smaller farms are more productive per hectare.
- Economies of Scale Hypothesis: If $\beta_1 > 0$, larger farms achieve higher yields due to better input access.

The limitations of the evaluation are i) data constraints (FDMS may not fully capture informal or subsistence farms, ii) Farm size may correlate with unobserved factors (for instance, managerial skill) and iii) cross-sectional nature cannot establish causality, only associations.

Farm Size Distribution in Azerbaijan: Current Trends

The structure of farm sizes in Azerbaijan remains highly fragmented, reflecting the legacy of post-Soviet land reforms that distributed agricultural plots to rural households. According to the latest data from the Electronic Agriculture Information System (EAIS, 2024), approximately 850,000 sown areas were declared for state subsidies in 2024, covering a total of 1.44 million hectares. This indicates that the average sown area per declaration is 1.7 hectares, while the average farm size is estimated at 2.7 hectares, suggesting that many farmers cultivate multiple small plots.

Table 1. Declared areas

Land Groups	Land, ha	Share	Number of sown areas	Share
>2 ha	547 942	38.0%	709 753	83.5%
2-5 ha	338 698	23.5%	114 983	13.5%
5-15 ha	178 192	12.3%	20 612	2.4%
15-50 ha	83 528	5.8%	2 540	0.3%
50< ha	295 443	20.5%	1 777	0.2%
Total	**1 443 803**		**849 665**	

Source: *EAIS, Ministry of Agriculture (2024)*

As shown in Table 1, the vast majority of declared sown areas (83.5%) are very small (≤2 ha), accounting for 38% of total agricultural land. Meanwhile, medium-sized farms (2-5 ha and 5-15 ha) represent 23.5% and 12.3% of land, respectively, but only 15.9% of total sown area declarations. On the other hand, large farms (>50 ha) control 20.5% of agricultural land but make up just 0.2% of total declarations, highlighting a highly unequal distribution where a small number of large farms operate on significant landholdings.

Information about the number of small, medium and large sown areas is given below.

Table 2. Number of small, medium and large sown areas per crop

Crops	number of sown areas up to 2 ha	between 2-5 ha	between 5-15 ha	between 15-50 ha	number of sown areas more than 50 ha
Grain	420816	80322	13264	1657	1366
Fruits and berries	131369	5852	1364	161	75
Feed	104838	16264	1152	52	20
Technical crops	15491	9170	4267	604	281
Potatoes	14648	808	87	7	5
Vegetables	11985	967	143	15	13
Grapes	5280	479	163	34	14
Melons	4484	978	106	2	0
Other	842	143	66	8	3

Source: *EAIS, Ministry of Agriculture (2024)*

Table 2 reveals notable variations in farm size distribution across different crops:

- Grains (wheat, barley, etc.) dominate small-scale production, with 420,816 sown areas under 2 hectares, but also have a significant presence of large farms (1,366 fields >50 ha).

- Fruits and berries are primarily cultivated on small plots (131,369 ≤2 ha), with very few large-scale producers.
- Technical crops (cotton, tobacco, etc.) show a higher share of medium (5-15 ha) and large (>50 ha) farms, likely due to higher capital requirements.
- Vegetables, potatoes, and grapes remain predominantly smallholder-based, with minimal large-scale production.

These trends suggest that Azerbaijan's agriculture is still dominated by smallholders, particularly in labor-intensive crops, while larger farms specialize in grains and industrial crops, possibly due to economies of scale in mechanization and export potential.

Information about the regional breakdown of the sown areas is presented below.

Table 3. Regional distribution of sown areas

Regions	number of sown areas up to 2 ha	between 2-5 ha	between 5-15 ha	between 15-50 ha	number of sown areas more than 50 ha
Khachmaz	34203	2477	587	53	10
Sheki	30376	3975	1429	114	57
Guba	27761	1230	170	12	2
Jalilabad	27466	5919	846	77	28
Gusar	26237	3055	566	47	8
Shamkir	24538	1911	376	13	7
Zagatala	23510	747	140	19	5
Tovuz	22893	223	183	74	92
Gazakh	21637	943	58	10	6
Sabirabad	21132	5146	659	92	53
Aghstafa	20802	586	49	16	5
Barda	20151	4653	603	92	25
Gabala	18656	1451	178	25	8
Goranboy	18652	3763	324	59	26
Shamakhi	17690	2485	562	58	42
Balaken	17547	366	52	4	3
Saatli	16532	2763	487	88	67
Masalli	15988	1348	59	2	1
Aghjabadi	15968	5832	857	145	126
Beylagan	14890	5235	853	49	24
Samukh	14559	1123	140	73	88
Bilasuvar	14467	4200	816	173	90
Ismayilli	14363	2493	587	19	9
Imishli	14187	4154	662	86	31
Aghdash	13238	3364	364	27	8
Aghsu	12994	4042	805	77	23
Zardab	12544	3010	186	16	11
Salyan	12263	3442	642	64	27
Goychay	12125	1280	175	11	0
Gakh	12105	1927	233	26	20
Gobustan	12017	3665	768	16	8
Terter	11650	2193	240	32	34
Fuzuli	11616	496	225	70	124

Regions	number of sown areas up to 2 ha	between 2-5 ha	between 5-15 ha	between 15-50 ha	number of sown areas more than 50 ha
Neftchala	11425	4933	1721	123	7
Aghdam	11241	1447	207	122	89
Kurdamir	9835	5905	1008	95	43
Oguz	8920	1551	333	20	6
Gadabay	8823	33	2	0	1
Yevlax	8077	4124	756	56	17
Jabrail	7815	4	6	21	61
Shabran	7628	1647	312	38	11
Ujar	6838	2399	148	23	25
Goygol	4700	328	55	23	12
Yardimli	4320	230	25	4	4
Lerik	4280	293	15	0	0
Lankaran	3529	167	58	13	1
Siyazan	2612	560	115	7	3
Hajigabul	2241	1255	764	51	163
Astara	1729	41	23	0	0
Khizi	448	436	53	16	3
Dashkasan	150	23	3	0	1
Naftalan	148	26	4	1	0
Absheron	82	25	16	1	0
Ganja	60	8	3	2	0
Khojavand	11	16	53	76	127
Mingachevir	3	2	8	2	2
Gubadli	1	3	2	13	48
Khojaly	1	1	7	1	36
Zangilan	1	0	3	5	29
Kalbajar	0	0	0	0	1
Lachin	0	0	2	76	1

***Source**: EAIS, Ministry of Agriculture (2024)*

The analysis of farm size distribution across Azerbaijan's regions reveals significant disparities, reflecting variations in agro-ecological conditions, historical land use patterns, and economic opportunities. The EAIS (2024) data highlights distinct trends in small, medium, and large-scale farming across different administrative districts.

Key regional patterns can be revealed the following way. Khachmaz (34,203), Sheki (30,376), and Guba (27,761) lead in the number of very small sown areas, consistent with the country's average of 1.7 ha per declaration. Mountainous regions like Gabala, Balaken, and Lerik also exhibit high concentrations of smallholders, likely due to terrain constraints and traditional subsistence farming.

Jalilabad (5,919), Sabirabad (5,146), and Aghjabadi (5,832) show notable clusters of farms in the 2-5 ha range, often linked to semi-commercial vegetable and grain production. Regions with irrigation infrastructure, such as Imishli, Beylagan, and Kurdamir, have a higher share of 5-15 ha farms, particularly for wheat and cotton.

Aghjabadi (126), Hajigabul (163), and Sabirabad (53) dominate in large-scale operations, driven by flat terrain and access to water resources. Post-conflict zones like Khojavand (127), Jabrail

(61), and Fuzuli (124) show unexpected concentrations of large farms, possibly due to state-led consolidation or investment in reclaimed lands.

It is also feasible to distinguish crop-specific regional trends based on the data. The central plains (e.g., Shamkir, Tovuz, Aghstafa) combine small and large wheat/barley farms, with Tovuz (92) and Samukh (88) standing out for >50 ha grain fields which could be distinguished as a Grain Belt. Beylagan, Saatli and Bilasuvar have a mix of medium (5-15 ha) and large (>50 ha) farms, reflecting state incentives for industrial crops.

The followings are notable outliers. Hajigabul, despite a small total number of farms, it has 163 large (>50 ha) sown areas, likely due to agro-industrial holdings. Gadabay is an extreme case with 33 farms of 2–5 ha and only 1 large farm, highlighting localized land fragmentation. In Absheron and Ganja urbanization reduces agricultural activity, with fewer than 100 sown areas total.

It must be mentioned that Azerbaijan's farm structure, dominated by smallholders averaging 1.7-2.7 hectares, contrasts sharply with patterns in the EU, USA, and Japan. In the European Union, farm sizes vary widely: Western Europe (e.g., France, Germany) averages 60–70 hectares due to consolidation and mechanization, while Eastern EU members (e.g., Romania, Poland) retain smaller farms (10-15 ha) post-socialist reforms. The United States exemplifies large-scale commercial agriculture, with an average farm size of 180 hectares, driven by economies of scale in crops like corn and soybeans. In Japan, aging farmers and mountainous terrain limit plots to 2-3 hectares on average, though corporate farms are rising. Unlike Azerbaijan's fragmentation, the EU and USA show strong polarization; small family farms coexist with agro-industrial giants, while Japan's smallholders rely on intensive techniques. State subsidies and land markets shape these differences, offering lessons for Azerbaijan's farm policy.

Impact of Farm Size on Agricultural Productivity

There are 1707 wheat growers in FDMS database. 1059 of them grow wheat on irrigated land. The data covers 49 regions across the country. The database covers all farm sizes.

The results of regression analysis are presented below.

Table 4. Results of the regression analysis

```
. regress yield ir land fert
```

Source	SS	df	MS
Model	396.522079	3	132.174026
Residual	1388.88315	1,703	.81555088
Total	1785.40523	1,706	1.04654468

Number of obs	=	1,707
F(3, 1703)	=	162.07
Prob > F	=	0.0000
R-squared	=	0.2221
Adj R-squared	=	0.2207
Root MSE	=	.90308

yield	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ir	.9979994	.0459194	21.73	0.000	.907935	1.088064
land	.0001031	.0001063	0.97	0.332	-.0001054	.0003116
fert	.0015881	.0013179	1.20	0.228	-.0009969	.004173
_cons	2.083293	.0367911	56.62	0.000	2.011132	2.155453

***Source**: STATA*

The regression analysis was conducted on STATA.

During regression analysis on cross-sectional data, it should be checked for multicollinearity. Multicollinearity occurs when independent variables in a regression model are highly correlated, which can inflate standard errors and make coefficient estimates unreliable. The most common method - VIF measures how much the variance of a coefficient is inflated due to multicollinearity ***(Table 5)***.

Table 5. The result of the multicollinearity test

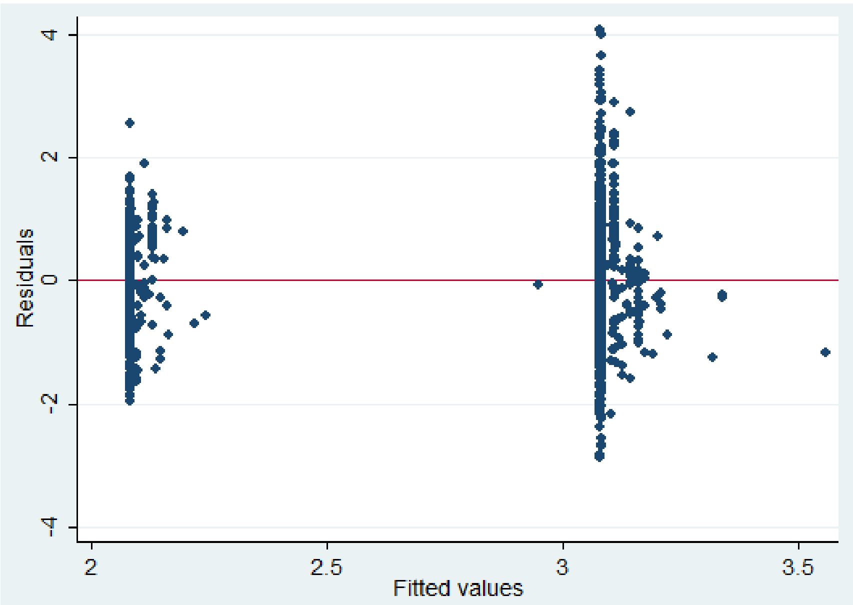
```
. estat vif
```

Variable	VIF	1/VIF
ir	1.01	0.985917
fert	1.01	0.986855
land	1.00	0.998925
Mean VIF	1.01	

Source: *STATA*

As we know, if VIF > 10, it indicates severe multicollinearity. In our case VIF is around 1. This confirms no systemic multicollinearity in the model. Now, let's check for heteroskedasticity.

Pic. The result of heteroskedasticity test



Source: *STATA*

The plot displays the residuals (the differences between observed and predicted values) on the y-axis against the fitted values (predicted values) on the x-axis. The residuals do not appear to be randomly scattered around the horizontal line at 0 (the red line). Instead, there's a clear pattern. "Fan" or "Cone" Shape: For both clusters of fitted values (around 2.1-2.2 and 3.0-3.2), the spread (variance) of the residuals changes as the fitted values change. Specifically, the spread of the residuals appears to increase as the fitted values increase within each cluster, forming a "fan" or "cone" shape. This is particularly noticeable in the cluster around 3.0-3.2, where the vertical spread of the points is much larger than in the cluster around 2.1-2.2. The variance of the residuals is clearly not constant across all levels of the fitted values. The residuals are much more widely dispersed for higher fitted values (around 3.0-3.2) compared to lower fitted values (around 2.1-2.2).

Based on this residual plot, there is strong visual evidence of heteroskedasticity. This means that the assumption of homoscedasticity (constant variance of the residuals) is violated in your regression model.

While Ordinary Least Squares (OLS) regression coefficients remain unbiased and consistent in the presence of heteroskedasticity, they are no longer the most efficient (i.e., they don't have the smallest standard errors). More critically, the standard errors of your regression coefficients will be biased and inconsistent. This leads to invalid t-statistics and p-values. The hypothesis tests for the significance of your coefficients will be unreliable. You might incorrectly conclude that a variable is statistically significant when it's not, or vice-versa. As well as, invalid Confidence Intervals. Confidence intervals for your coefficients will also be inaccurate.

Since our data exhibits heteroskedasticity (non-constant variance in residuals), we need to correct it to ensure valid statistical inference. We used Heteroskedasticity-Robust Standard Errors (Simplest & Most Common Fix) for this purpose.

Table 6. Huber-White (sandwich) estimator

```
. regress yield ir land fert, vce(robust)

Linear regression                               Number of obs     =      1,707
                                                F(3, 1703)        =     203.22
                                                Prob > F          =     0.0000
                                                R-squared         =     0.2221
                                                Root MSE          =     .90308
```

yield	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
ir	.9979994	.0428246	23.30	0.000	.914005	1.081994
land	.0001031	.0000184	5.59	0.000	.0000669	.0001392
fert	.0015881	.0011689	1.36	0.174	-.0007046	.0038808
_cons	2.083293	.0295394	70.53	0.000	2.025356	2.14123

***Source**: STATA*

We accept Robust SEs as the Solution. Since our goal is valid inference (e.g., hypothesis testing), robust SEs are sufficient.

Now we can interpret our results. The regression results, utilizing robust standard errors to account for heteroskedasticity, indicate that the overall model is statistically significant, meaning the independent variables collectively explain a significant portion of the variation in yield. The p-value associated with the F-statistic is less than 0.0001. Since this is much smaller than conventional significance levels (e.g., 0.05 or 0.01), we reject the null hypothesis. This means that at least one of the independent variables (ir, land, fert) is statistically significant in explaining yield. Both **ir** and **land** have a positive and statistically significant effect on yield. **fert** does not have a statistically significant effect on yield when controlling for **ir** and **land** in this model. The independent variables explain about 22.21% of the variance in yield. This indicates that approximately 22.21% of the variation in yield is explained by the independent variables (ir, land, fert) included in the model. This is a measure of the model's overall fit.

Impact of Farm Size on Agricultural Productivity

The regression analysis, using robust standard errors to control for heteroskedasticity, reveals key insights into how farm size and other factors influence wheat productivity in Azerbaijan. The model’s statistical significance (F-statistic *p*-value < 0.0001) confirms that the selected independent variables collectively explain a meaningful portion of yield variation. However, the moderate R^2 of 0.2221 suggests that while farm size and irrigation are significant drivers, unobserved factors (e.g., soil quality, management practices) also play a major role.

The positive and statistically significant coefficient for farm size (land) suggests that larger farms achieve higher wheat yields, contradicting the inverse relationship hypothesis in this context. This aligns with evidence from commercial grain systems, where scale enables better mechanization and input access.

Irrigation (ir) has a strong positive effect, underscoring its critical importance in a country where only 60% of arable land is irrigated (World Bank, 2023). Regions with reliable water access (e.g., Mugan-Salyan) consistently outperform rainfed areas.

Fertilizer use (fert) showed no statistically significant impact on yields, possibly due to suboptimal application rates or poor nutrient balance, data limitations (e.g., self-reported usage in FDMS), soil degradation offsetting fertilizer benefits in some regions and so on.

Challenges and Opportunities

The findings from this study carry important policy implications for Azerbaijan's agricultural development. Regarding land consolidation, the government could consider incentivizing voluntary farm mergers through measures like tax incentives or subsidized machinery sharing programs, particularly for grain-producing operations, to help overcome the limitations of small plot sizes. For infrastructure development, prioritizing irrigation expansion in arid zones such as Shirvan and Ganja-Gazakh would likely generate greater productivity gains than current fertilizer subsidy programs.

The analysis also suggests potential benefits from promoting precision agriculture techniques, especially among smallholders. Implementing soil testing programs and targeted input use could help optimize resource allocation and improve efficiency where fertilizer applications currently show limited impact. However, these policy directions should be considered in light of the study's limitations. The cross-sectional nature of the data prevents definitive causal conclusions, while potential omitted variables like farmer education levels and crop rotation practices may influence the results. Future research could be strengthened through longitudinal farm-level data collection and regional sub-analyses comparing regional differentiation.

These findings challenge conventional assumptions about small farm productivity in Azerbaijan's wheat sector, underscoring the importance of developing tailored policies that account for farm scale, irrigation access, and input management specific to local conditions. The results suggest that a one-size-fits-all approach to agricultural development may be less effective than strategies adapted to regional and production system differences.

Conclusion and Policy Recommendations

This study provides important empirical evidence about farm structure and productivity relationships in Azerbaijan's agricultural sector. The analysis reveals several key findings that challenge conventional assumptions while offering actionable policy insights.

The research indicates that larger farms exhibit higher wheat productivity compared to smallholders in Azerbaijan. However, given the relatively small magnitude of the coefficient for the farm size variable, this relationship appears to be marginal. Consequently, the deviation from the commonly observed inverse productivity relationship in developing countries may be considered as negligible. This appears driven by better access to irrigation and mechanization among larger operations. However, the dominance of small farms (83% under 2 ha) continues to shape the sector's structure and potential growth trajectory.

Three priority policy recommendations emerge from these findings:

1. ***Land Consolidation Support*** - The government might consider to develop voluntary land consolidation programs with incentives like subsidized cooperatives and streamlined leasing markets. Particular focus should be given to grain-producing regions where scale benefits are most evident.
2. ***Strategic Irrigation Investment*** - Given irrigation's strong positive impact, public investments should prioritize modernizing water infrastructure in high-potential but water-constrained areas like Shirvan and Ganja-Gazakh.
3. ***Precision Agriculture Promotion*** - Extension services should help farmers adopt targeted input use through soil testing and customized fertilization plans, especially for smallholders who may lack technical knowledge.

These interventions should be implemented gradually, with pilot programs to test effectiveness. Future research should track farms over time to better understand causality and examine how regional differences in climate and soil conditions mediate the farm size-productivity relationship.

Ultimately, Azerbaijan's agricultural policy needs to move beyond uniform approaches and develop differentiated strategies that account for varying farm sizes, regional conditions, and crop-specific requirements. This evidence-based, context-sensitive framework offers the most promising path to enhancing both productivity and rural livelihoods.

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Azərbaycanda fermer təsərrüfatlarının ölçüsü və məhsuldarlıq: çətinliklər və siyasət tədbirləri

Xülasə

Tədqiqat işi Elektron Kənd Təsərrüfatı İnformasiya Sistemi (EKTİS) və Fermer Təsərrüfatları Məlumatlarının Monitorinqi Sisteminin (FTMMS) məlumatlarından istifadə etməklə Azərbaycanda təsərrüfat ölçüsü ilə kənd təsərrüfatı məhsuldarlığı arasındakı əlaqəni araşdırır. Təhlil göstərir ki, orta və iri təsərrüfatlar kiçik təsərrüfatlarla müqayisədə, ilk növbədə suvarma və mexanizasiyaya daha yaxşı çıxış imkanları hesabına daha yüksək buğda məhsuldarlığına nail olurlar. Reqressiya nəticələri göstərir ki, təsərrüfat ölçüsü və suvarma məhsuldarlığa statistik cəhətdən əhəmiyyətli müsbət təsir göstərir, gübrə istifadəsi isə əhəmiyyətli təsir göstərmir. Siyasət nəticələri könüllü torpaq konsolidasiyası, strateji suvarma investisiyaları və dəqiq kənd təsərrüfatının mənimsənilməsi vasitəsilə mövcud torpaq istifadəsinin optimallaşdırılmasının orta əhəmiyyətini vurğulayır. Tədqiqat keçid iqtisadiyyatlarında optimal təsərrüfat strukturları ilə bağlı müzakirələrə töhfə verir və Azərbaycanda kənd təsərrüfatının inkişafı üçün sübuta əsaslanan tövsiyələr təqdim edir.

Açar sözlər: *təsərrüfat ölçüsü, kənd təsərrüfatı məhsuldarlığı, Azərbaycan, buğda məhsuldarlığı, torpaqların konsolidasiyası, suvarma, dəqiq kənd təsərrüfatı, kənd inkişafı.*

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Размеры ферм и производительность сельского хозяйства в Азербайджане: проблемы и политические последствия

Резюме

В исследовании изучается взаимосвязь между размером фермы и производительностью сельского хозяйства в Азербайджане с использованием данных из Электронной сельскохозяйственной информационной системы (ЭСИС - EAIS) и Системы мониторинга данных фермы (СМДФ - FDMS). Анализ показывает, что средние и крупные фермы достигают более высоких урожаев пшеницы по сравнению с мелкими фермерами, в первую очередь за счет лучшего доступа к орошению и механизации. Результаты регрессии показывают, что размер фермы и орошение оказывают статистически значимое положительное влияние на производительность, в то время как использование удобрений не оказывает существенного влияния. Политические последствия подчеркивают умеренную важность оптимизации существующего землепользования за счет добровольной консолидации земель, стратегических инвестиций в орошение и принятия точного земледелия. Исследование вносит вклад в дискуссию об оптимальных структурах фермерских хозяйств в странах с переходной экономикой и предоставляет основанные на фактических данных рекомендации по развитию сельского хозяйства в Азербайджане.

Ключевые слова: *размер фермы, производительность сельского хозяйства, Азербайджан, урожайность пшеницы, консолидация земель, орошение, точное земледелие, развитие сельских районов.*