

Agricultural production in Tajikistan:

Evidence from twelve districts in Khatlon Province, 2015–2023

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Survey data from 2000 households in 12 districts of Khatlon Province, USAID's Zone of Influence (ZOI), were analyzed to document changes in the agriculture sector between 2015 and 2023.

Key findings

- Participation in agriculture remained constant at 85 percent of households, yet the average cultivated area significantly decreased from 2015 to 2023, likely due to the parallel increase in the number of households in the study area as well as the further division of dehkan farms.
- Cropping patterns have changed since 2015. Among others, we find a stark increase in cultivation of maize, whereas cotton is grown at similar frequency but on a significantly smaller average plot area. Overall, we observe a positive increase in the diversity of (semi-)annual crops.
- Mechanization is used for land preparation of plots for nearly all major crops now, up from much lower levels in 2015. Mechanization for harvesting significantly increased on plots with fodder crops (from 6 percent to 15 percent) and maize plots (from 2 percent to 8 percent). Most households rely on rental services as few own the needed machinery.
- More households have water pumps, greenhouses, and cold storage, and more household and presidential plots having irrigation in 2023 than in 2015. Agricultural innovations including drip irrigation and solar panels also emerge but are still implemented at very low levels (<1 percent).
- Cattle ownership declined from 2015 to 2023 and, accordingly, fewer households have cows producing milk (40 percent vs. 33 percent). This may—at least partly—explain the lower rates of dairy consumption observed among female respondents in 2023.
- Poultry ownership increased dramatically (from 7 percent to 25 percent) and is now owned at similar rates across different types of households, including more vulnerable or disadvantaged households. Accordingly, there is more household-level consumption of eggs in the survey area.

Recommended actions

The report underscores the importance of the priorities specified in the Government of Tajikistan's Agri-Food System and Sustainable Development Program (ASDP):

- Strategic priority 4- food security and food safety: Support crop diversity in household plots and facilitate and support household livestock production, particularly among vulnerable households, given its critical role in supporting nutritious diets among vulnerable households.
- Strategic priority 6 – well-functioning of production and marketing chains: Large uptake of mechanized land preparation facilitated through rental services show how the private sector has organized effectively in Khatlon province. Uptake of other innovations across the agricultural value chain is still low and creating an enabling environment is needed to accelerate adoption.

Introduction

Tajikistan's agrifood sector is an important contributor to its GDP and is intertwined with many households' livelihoods as the country's largest employment sector. Agricultural production is of particular interest in the predominately rural Khatlon Province. While making up only 17 percent of the country, 40 percent of agricultural land and 48 percent of arable land of Tajikistan lie in Khatlon Province. The efforts of many local and international NGOs have thus focused on Khatlon Province, aiming to improve the welfare and food security of the population by supporting the development of the agricultural sector.

Against this background, a rural household survey was conducted among 2,000 households in 12 districts of Khatlon Province—USAID's Zone of Influence—were interviewed in February-March 2023 about their agricultural production in the year prior to the survey. Most of these had been previously interviewed in February-March 2015 using a similar questionnaire, offering a good opportunity to detect changes in agricultural production over this period.

What follows is a summary of the findings from a recent working paper¹.

Plots and crops

Most households (85 percent) in our survey area are cultivating crops. However, many cultivate solely on a very small household plot adjacent to their house. A quarter of households have presidential plots, and one out of ten household have a dehkan farm.

Participation in agriculture remained constant at 85 percent of households, yet the average cultivated area decreased by 28 percent (from 0.44 hectares in 2015 to 0.32 hectares in 2023). A large part of this decline is likely related to further restructuring of dehkan farms during that period with the average size of dehkan farms decreasing by 40 percent. Yet, the average size of household and presidential plots also reduced, thus suggesting that other factors, such as farm fragmentation and construction on land formerly used for farming, are also at play.

The most commonly grown crops are potato, tomato, fodder crops, maize, and wheat. Cotton is cultivated on the largest area (1.47 ha), followed by wheat (0.29 ha) and fodder crops (0.15 ha). There was an evident shift in the cropping patterns in the past 8 years. While fewer households grew potatoes, tomatoes, wheat, and onions, more households cultivated maize, cucumbers, beans, and peppers in 2023 than eight years prior (Figure 1). This change in cropping patterns led to a modest increase in the diversity of (semi-) annual crops cultivated in the study region.

The largest variety of crop cultivation is seen in household plots, with an increase in crop diversity achieved from 2015 to 2023. As the harvests from household plots are often used for the household's own consumption, this is hoped to lead to an increase in the household's dietary diversity—a needed Cotton continues to be prominent in Khatlon's landscape. It was grown on about a third of all dehkan farms in both 2015 and 2023. Nevertheless, in line with the reduction in plot sizes of dehkan

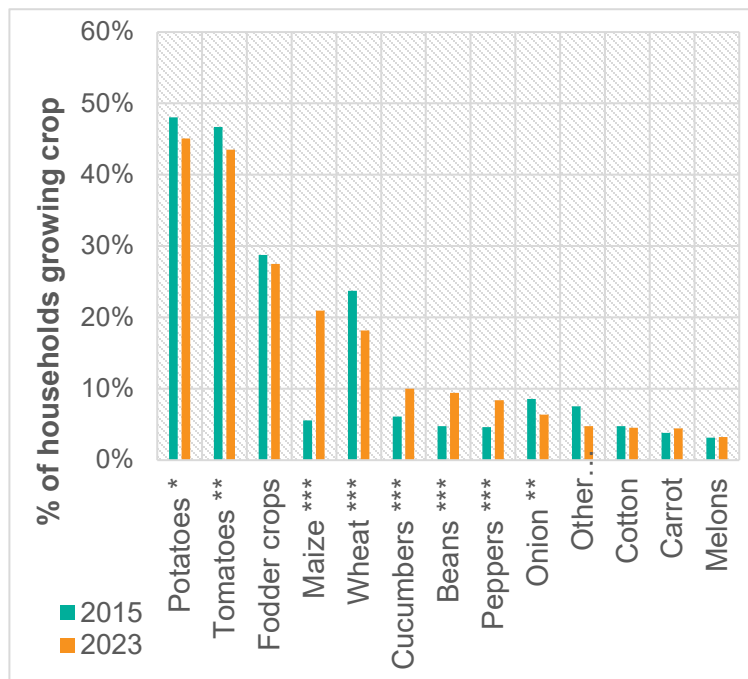


Figure 1. Most commonly grown crops in the survey area
(Significant difference at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$)

¹ Lambrecht, I., Aliev, J., Akramov, K., and Khakimov, P. (2023). Agricultural production in Tajikistan: Evidence from twelve districts in Khatlon Province, 2015-2023. Central Asia Working Paper 3, The International Food Policy Research Institute, Washington DC.
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farms, the average parcel area on which cotton is grown decreased from about 2.31 ha in 2015 to 1.47 ha in 2023. This steep drop hints at a decline in the total area of cotton being cultivated in the study region, consistent with reports from other sources.

Farm mechanization and innovation

In 2015, less than half of the plots growing potato, tomato, maize and bean crops were prepared using machinery. In 2023, 90 per cent of these plots were mechanically prepared, with mechanization high for almost all crops. The use of mechanization for harvesting also significantly increased on plots with fodder crops (from 6 percent in 2015 to 15 percent in 2023) and on maize plots (from 2 percent to 8 percent, respectively). Only 6 percent of households used their own machinery, the remainder relied on mechanization rental services.

Figure 2 illustrates changes in ownership of farm mechanization and other agricultural innovations. Ownership of water pumps increased from 7 percent to 13 percent, alongside small but significant increases in irrigation on household and presidential plots. Furthermore, more households invested in greenhouses and a threefold increase in storage facilities (mainly cold storage) is observed between 2015 and 2023. Several agricultural innovations such as drip irrigation, motorized plows, and solar panels for use in agriculture appear to have emerged, though still starting off from relatively low levels.

No significant change is seen in the share of households that utilize mineral fertilizer. However, the increase in agricultural production may point toward an increase in the quality of fertilizer.

Livestock

Similar to cropping patterns, significant changes have occurred in livestock ownership from 2015 to 2023—changes, that have had implications on the household’s food intake. For one, fewer households own cattle (from 62 percent in 2015 to 55 percent of households in 2023) and the households that have cattle own fewer animals. This is likely to have nutritional implications as three out of four households that produced milk solely used this milk for their own consumption. The significant decrease in dairy cows (from 40 percent in 2014 to 33 percent in 2022) may explain why fewer women consumed milk in 2023 than eight years prior.²

In contrast, significantly more households own sheep and goats, and herds are larger in 2023 than in 2015. Additionally, the share of households that own poultry has more than tripled, from 7 percent in 2014 to 25

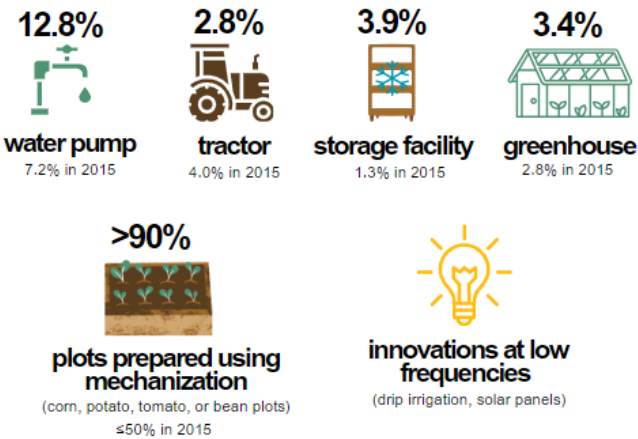


Figure 2. Farm mechanization and agricultural innovations in the survey area

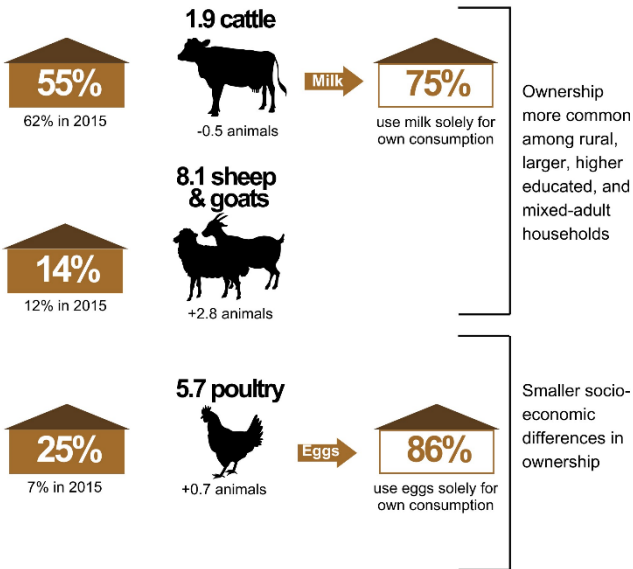


Figure 3. Livestock ownership in the survey area

² Lambrecht, I., Mardonova, M., and Akramov, K. (2023). Welfare and vulnerability in Tajikistan: Evidence from twelve districts in Khatlon Province, 2015-2023. Central Asia Working Paper 2, The International Food Policy Research Institute, Washington DC. <https://doi.org/10.2499/p15738coll2.136910>

percent in 2022. Of the households that have chickens, 86 percent use the eggs only for their own consumption. This increase in poultry is paralleled with an increase in the proportion of individuals consuming eggs in the household.

The increase in poultry ownership seems to have occurred more equally across different types of households, including those without male adults in the home, those with lower levels of educational attainment, and households with fewer household members. With less-privileged households increasing poultry ownership, the potential to improve food security and dietary quality in the region is promising.

Looking ahead

The findings of the report support the priorities set out in the 2030 objectives of the Agri-Food System and Sustainable Agriculture Development Program (ADSP). More specifically, the ADSP prioritizes creating conditions for access of vulnerable groups and regions to sufficient, safe and nutritious food under strategic priority 4; and prioritizes achieving effectively functioning value chains under strategic priority 6.

Overall, the agricultural sector seems to be moving towards a more favorable setup, with larger crop diversity, usage of farm mechanization for land preparation and harvesting of selected crops, and emerging innovations that may further improve agricultural production and storage. This is the necessary direction to achieve priority 4 and 6, but would need to accelerate to meet ADSPs objectives for 2030.

Food insecurity is high in Khatlon Province, especially during winter, and dietary quality is insufficient. Further efforts towards a more diverse and productive agricultural sector, including both crop and livestock production, are therefore encouraged. Livestock, particularly dairy cattle and poultry, can play a critical role in supporting nutritious diets among vulnerable.

Mechanization rental services for land preparation show how the private sector has organized effectively in Khatlon province to serve farmers who do not own tractors. Further avenues should be considered to also encourage uptake of other on-farm and off-farm innovations across the agricultural value chains.

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