Socio-Economic Water Survey (SEWS): Tel Tamer, Al-Hasakeh

September 2024 (Dry Season) & April 2025 (Wet Season) | Syria

Context & Rationale

Following thirteen years of conflict, water scarcity is prevalent in northeastern Syria (NES) due to climate change, heavy water abstraction from its aquifers, limited water management and damaged infrastructures. With an economy heavily reliant on agriculture, this has also had negative effects on livelihoods in NES. In order to effectively address water needs, it is essential for water management actors to have an evidence-based understanding of accessibility and demand, water prices, usage patterns, and the ability and willingness of water users to pay for services.

This Socio-Economic Water Survey is a pilot intended to address a lack of sufficiently detailed data on water needs and usage for both domestic and agricultural purposes to adequately inform decision-making by water management actors in NES.

Methodology Overview

The SEWS assessment employed two separate structured surveys: one with households and one with farmers, conducted across two seasons - dry and wet - to compare differences in water use practices over time. Data collection took place in **September 2024** for the **dry season** and **April 2025** for the **wet season.**

Household data was collected through random sampling of 106 households (93 in communities and 13 in IDP sites) to ensure **representativity at the sub-district level** (95% confidence level and 10% margin of error).

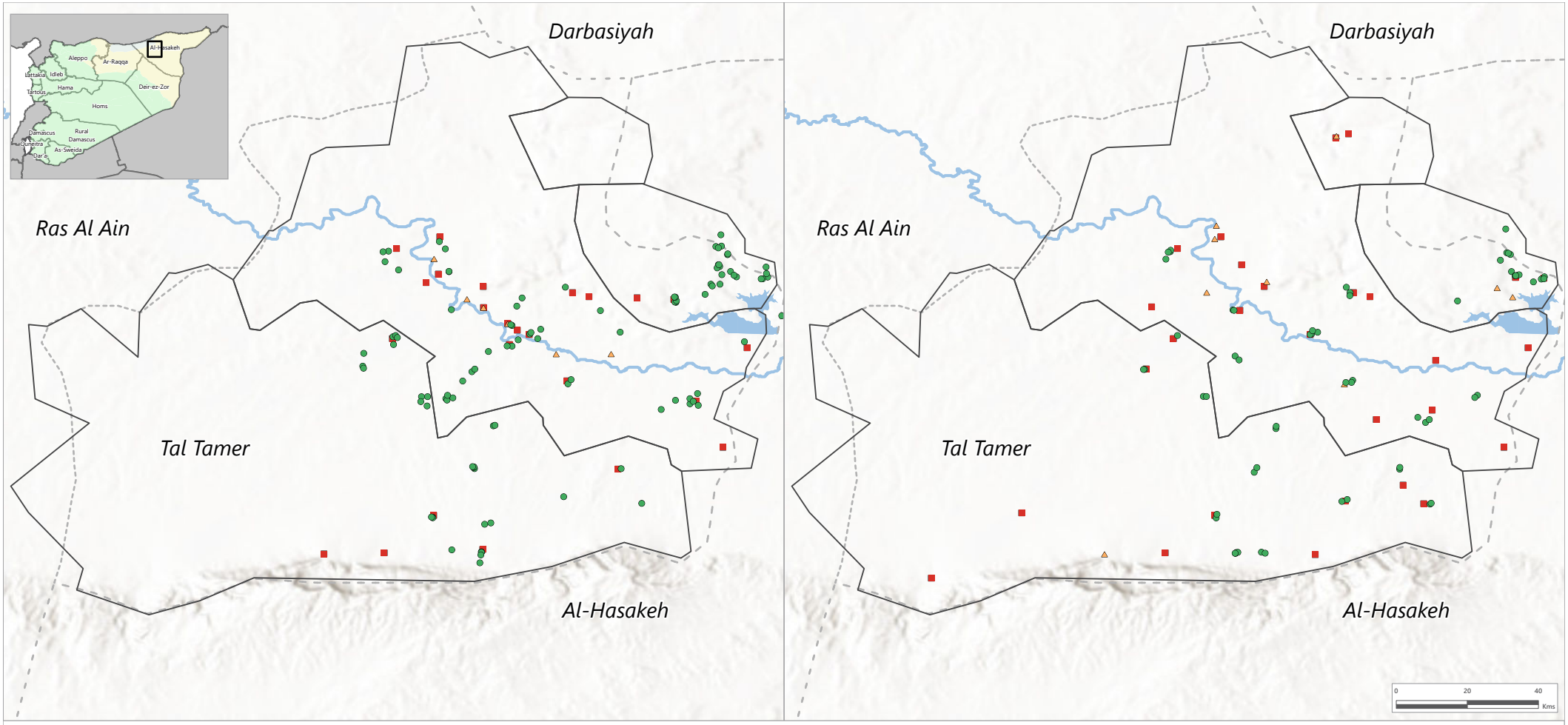
Farmer data was gathered through purposive sampling - meaning that **farmers' findings are indicative and not representative.** During the dry season, 101 farmers surveyed, in comparison to 61 during the wet season. To capture geographic variation in water access, farmer surveys were spread across three zones: **Zone 1** (along the Khabur River), **Zone 2** (near other surface water bodies and a dam), and **Zone 3** (farther from water sources). Only farmers who had irrigated at least once in the past six months were included. *Please see page 15 for more details.*

Key Messages

- Despite high dependence on boreholes, **most assessed farmers reported facing barriers to water access**, particularly due to **fuel** and **electricity costs**, **damaged infrastructure**, and **declining groundwater levels**.
- Most farmers reported **long-term declines in groundwater availability**, with 82% observing reduced quantity and 28% noting **worsening quality in the past 20 years**. Among them, **nearly one-third had abandoned certain crop types** as a result.
- Preferred solutions to water access issues among assessed farmers included **affordable fuel and electricity for pumps**, **renewable energy adoption**, and **improved water infrastructure.** However, nearly all reported financial barriers to implementation. While these solutions could **enhance irrigation and livestock water access,** they may also **increase groundwater extraction,** highlighting the **need to pair energy access with sustainable water management.**
- **A vast majority of households reported insufficient access to drinking water** - 98% in the wet season and 93% in the dry - underscoring chronic challenges even during periods of lower demand.
- Based on the Household Water Insecurity Experiences Scale (HWISE), **over half of households experienced water insecurity in the wet season (55%), up from 42% in the dry season.** Many reported disrupted routines and emotional stress, highlighting persistent strain on household water systems year-round. This suggests that household water insecurity in Tel Tamer is shaped more by **systemic and infrastructural challenges** than by **seasonal water availability.**

Dry season data collection coverage (September 2024)

Wet season data collection coverage (April 2025)



Data collection coverage

- Communities
- Informal settlements
- Farmers

Administrative boundaries

- Sub-district
- Assessment area

Infrastructures

- Waterway/Lake

Area of influence (liveuamap: 6 May 2025)

- Government of Syria
- FSA groups and Turkish troops
- SDF

REACH Informing more effective humanitarian action

Farm Characteristics

The size of farms reported by assessed farmers varied widely, ranging from 4 to 450 donums across the wet and dry seasons. Median farm sizes among assessed farmers were similar across seasons: 58 donums in the dry season and 50 in the wet. However, farmers assessed in the dry season cultivated a larger share of land, with a median of 35 donums cultivated (60% of total farm size), compared to 20 donums (40%) during the wet season.

Dry Season
Median farm size:
58 donums
Median number of donums cultivated in last 6 months:
35

Wet Season
Median farm size:
50 donums
Median number of donums cultivated in last 6 months:
20

Despite a seasonal difference in land use, cropping patterns remained broadly consistent: when asked what crops they had cultivated in the 6 months prior to data collection, wheat was the most commonly grown crop in both seasons, followed by barley, tomato and eggplant. Some variation was observed in prevalence of specific crops - cotton, for example was more common in the dry season, compared to cucumber in the wet season.

	Dry Season		Wet Season
1	Wheat (88%)	1	Wheat (92%)
2	Tomato (49%)	2	Barley (43%)
3	Barley (43%)	3	Tomato (33%)
4	Eggplant (39%)	4	Eggplant (26%)
5	Cotton (32%)	5	Cucumber (23%)

Livestock Ownership

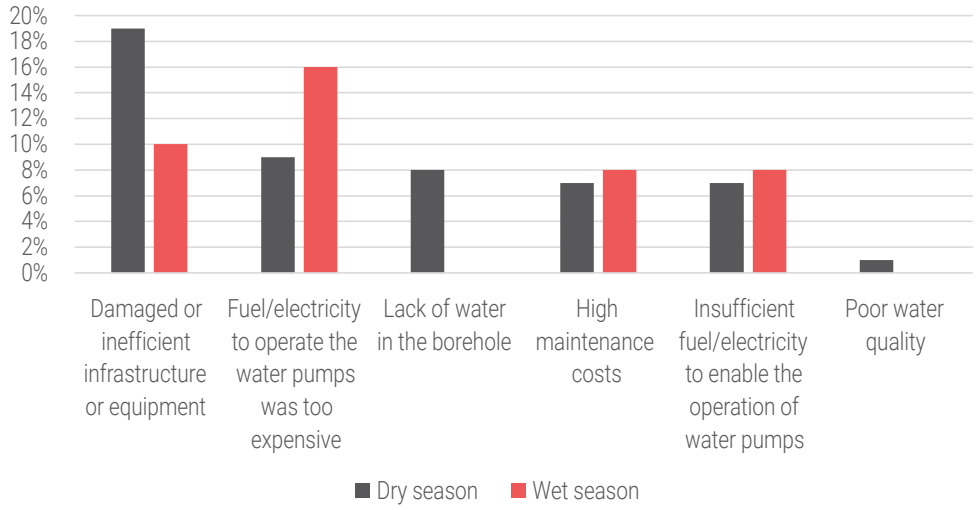
Most surveyed farmers during both the dry and wet seasons reported rearing livestock. A higher percentage of farmers assessed during the wet season reported rearing livestock in the 6 months prior to data collection (100%), compared to those during the dry season (63%). However, this difference may be due to the fact that different farmers were surveyed in each season (see Methodology Overview, page 15), than a true seasonal shift in livestock activity. **The most commonly owned livestock were sheep or goats** (reared by 55% of assessed farmers in the dry season and 95% of assessed farmers in the wet season), **followed by poultry** (44% dry season and 87% wet season), and lastly **cattle** (17% dry season and 30% wet season).

Farm Boreholes

Across both dry and wet seasons, assessed farmers reported using a median of one borehole per farm. The majority of assessed borehole pumps were powered by solar energy - 75% in the dry season and 74% in the wet season - while others relied on fuel (13% dry, 22% wet) or electricity from the public grid (10% dry, 4% wet).

While all assessed farms across seasons had at least one functioning borehole, a notable proportion also reported having **unused boreholes**: 29% in the dry season and 23% in the wet season.[1] The reasons for non-use varied somewhat by season. In the **wet season**, farmers most commonly cited the **high cost of fuel or electricity** needed to operate pumps - potentially linked to reduced solar power generation during cloudier months, which may increase reliance on fuel-powered systems. In the dry season, non-use was more often attributed to **damaged or inefficient infrastructure or equipment**, which aligns with findings that 28% of boreholes experienced at least one pump failure in the past six months due to reduced water levels, compared to just 9% during the wet season.

Reasons boreholes not used in the 6 months prior to survey (select multiple)



Perceived Long-term Groundwater Access

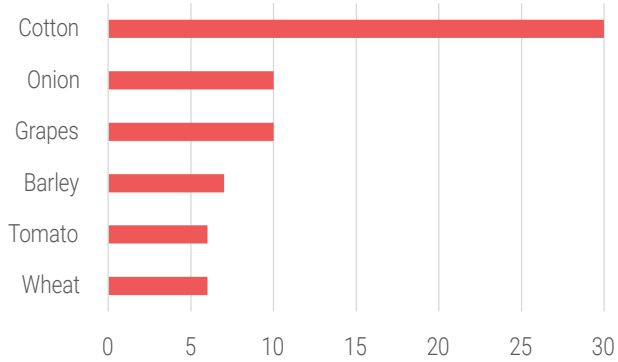
Across both dry and wet seasons, **82%** of assessed farmers indicated they noticed a **decrease in the quantity of groundwater** from boreholes or wells available to their farm in the past 20 years.

28% of assessed farmers noticed a **deterioration in the quality of groundwater** from boreholes and wells available on their farm in the past 20 years.

While the sampling approach for the farmers survey was not designed to produce statistically representative data, and findings should be considered indicative, some variation was observed across the three targeted geographic zones. **Zone 3,** the area farthest from water sources, had the **highest proportion of farmers who had noticed a deterioriation in quantity and / or quality of groundwater** (89%), followed by **Zone 1** (85%, closest to the Khabur River), and **Zone 2** (78%, near to other surface water bodies).

Among surveyed farmers who noticed a deterioration in quantity and/or quality of groundwater, **30%** had **abandoned certain crop types** over the past 20 years.

Most commonly abandoned crops in the past 20 years, by number of farmers (dry & wet seasons) (select multiple)

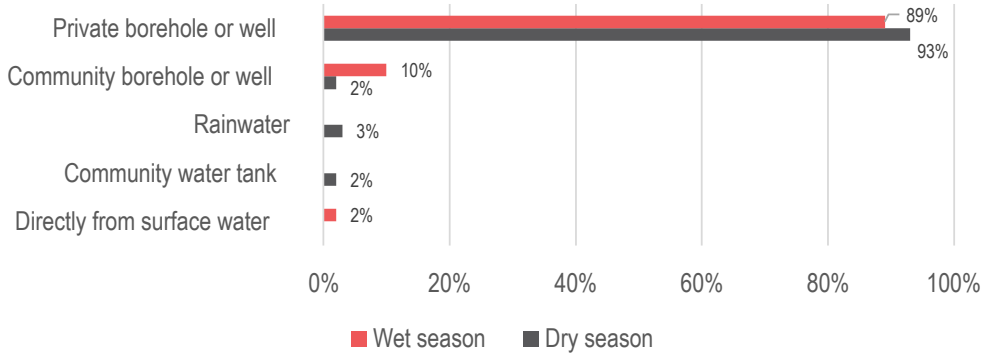


Among farmers noticing a decrease in the quantity and quality of groundwater (dry and wet seasons), the most commonly abandoned crop in the past 20 years were cotton (abandoned by 30 farmers), followed by onion (10), grapes (10), barley (7), tomato (6), and wheat (6). These trends suggest that farmers are making adaptive decisions in response to groundwater decline, discontinuing water-intensive crops such as cotton.

Water Supply Modalities

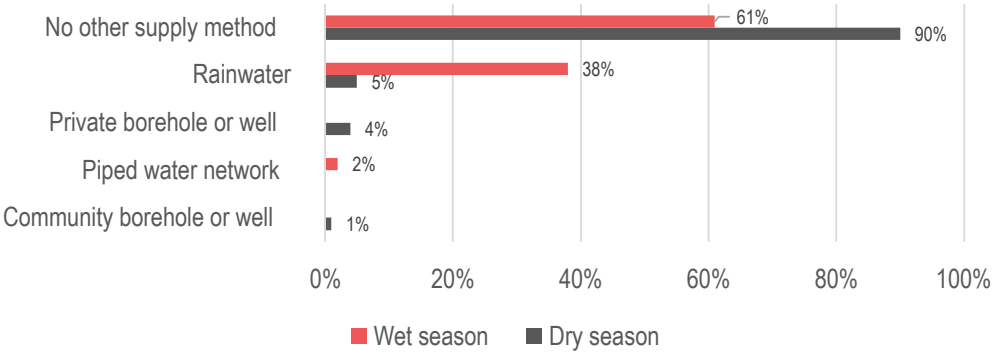
Assessed farmers in Tel Tamer **relied heavily on groundwater via private boreholes or wells** during both dry (93% of assessed farmers) and wet seasons (89%).[2] Much smaller proportions of farmers relied on community boreholes or wells, rainwater, community water tanks, or directly from surface water.

Farmers' primary water supply modality, by season



In both seasons, most farmers relied solely on a **single water source,** with 90% in the dry season and 61% in the wet season reporting no complementary supply. Among those who did report additional sources, rainwater was the most common in the wet season (38%), while in the dry season, very few farmers accessed alternative supplies such as rainwater (5%), private wells (4%), or community wells (1%). This limited diversification in water sourcing - particularly during the dry season - reflects a **high level of vulnerability to potential future declines in groundwater yields,** which could further contribute to crop abandonment and reduced agricultural productivity, impacting livelihoods in the area.

Farmers' complementary water supply modalities, by season (select multiple)

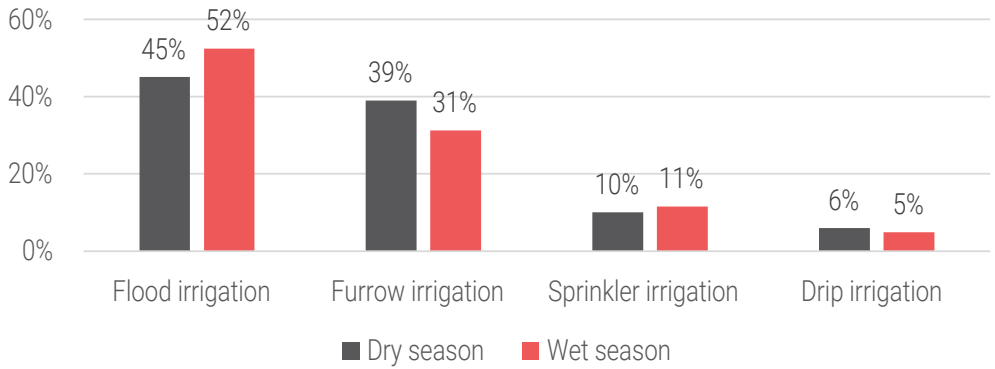


Irrigation Methods

Overall, **flood irrigation** was the leading main method for irrigation (in the 6 months prior to data collection) across seasons, followed by **furrow irrigation.** Despite widespread recognition of groundwater decline in northeastern Syria, these two irrigation methods are inefficient and poorly suited to water-scarce contexts.

However, **Zone 3** - the area farthest from the Khabur River and other surface water sources - **had the highest proportion of farmers using more sustainable irrigation methods.**[3] In this zone, 14% of farmers in the dry season and 22% in the wet season reported using sprinkler irrigation, while 16% of farmers in the dry season reported using drip irrigation. While this suggests localized adaptation to water stress, farmers in other zones could benefit from adopting more sustainable practices, which, in turn could help reduce strain on aquifers.

Main irrigation methods used in the past 6 months, by season



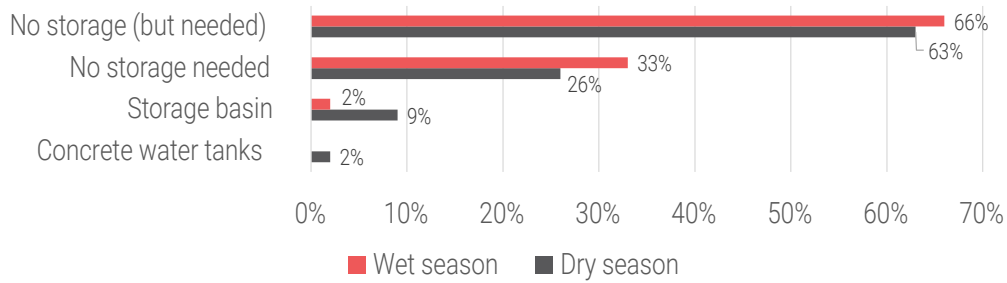
A considerable share of farmers reported **no complementary irrigation method** (48% in the dry season, 69% in the wet season). Among those who did, **drip irrigation** was most common (28% of assessed farmers in the dry season and 18% in the wet), followed by furrow (15% dry, 5% wet), flood (12% dry, 5% wet), and sprinkler irrigation (9% dry and 3% wet), with all methods more frequently used in the dry season. The widespread lack of complementary irrigation methods suggests limited flexibility to adjust irrigation strategies in response to changing water availability, potentially increasing farmers' exposure to water stress and crop loss.

Water Consumption & Storage Methods

Storage Methods

On-farm water storage infrastructure was found to be extremely limited among surveyed farmers, with no significant variation between zones. Most reported not storing water for agricultural use, with a majority indicating it was needed but unavailable. Others reported no storage and no perceived) need for it. Only a small number of farmers reported using storage basins or concrete tanks, and no farmers reported having any form of complementary water storage in either the dry or wet season rounds.

Main storage methods used in the past 6 months, by season

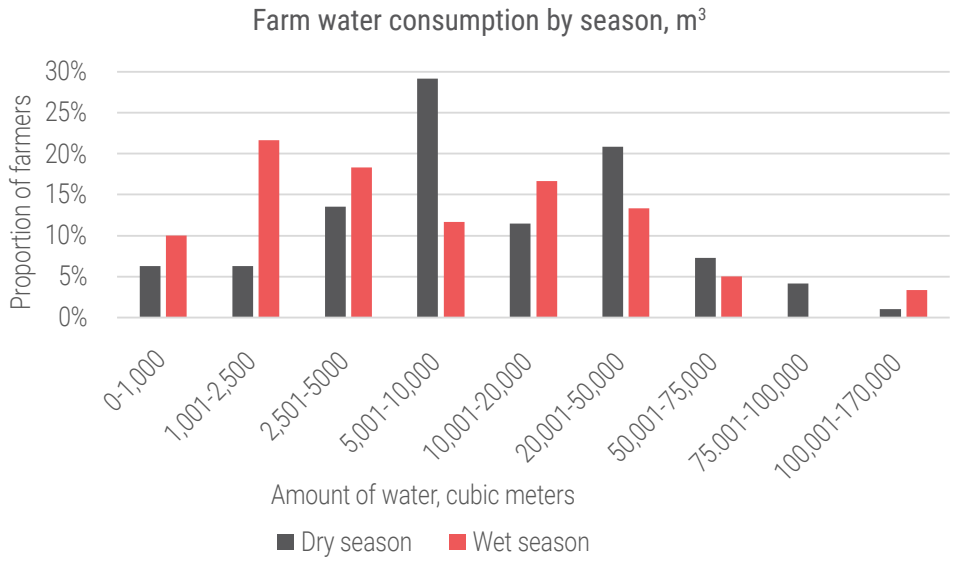


Farm Water Consumption

Water consumption among surveyed farmers in Tel Tamer showed a high degree of variability overall and by geographic zone, ranging from less than 1,000 m^3 to over 100,000 m^3 per season.[4] While the majority of farmers reported relatively modest water use - with over half falling below the 10,000 m^3 threshold in both dry and wet seasons - a notable share reported higher consumption during the dry season, with 32% using more than 20,000 m^3. In comparison, 22% of farms reported consumption above 20,000 m^3 during the wet season.

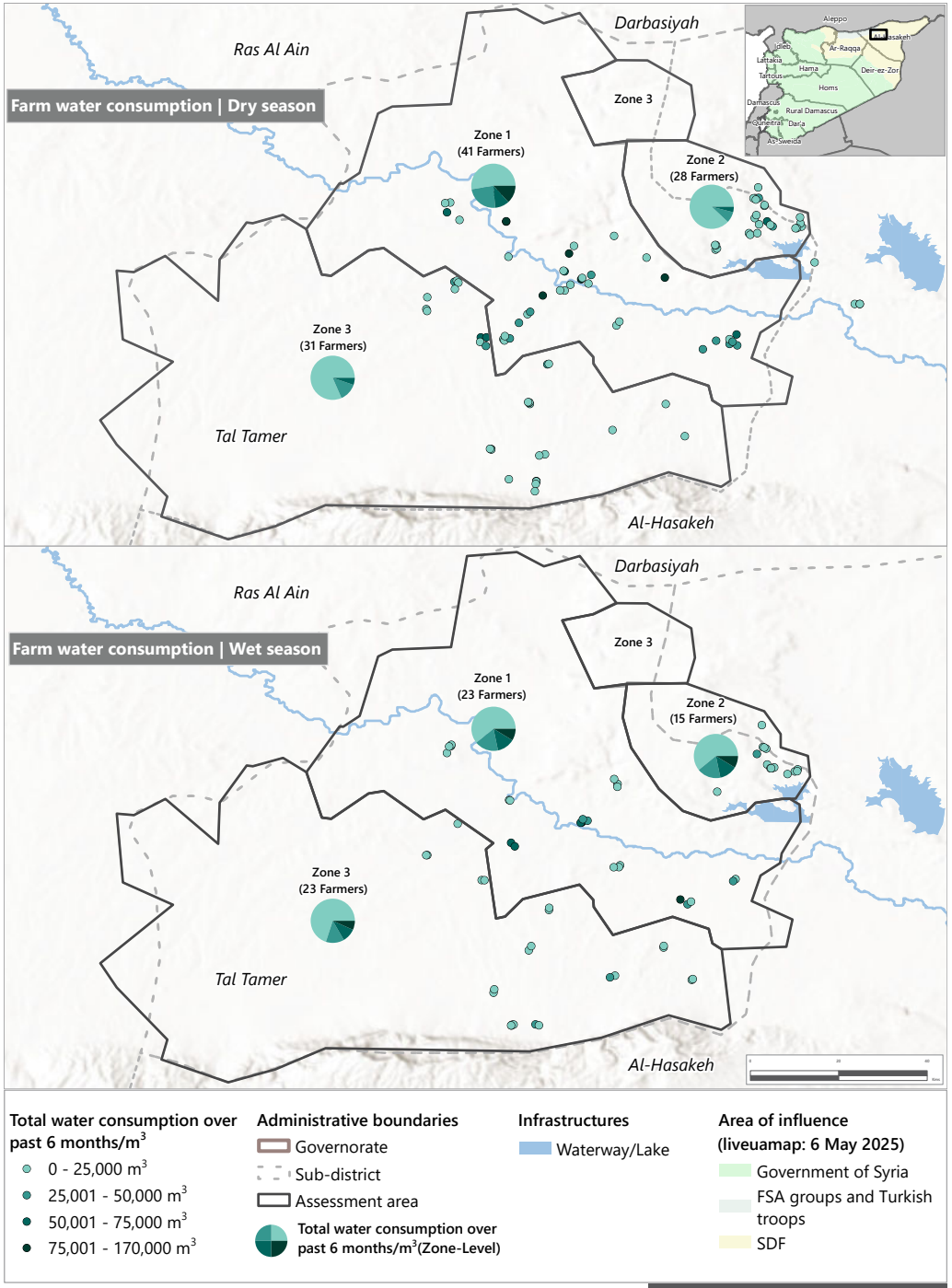
	Median farm water consumption in past 6 months	
	Dry Season	Wet Season
Zone 1: Areas nearest to Khabur River	24,688 m^3	13,192 m^3
Zone 2: Areas near dam and other water bodies	8,856 m^3	2,876 m^3
Zone 3: Areas farther from water sources	6,458 m^3	2,690 m^3
Overall	**9,403 m^3**	**4,597 m^3**

These elevated levels may reflect differences in land size, crop types, irrigation practices, or access to groundwater sources. Seasonal trends indicate higher overall consumption in the dry season, suggesting increased irrigation demand during periods of lower rainfall.



Consumption also varied considerably by geographic zone. Zone 1 - located closest to the Khabur River - reported the highest median usage, with farmers consuming 24,688 m³ in the dry season and 13,192 m³ in the wet season. In contrast, Zones 2 and 3, which are farther from major surface water sources, reported markedly lower median values. This pattern may suggest a link between surface water proximity and higher irrigation volumes, reflecting both greater water availability and potentially more water-intensive cultivation near the river. It may also indicate greater physical and financial challenges to irrigate land farther from water sources, including the need for longer pumping distances or higher energy costs.

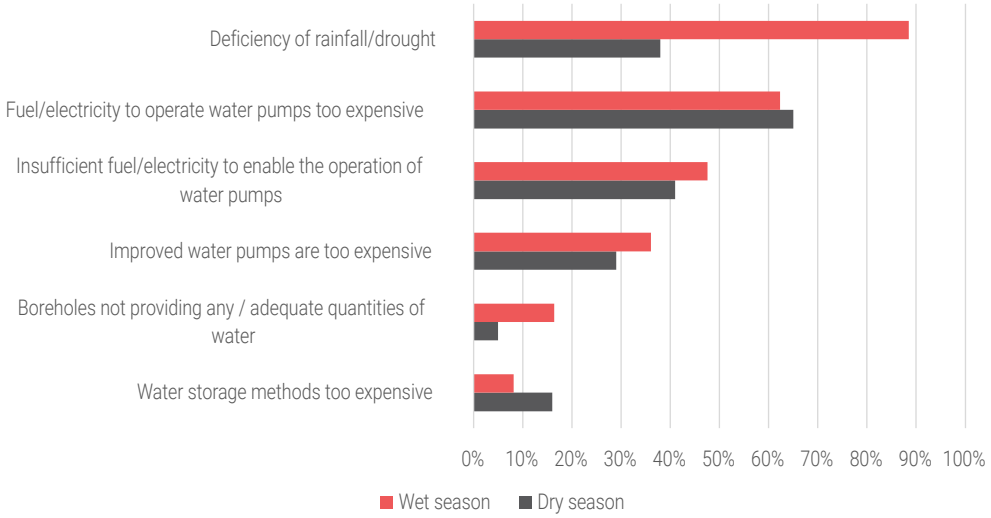
Overall, median values of 9,403 m³ in the dry season and 4,597 m³ in the wet season reinforce the seasonal shift in water demand. However, it is important to note that different farmers were interviewed in each season, which likely affects comparability between seasons and should be considered when interpreting these results.



Water Sufficiency

Nearly all surveyed farmers reported facing barriers to water access for agriculture, with 93% in the dry season and 100% in the wet season indicating at least one constraint over the past six months. The most commonly cited issue during the wet season was insufficient rainfall and drought (89%), while in the dry season, the leading barrier was the high cost of fuel and electricity needed to operate water pumps (65%). Other frequently reported challenges across both seasons included limited availability of fuel or electricity, the unaffordability of improved water pumps, and - increasingly in the wet season - boreholes yielding inadequate water quantities.

Barriers preventing or limiting water access for agricultural purposes over last 6 months (select multiple)

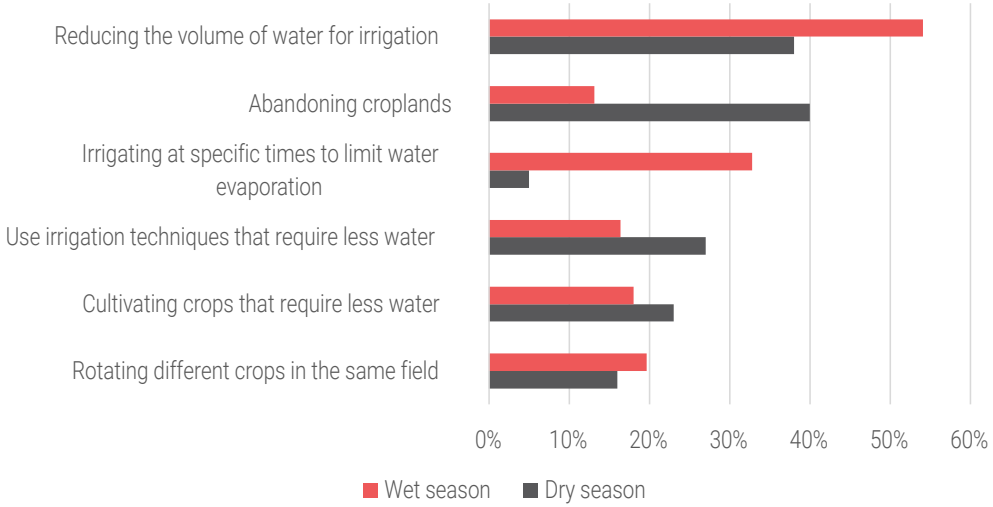


Farmers' perceptions of water sufficiency declined notably from the dry to the wet season. While 57% of farmers in the dry season reported that water was mostly or completely sufficient to meet production objectives, only 24% did so in the wet season, with the majority (69%) indicating that water was mostly insufficient. While this may seem counterintuitive, it may be explained by the expectation of seasonal rainfall during the wet season - rainfall that, as mentioned above, had been deficient in the six months prior to data collection, according to the vast majority of surveyed farmers. As a result, unmet expectations for rain-fed support to irrigation may have led to increased perceptions of insufficiency, even if total water availability was not significantly lower than in the dry season.

Disaggregation by crop type shows that perceptions of sufficiency declined consistently across all major crops. In the dry season, 60% of wheat farmers, 67% of eggplant and tomato farmers, and 58% of barley farmers reported that water was mostly or completely sufficient. By the wet season, these figures dropped sharply—to just 23% of wheat farmers, 3 of 16 eggplant farmers (19%), 5 of 20 tomato farmers (25%), and 7 of 26 barley farmers (27%). Even among cucumber farmers, 59% in the dry season had reported mostly or completely sufficient water, compared to just 2 of 14 (14%) in the wet season. This uniform decline across crop types suggests that the issue was not crop-specific water demands, but rather broader shortfalls in anticipated rainfall and irrigation access during the wet season.

Across both seasons, the majority of farmers reported adopting strategies to conserve water or cope with shortages in the past six months—83% during the dry season and 87% during the wet season. While a range of strategies was reported, the specific approaches varied somewhat by season. In the wet season, the most commonly cited strategy was reducing irrigation volumes (54%), followed by adjusting irrigation timing to reduce evaporation (33%). In the dry season, however, farmers more frequently resorted to abandoning croplands (40%) and reducing irrigation volumes (38%). These coping strategies further highlight the strain on water resources and underscore the need for more sustainable, efficient irrigation systems and broader support to help farmers adapt to ongoing water scarcity.

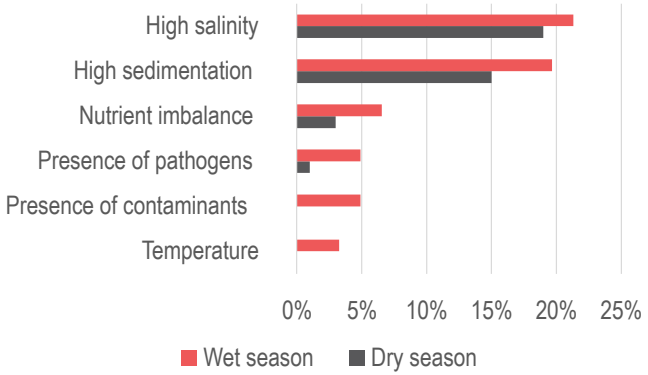
Strategies used in the past 6 months to save water or cope with lack of water (select multiple)



Perceived Water Quality

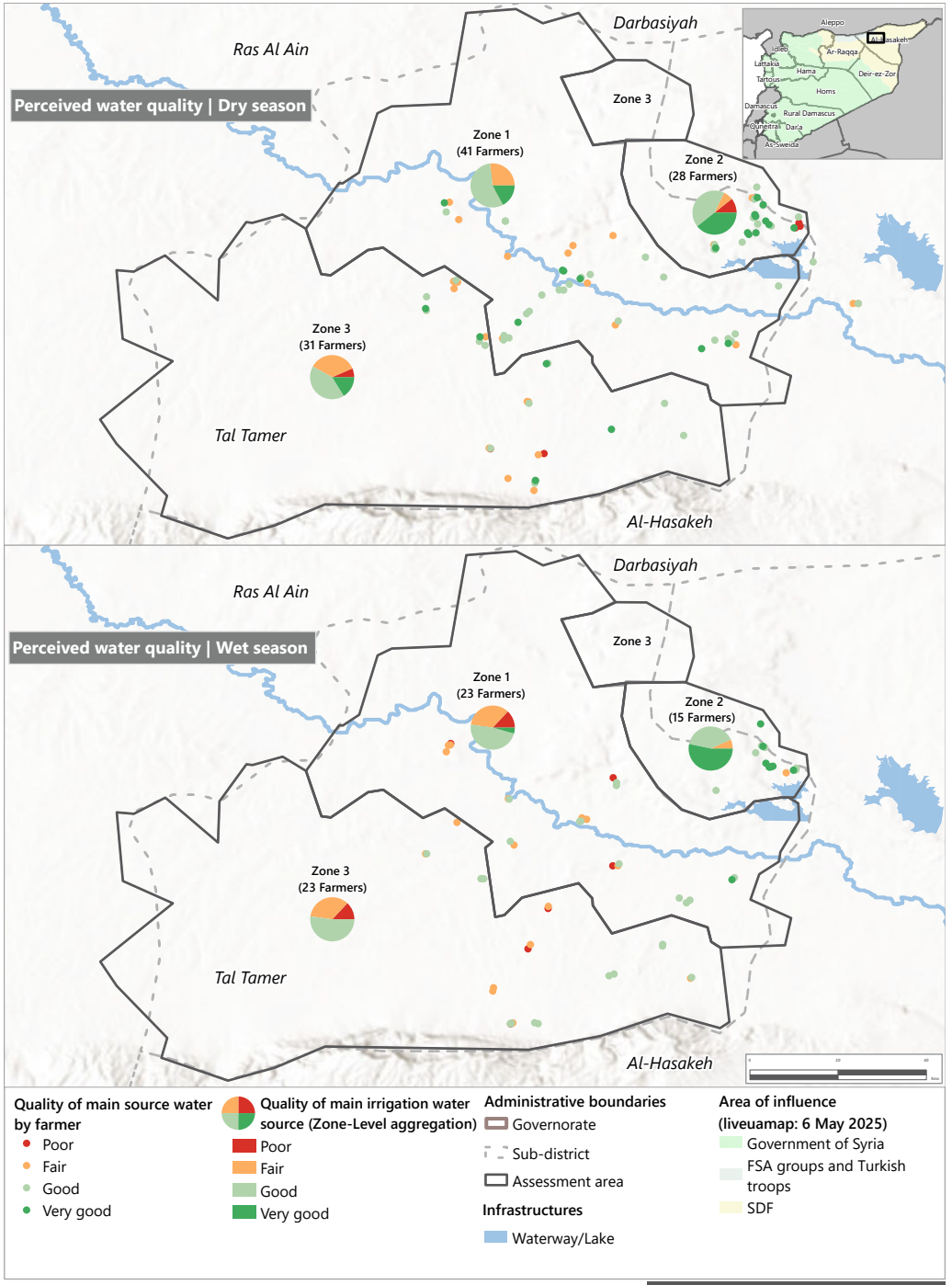
The proportion of farmers reporting issues with their primary water source increased from the dry season (30%) to the wet season (46%), with **high salinity** and **sedimentation** identified as the most common perceived problems. Zone 3 had the highest share of farmers who reported experiencing water quality issues (41% in the dry season and 43% in the wet season), followed by Zone 1 (26% dry, 27% wet) and Zone 2 (20% dry, 27% wet). These findings suggest that farmers farther from major water bodies may face more persistent water quality challenges.

Issues experienced with primary water source in the last 6 months, by season (select multiple)



Overall, **the majority of farmers perceived water quality from their main water source to be "good" or "very good,"** without major differences in these perceptions across seasons. Zone 3 had the highest proportion of farmers reporting water quality as "fair" or "poor," while Zone 2 had the highest proportion of farmers reporting "good" or "very good."

Farmers reported a greater use of strategies to cope with poor water quality in the wet season compared to the dry season. While only 22% of farmers adopted any coping measures in the dry season, more than half (54%) did so in the wet season. The most common approaches included applying fertilizers (13% dry season, 49% wet season) and cultivating more water-quality-tolerant crops (6% dry, 21% wet). These strategies, while reactive, do not appear to address the underlying issue of unsustainable water extraction practices that may be contributing to declining groundwater availability. Moreover, increased reliance on fertilizers raises input costs, placing an added financial burden on farmers already coping with challenging production conditions.

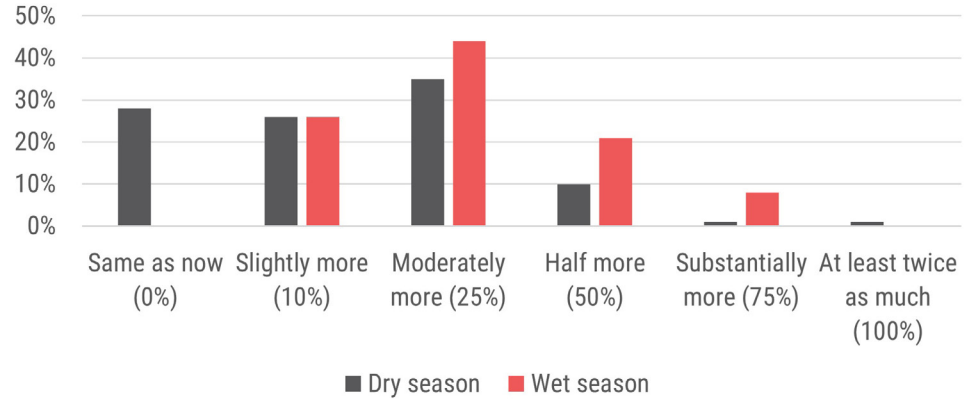


Water Demand & Solutions to Improve Water Access

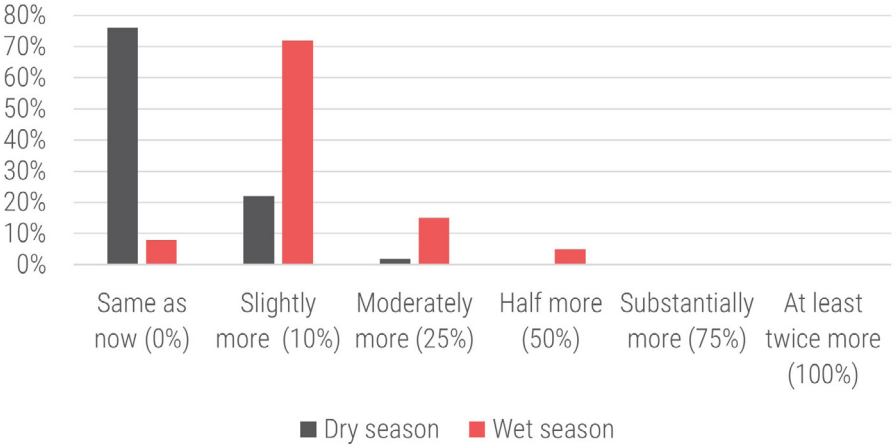
Farmers reported a greater perceived need for additional water for agriculture than for livestock, with demand rising from the dry to the wet season. For irrigation, 72% of farmers in the dry season and 99% in the wet season said more water was needed, with those reporting moderate or substantial shortfalls increasing from 36% to 52%.

In contrast, 76% of livestock-owning farmers said water was sufficient in the dry season, but this dropped to 8% in the wet season. Most wet-season respondents (72%) indicated needing slightly more water, suggesting seasonal stress that may impact livestock and crops differently.

Minimum additional amount of water needed for irrigating crops, by season

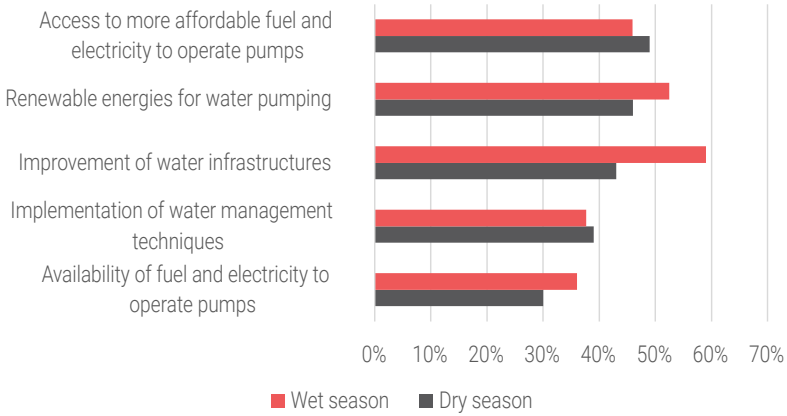


Minimum additional amount of water needed for sustaining livestock, by season



When asked about the most important solutions to improve access to irrigation water, farmers most frequently prioritized **access to more affordable fuel and electricity for operating pumps** (49% dry season, 46% wet season), followed closely by the adoption of **renewable energy sources for water pumping** (46% dry, 52% wet). Improving water infrastructure was another key concern, particularly in the wet season (43% dry, 59% wet). Farmers also emphasized the need for better water management techniques (39% dry, 38% wet) and the availability of fuel and electricity (30% dry, 36% wet). Notably, **the two most commonly cited solutions - cheaper energy and renewable power - could facilitate increased water extraction, which could further strain already-depleted groundwater resources, underscoring the importance of coupling energy access with effective water management strategies.**

Solutions to improving access to water for irrigation (select multiple)



For livestock-owning survey respondents, **energy access was a priority for improving access to water for livestock, as well as improving water infrastructures**. In the dry season, top priorities included affordable fuel and electricity for pumps (37%), renewable energy (32%), and energy availability (24%). In the wet season, improving water infrastructure was the leading concern (52%), followed by affordable energy (44%) and energy availability (33%). These results highlight the consistent importance of energy access and a heightened focus fon infrastructure improvement for farmers interviewed during the wet season.

Despite strong demand for solutions to improve water access for both agriculture and livestock, the vast majority of farmers reported being unable to afford their implementation. In the dry season, 98% of farmers - and 95% in the wet season - said they were willing but financially unable to pay for such improvements. These findings underscore the need for assistance to make water access solutions more accessible for farming communities.

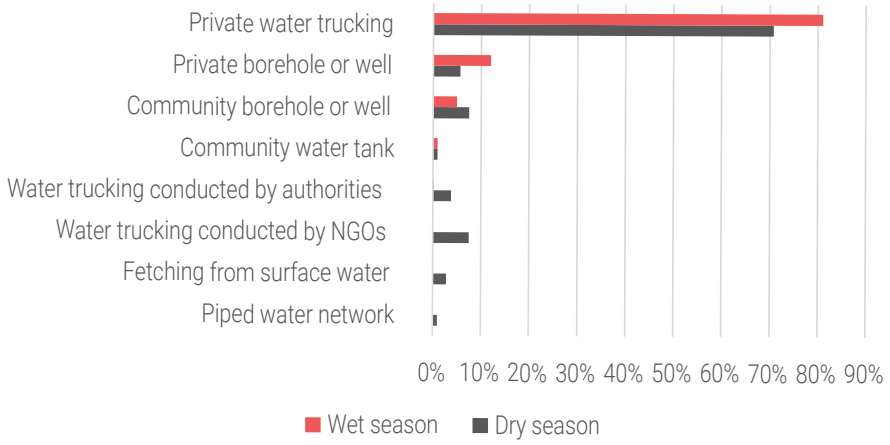
Household Survey Findings

Drinking Water Supply Modalities

Piped water infrastructure in Tel Tamer is largely non-functional, leaving households without access to reliable public supply. This is primarily due to the non-operational status of Alouk water station - located in Ras Al Ain near the Syrian-Turkish border - which had previously served as the main source of piped water for the area. Since Alouk went offline in October 2023, water availability across Al-Hasakeh governorate has been significantly impacted.[5]

In this context, **private water trucking** emerged as the **dominant primary drinking water supply modality for households**, accounting for 71% of households in the dry season and 81% in the wet season. During the dry season, the second and third-most commonly reported drinking water sources were NGO water trucking (8%) and community boreholes (8%), while in the wet season they were private boreholes or wells (12%) and community boreholes (5%). **Use of complementary or backup drinking water sources was limited across both seasons**, with 70% of households lacking an alternative supply in the dry season and 95% in the wet season.

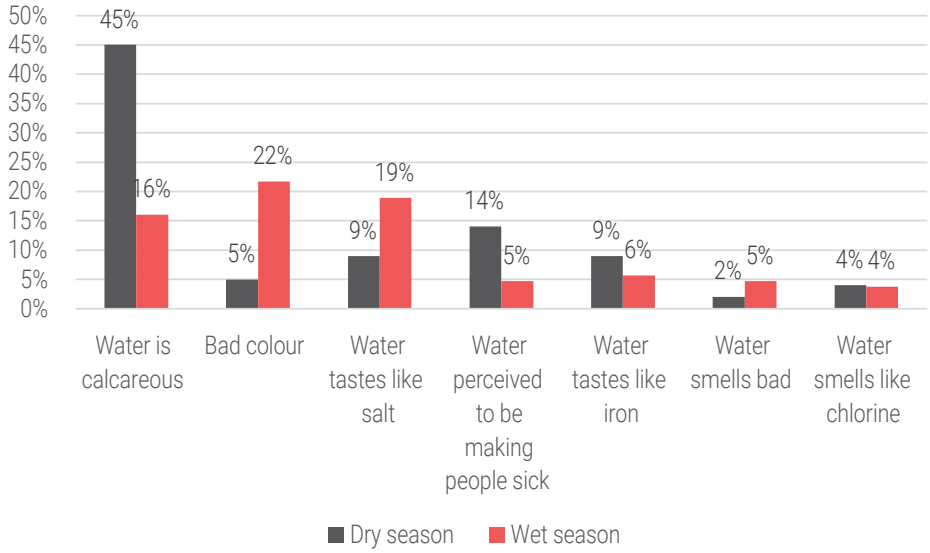
Most frequently reported household drinking water supply methods, by season



Across the dry and wet seasons, the most common payment modality for drinking water reported by households was fixed-cost per amount used (47% of households in the dry season and 50% in the wet season). During the dry season, however, a higher percentage of households reported drinking water being free (28%) than those surveyed during the wet season (15%).

Perceived issues with drinking water quality (in the 30 days prior to data collection) varied by season. A higher proportion of households reported issues in the dry season (69%) than during the wet season (48%), with the most commonly reported issues being calcareous water (45% of households), water being perceived to be making people sick (14%), and water tasting like iron (9%). During the wet season, the primary perceived issues were bad colour (22%), water tasting like salt (19%) and water being calcareous (16%).

Perceived issues with drinking water quality, by season (select multiple)



When asked what methods households used in the last 30 days to make water safer to drink, the majority of households across both seasons reported not using any (79% in the dry season and 85% in the wet season). For those that did, the leading method across seasons was storage and sedimentation (18% in dry season and 15% in wet season).

Non-Drinking Water Supply Modalities

For non-drinking water supply modalities, private boreholes or wells was the most reported supply method across seasons, although there was increased use from the wet season to the dry season. During the dry season, the second and third most commonly reported supply methods for non-drinking water were community boreholes and private water trucking, while during the wet season it was private water trucking and community boreholes.

	Dry Season	Wet Season
1	Private borehole or well (52%)	Private borehole or well (76%)
2	Community borehole or well (20%)	Private water trucking (14%)
3	Private water trucking (18%)	Community borehole or well (9%)

The use of **complementary non-drinking water sources was also limited** across both seasons, although even moreso during the wet season, when 98% of households did not have a complementary method, compared to the dry season, when 82% of households did not.

The vast majority of households reported not paying for non-drinking water (82% of households across both seasons). For those households that did, the most common modality was fixed-cost per amount used (14% in the dry season and 9% in the wet season).

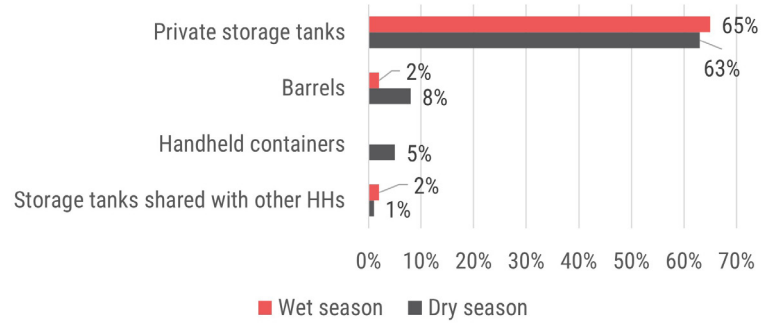
Water Storage Methods

The majority of households across the dry and wet seasons stored drinking and non-drinking water in separate storage containers in the 30 days prior to data collection - 77% in the dry season and 69% in the wet season. Among these households, private storage tanks were the most commonly used method for drinking water, followed by barrels and handheld containers (such as jerry cans or bottles) in the dry season, and barrels and shared tanks in the wet season.

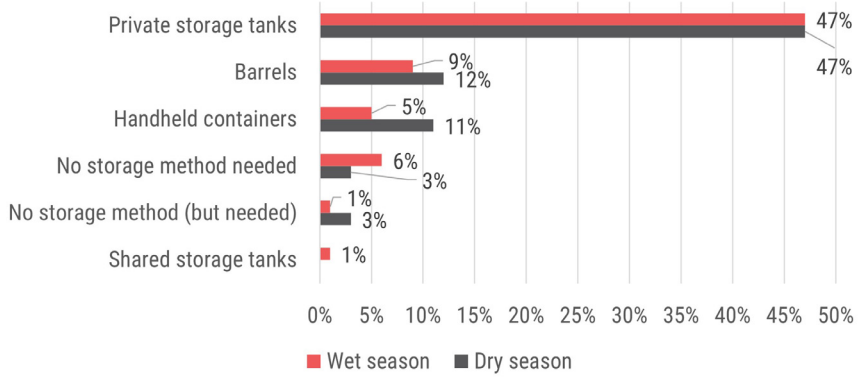
For **non-drinking water, private tanks were again the most frequently reported method in both seasons**, alongside the use of barrels and handheld containers. A small number of households reported needing but lacking any storage method for non-drinking water.

Among households that stored drinking and non-drinking water together, private storage tanks were also the most commonly used solution in both seasons.

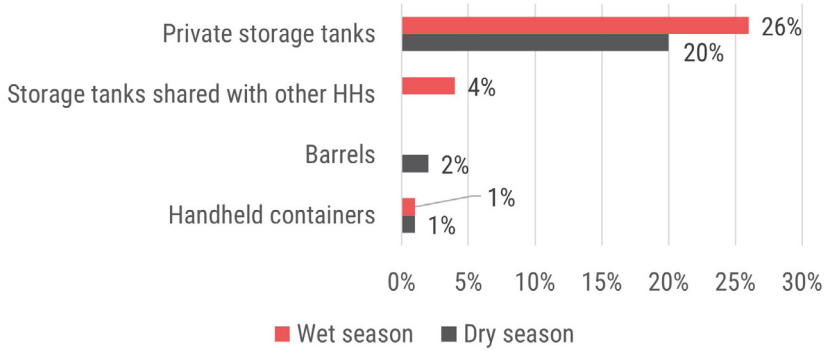
Drinking water storage methods for HHs storing drinking and non-drinking **separately** (% of all HHs)



Non-drinking water storage methods for HHs storing drinking and non-drinking **separately** (% of all HHs)



Storage methods for HHs storing drinking and non-drinking **together** (% of all HHs)



REACH Informing more effective humanitarian action

Water Expenditure

During the dry season, the median estimated monthly water expenditure was 9.70 USD, remaining similar in price during the wet season - 9.90 USD.

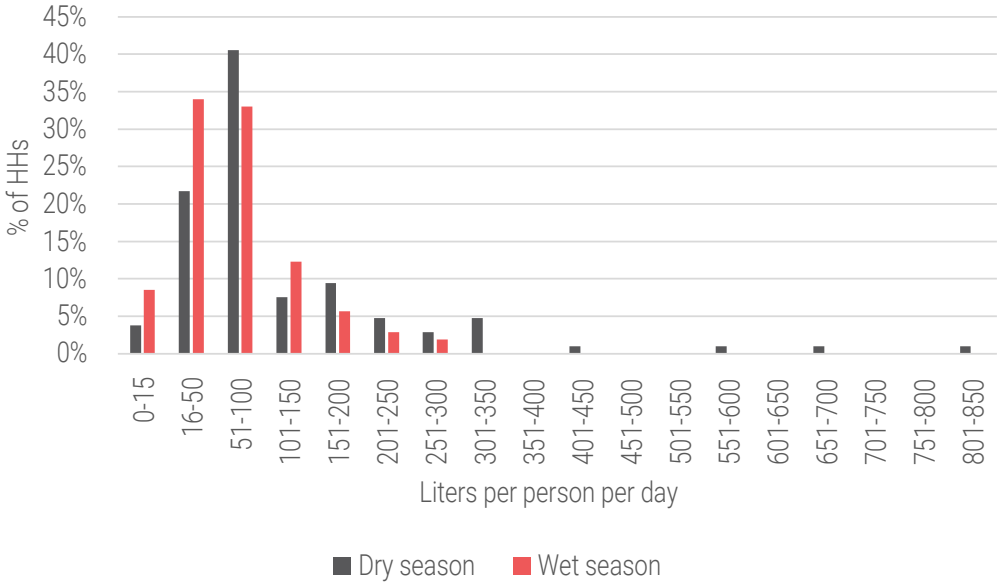
Dry Season
Median water expenditure:
9.70 USD
Median portion of income dedicated to water expenses: **7.5%**

Wet Season
Median water expenditure:
9.90 USD
Median portion of income dedicated to water expenses: **6%**

Household Water Consumption

According to the Sphere Standards, a minimum of 15 liters of water per person per day is required to meet basic needs in humanitarian settings.[6] In the 30 days prior to data collection, reported household water consumption - including both drinking and non-drinking uses - exceeded this threshold in both seasons, averaging 76 liters per person per day in the dry season and 62 liters in the wet season.[7] However, **a small proportion of households** - 4% in the dry season and 8% in the wet season - **reported consumption levels below minimum standard.** The lower consumption during the wet season may reflect reduced domestic water needs during cooler months, such as less frequent bathing or laundry compared to the hotter, drier period.

Household water consumption per person per day (drinking and non-drinking)



Dry Season
Median water consumption per person per day:
76 liters

Wet Season
Median water consumption per person per day:
62 liters

Household Water Insecurity

To measure household water insecurity, the questionnaire included 12 items from the Household Water Insecurity Experiences (HWISE) Scale.[8] Participants responded using a four-point scale scored from 0 ('never') to 3 ('often/always'), with total scores ranging from 0-36. Households were classified into four categories: no-to-marginal (0-2), low (3-11), moderate (12-23), and high (24-36). **In the dry season, most households experienced low** (42%) **or moderate** (41%) **water insecurity;** only 2% reported high

HWISE indicators - In the last 30 days, how frequently...

Worry	Did you or anyone in your household **worry** you would not have enough water for all of your household needs?
Interrupt	Has your main water source been **interrupted** or limited (e.g. water pressure, less water than expected, river dried up)?
Clothes	Have problems with water meant that **clothes** could not be washed?
Plans	Have you or anyone in your household had to **change schedules or plans** due to problems with your water situation? (Activities that may have been interrupted include caring for others, doing household chores, agricultural work, income-generating activities, sleeping, etc.)
Food	Have you or anyone in your household **had to change what was being eaten** because there were problems with water (e.g., for washing foods, cooking, etc.)?
Hands	Have you or anyone in your household had to go without washing **hands** after dirty activities (e.g., defecating or changing diapers, cleaning animal dung) because of problems with water?
Body	Have you or anyone in your household had to go without washing their **body** because of problems with water (e.g., not enough water, dirty, unsafe)?
Drink	Has there not been as much water to **drink** as you would like for you or anyone in your household?
Angry	Did you or anyone in your household feel **angry** about your water situation?
Sleep	Have you or anyone in your household gone to **sleep** thirsty because there wasn't any water to drink?
None	Has there been **no useable or drinkable water** whatsoever in your household?
Shame	Have problems with water caused you or anyone in your household to **feel ashamed**/ excluded/stigmatized?

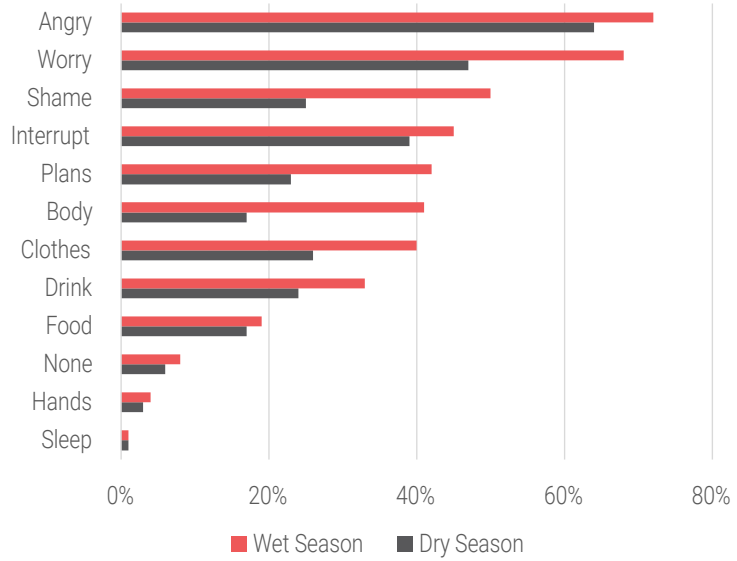
insecurity. **In the wet season, insecurity intensified: 55% of households fell into the moderate or high categories**, compared to 43% in the dry season.

This trend was reflected across multiple indicators, measured as the percentage of households scoring 2 or higher on individual HWISE items (i.e., responding 'sometimes,' 'often,' or 'always'). The most commonly reported experience in both seasons was **anger about the water situation** (64% in the dry season; 72% in the wet), followed by **worry about not having enough water** (47% to 68%). **Feelings of shame or exclusion due to water issues** doubled (25% to 50%), and disruptions to daily life became more common, rising from 23% to 42%. The inability to wash one's body also increased, from 17% to 41%.

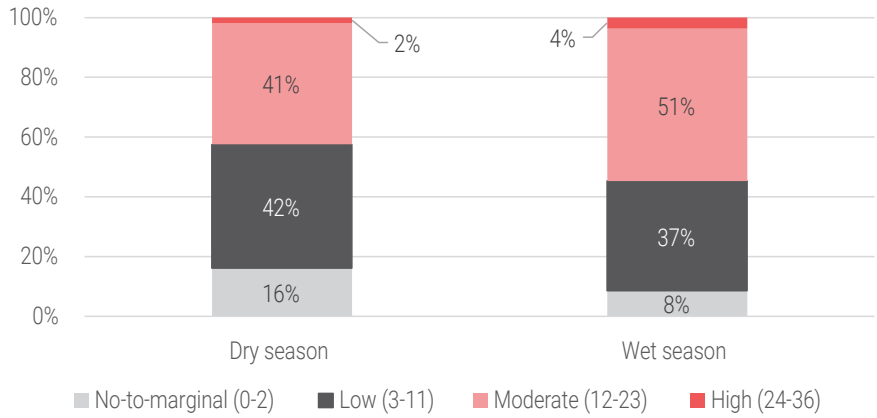
Indicators related to domestic use and consumption followed a similar trend. Households reporting **difficulty washing clothes** rose from 26% to 40%, while those without enough drinking water increased from 24% to 33%.

While water insecurity is typically associated with dry seasons, findings from Tel Tamer suggest that seasonal rainfall does not necessarily improve household water access. In the wet season, poor access to or damage to water infrastructure, poor water quality, and continued reliance on unreliable sources may compound access challenges. These results highlight that **water insecurity in the area is driven by more systemic and infrastructural issues than by seasonal availability alone.**[9]

Proportion of HHs scoring 2 or higher on HWISE indicators, by season



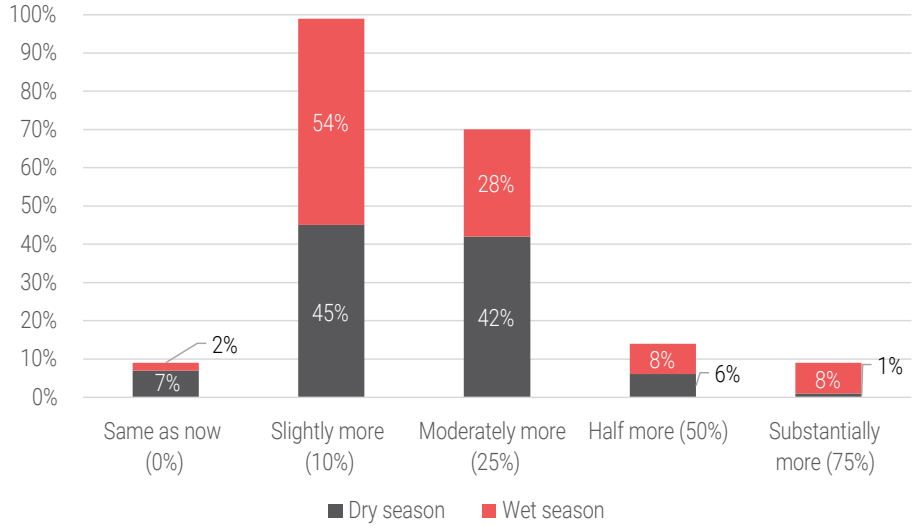
Prevalence of HH water insecurity, by season



Water Demand

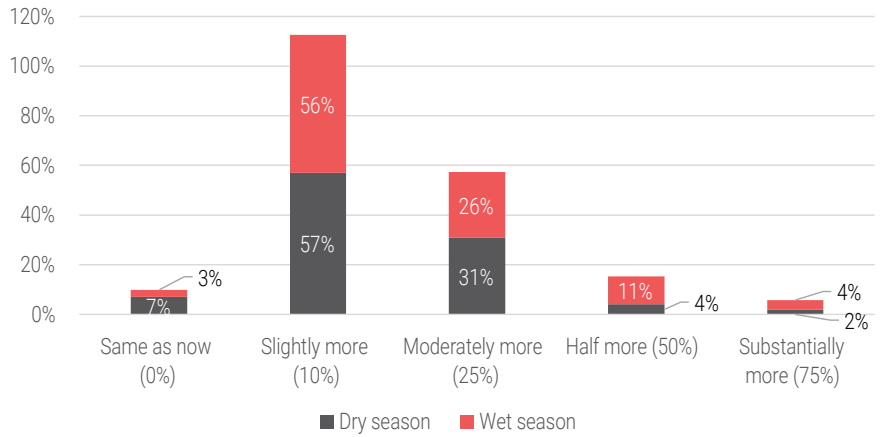
Household survey responses about the minimum additional amount of drinking and non-drinking water they would need per month compared to the previous month indicated a consistent shortfall in both types of water across seasons. For drinking water, in the dry season, 93% indicated a need for increased supply. In the wet season, 98% reported needing more water, with 54% needing slightly more and 28% needing moderately more.

Perceived minimum amount of additional drinking water needed by households for a month, as compared to previous month



Similarly, for non-drinking water, 93% in the dry season and 97% in the wet season reported unmet needs, with over a third of respondents in both seasons needing 25% more or greater. These findings suggest that even during the wet season, households face chronic water access gaps, highlighting the need for sustained support to meet both consumption and hygiene-related water needs.

Perceived minimum amount of additional non-drinking water needed by households for a month, as compared to previous month

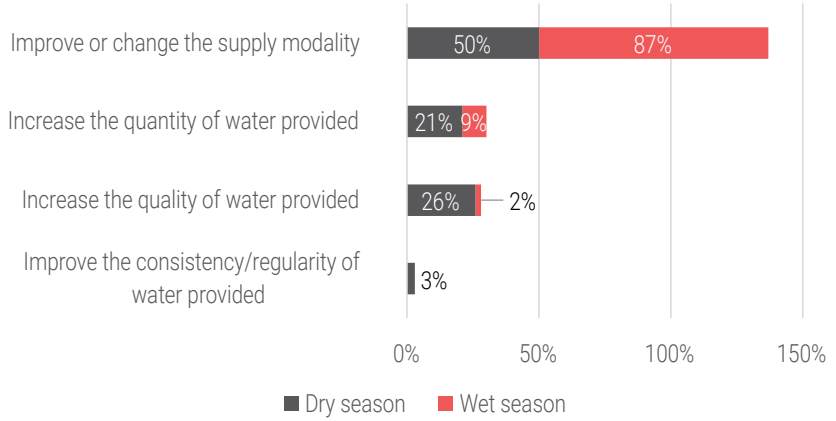


Solutions for Improving Water Access

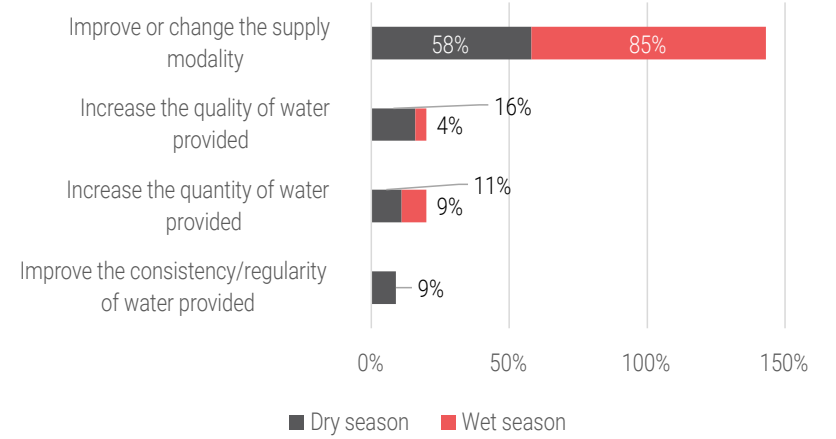
When asked to identify preferred solutions for improving access to drinking water, **households overwhelmingly prioritized improving or changing the supply modality.** This preference was especially pronounced in the wet season, where 87% selected this option, compared to 50% in the dry season. In the dry season, preferences were more distributed, with 26% citing improved water quality and 21% increased quantity. These results suggest that while quality and quantity matter, the way drinking water is acquired is viewed as a main barrier, particularly during the wet season.

For non-drinking water, similar patterns emerged. The majority of households in both seasons favored modality improvements—58% in the dry season and 85% in the wet season. Other aspects like quality, quantity, or consistency were cited by a smaller proportion of respondents, especially in the wet season. This indicates that for **non-drinking uses such as washing or hygiene, access and delivery mechanisms remain the core challenge rather than the quality or quantity of water.**

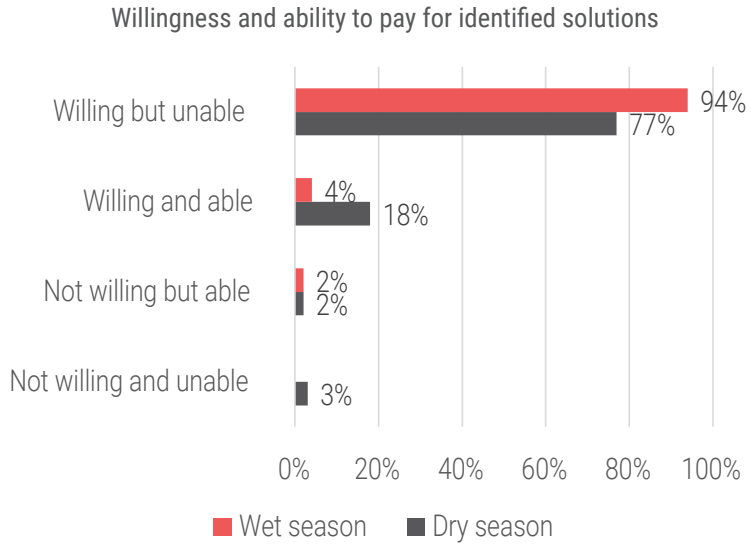
Solutions for improving access to drinking water reported by HHs (select multiple)



Solutions for improving access to non-drinking water reported by HHs (select multiple)



Finally, households were asked whether they were willing and able to pay for the water access solutions they had identified. The results highlight **a willingness to contribute, but a lack of financial capacity to do so.** In the dry season, 77% of households reported being willing but unable to pay, while only 18% were both willing and able. In the wet season, financial barriers appeared even more acute, with 94% stating they were willing but unable, and just 4% reporting they were both willing and able. As with the farmer survey, these findings point to a gap between demand and financial capacity, suggesting need for support to enable access to sustainable water solutions.



Methodology Overview

The **household component** of the SEWS consists of structured household interviews conducted in person by REACH enumerators operating in gender-mixed pairs. Households were randomly selected through simple random sampling among accessible communities and IDP sites across Tel Tamer sub-district. The sampling size was calculated to obtain **representative data in accessible communities at the sub-district level with a 95% level of confidence and a 10% margin of error.** A buffer of 10% was added to the sample to account for deletions in the cleaning phase.

The sample size for both rounds of data collection - conducted in the **dry season (September 2024)** and **wet season (April 2025)** - was **106 households across Tel Tamer, including 93 households living in communities and 13 households living in IDP sites** of Tel Tamer. Two distinct samples of 106 households were interviewed in each season, meaning that **different households were surveyed in the dry and wet seasons.** This distribution corresponds to the ratio of households (either host or IDPs) living in communities and IDP households living in sites in accessible areas of Tel Tamer according to the 2024 OCHA Population Task Force data. Households residing in communities were selected via GPS random sampling while households living in IDP sites were randomly selected by REACH enumerators directly at the site.

The sample is biased toward cooperative, readily available households and households where at least one adult member is at home during the time of data collection. Should the selected household not fit the research criteria, enumerators disengage and find another household in the same location.

The **farmer component** of the SEWS assessment consisted of structured, in-person interviews conducted directly at farmland locations by REACH enumerator teams working in pairs. Due to the absence of formal farmer lists and limited capacity for random GPS-based sampling, a purposive sampling approach was used. As such, findings should be considered **indicative rather than representative** of the wider farmer population.

Interviews were conducted in accessible areas of Tel Tamer sub-district, covering three geographic zones characterized by distinct hydrological features. In the **dry season (September 2024), 101 farmers** were interviewed - 38 in Zone 1, 25 in Zone 2, and 38 in Zone 3. In the **wet season (April 2025), 61 farmers** were interviewed - 23 in Zone 1, 15 in Zone 2, and 23 in Zone 3. To ensure relevance to the study's focus on water usage and irrigation practices, only farmers who had irrigated their land at least once in the six months prior to data collection were eligible; **rainfed-only farmlands were excluded** from the sample.

Limitations: The original survey design aimed to track the same set of farmers across both seasons to enable direct seasonal comparisons. This panel approach, however, was disrupted by several operational constraints during the wet season. A prolonged mobile network outage prevented reliable contact with previously surveyed farmers, and the need for sunny conditions to operate solar-powered boreholes used in concurrent water testing further delayed fieldwork. As a result, it was not possible to consistently reinterview the same farmers. While the methodology remained consistent in approach and geographic scope, the seasonal samples differ, and findings should be interpreted as **indicative rather than directly longitudinal.**

Endnotes

[1] Please note that the sampling strategy did not include farmers who relied strictly on rainwater farming, which may bias the results of the number of boreholes per farm in the area. Furthermore, the actual proportion of farms that do not have any functioning boreholes in the wet season may be higher. This is because the farmers' survey included a borehole test to measure the flow rate of boreholes and their pumps. However, during the wet season, some farmers were unable to participate in the survey because cloudy weather prevented them from operating solar-powered borehole pumps.

[2] As above; the sampling strategy excluding farmers who rely exclusively on rainwater farming may have biased primary and complementary water supply modalities results.

[3] FAO, "Irrigation Water Management: Irrigation Methods," Training manual no. 5, 1985.

[4] Farm water consumption was estimated by combining farmer-reported data on the number of the days their borehole pump(s) were used and the average number of hours it operated per day, resulting in total pumping hours over the **past 6 months**. A timed test to fill a 20-liter bucket was conducted to estimate the pump's flow rate in liters per hour. This flow rate was then multiplied by the total pumping hours to estimate the volume of water used, which was converted from liters to cubic meters. As this estimate relies on self-reported usage patterns and a basic flow rate test, it should be considered indicative rather than precise.

[5] REACH, "Area-Based Assessment: Tel Tamer, Al-Hasakeh Governorate," Situation Overview, 2024; OCHA, "Syrian Arab Republic: Al-Hasakeh, Ar-Raqqa, & Deir-ez-Zor Humanitarian Overview," March 2024.

[6] Sphere Association, *The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response*, fourth edition, Geneva, Switzerland, 2018. www.spherestandards.org/handbook

[7] To estimate liters of water consumed per person per day, the survey followed two pathways based on whether households stored drinking and non-drinking water together or separately. For households storing water together, consumption was estimated either through self-reported volumes for drinking and non-drinking use, or by multiplying the storage container's capacity by the number of times it was fully refilled in the **past 30 days.** In both cases, total volume was divided by household size and number of days to calculate per person per day water consumption. Only the combined consumption figure (drinking and non-drinking) could be applied across the full sample. While this method provides an indicative estimate, it is based on reported storage and refill patterns for the household's **main** storage method only, and does account for households that may have multiple storage methods for drinking and/or non-drinking water, therefore, in some cases may underestimate household water consumption. It also relies on recall-based responses and assumes consistent refill behavior throughout the reporting period.

[8] Young SL, Boateng GO, Jamaluddine Z, Miller JD, et al. (2019). The Household Water InSecurity Experiences (HWISE) Scale: development and validation of a household water insecurity measure for low-income and middle-income countries. BMJ Global Health. doi: 10.1136/bmjgh-2019-001750.

[9] While observed increase in household water insecurity during the wet season may seem counterintuitive, it is important to note that different households were surveyed in the dry and wet seasons. These findings may therefore reflect underlying differences between sampled populations, in addition to true seasonal changers in water access and use.

ABOUT REACH

REACH Initiative facilitates the development of information tools and products that enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development contexts. The methodologies used by REACH include primary data collection and in-depth analysis, and all activities are conducted through inter-agency aid coordination mechanisms. REACH is a joint initiative of IMPACT Initiatives, Acted and the United Nations Institute for Training and Research - Operational Satellite Applications Programme (UNITAR-UNOSAT).