

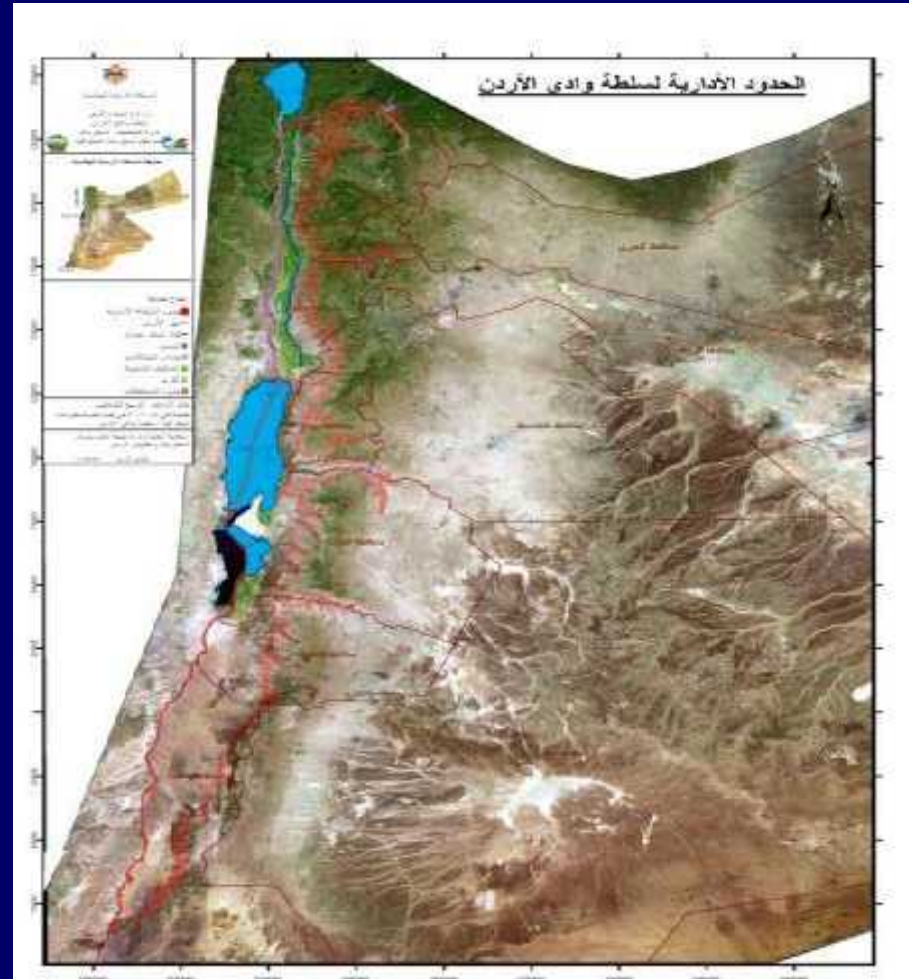
**Water Strategy Related on Date Palm
Growing and Expansion
in the Jordan Valley**

**First Date Palm Jordan International Festival
InterContinental Hotel, Amman
Oct.21-23, 2018**

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Jordan Valley: General Overview

- Valley Length 360 km.
- Valley Average width 13 km .
- Gradient 1.8%.
- Population 400,000.
- It is comprised of three Zones:
 - *Jordan Valley.*
 - *Dead Sea.*
 - *Southern Ghors and Wadi Araba.*



Jordan Valley Profile

Land and Cropping Pattern

- Total area 360,000 donum
- Irrigated area 300,000 d
- No. of farm units 10,000
- Farm unit area 30-40 d
- Citrus 70,000 d
- Banana 3000 d
- Dates 27,000 d
- Vegetables 180,000 d
- Grapes 4,000 d



Jordan Valley Water Resources

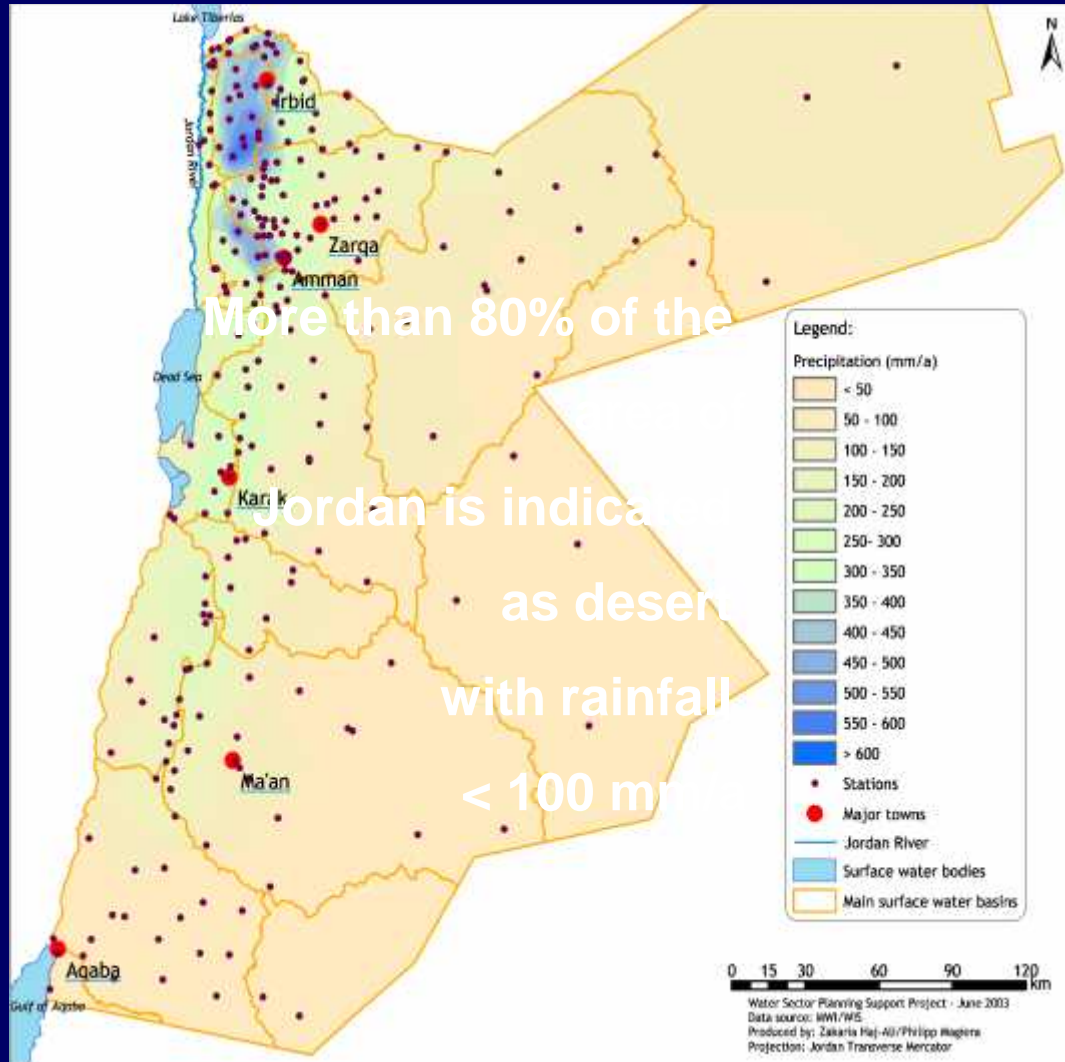
I- Conventional Water Resources

- Surface water.
- Ground water.

II- Non-conventional Water Resources

- Treated Waste Water
- Desalinization of medium salinity
(Brackish water)

Mean Annual Rainfall(mm)



350 mm/a North

50mm/a South

Dams Capacities in JV

Dam	Storage Capacity (MCM)
Unity	110.00
Wadi Arab	16.79
Ziqlab	3.96
Kufrenjeh	7.80
King Talal	75.00
Karama	55.00
Shueib	1.70
Kafrein	8.45
Zarqa/Maein	2.00
Waleh	8.18
Mujib	29.82
Tannour	14.71
Lajoun	1.00
Karak	2.00
Total	336.42



Private Sector Participation (WUA's) in the JV

- WUAs are Cooperative Civil Voluntary Non-Profit Organizations that are Managed by the Farmers.

The Main Objective of the WUAs is : Sustainable Management of Irrigation Water Resources in the JV Through Farmers Participation.

On the Governmental Level (JVA):

Maintaining the Infrastructure and Optimal Irrigation Water Use.

On the Farmers Level:

Improvement of the Services Level and on Farm Management..

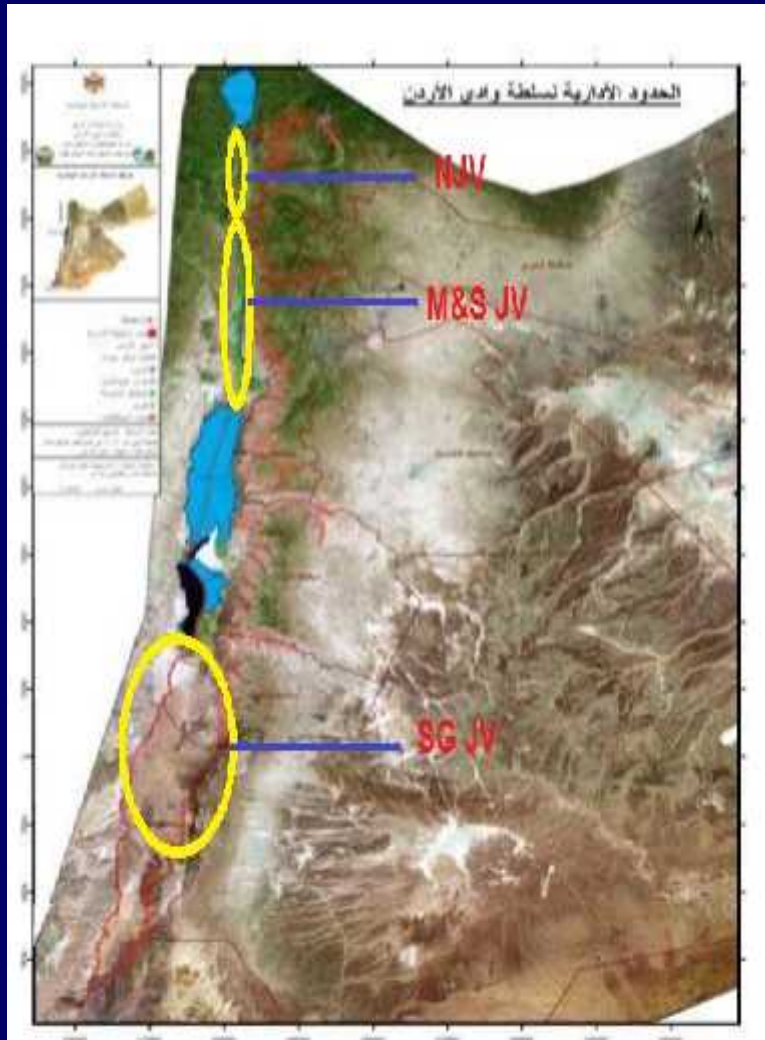
Released and Billed Water in N&M JV 2010-2016

Year	Released Fresh Water (MCM)	Released Reclaimed (MCM)	Total (MCM)	Billed/Irr. (MCM)	Billed/Drink (MCM)	Total Billed (MCM)	Diff. (MCM)	NRWt%
2010	109.64	96.53	206.17	102.76	53.94	156.70	49.47	24%
2011	100.29	77.91	178.20	87.67	53.54	141.21	36.99	21%
2012	118.09	101.77	219.86	105.83	62.14	167.97	51.89	24%
2013	146.35	107.56	253.91	123.16	70.06	193.22	60.69	24%
2014	130.19	119.30	249.49	128.08	60.90	188.98	60.51	24%
2015	143.84	127.18	271.02	139.95	66.23	206.18	64.84	24%
2016	161.10	130.91	292.01	144.12	68.67	212.79	79.22	27%
Total	909.51	761.15	1670.66	831.56	435.48	1267.04	403.62	24%

Irrigation Water Released and Billed Through N&M JV Network 2010-2016

Year	Fresh	Reclaimed	Total	Billed	Diff.	NRW%
2010	40.60	85.33	125.93	102.76	23.67	19%
2011	28.24	70.61	98.85	87.67	16.43	17%
2012	34.26	94.30	128.56	105.83	30.92	24%
2013	47.67	101.38	149.05	123.16	23.19	16%
2014	43.84	108.52	152.36	128.08	24.24	16%
2015	45.70	113.45	159.15	139.95	22.33	14%
2016	50.40	120.01	170.41	144.12	21.84	13%
Total	290.71	693.58	984.29	831.56	162.64	17%

Study Area



- North Jordan Valley (Fresh Water)
- Middle Jordan Valley and South Shonah (Reclaimed Water)
- Southern Jordan Valley (Fresh Water)

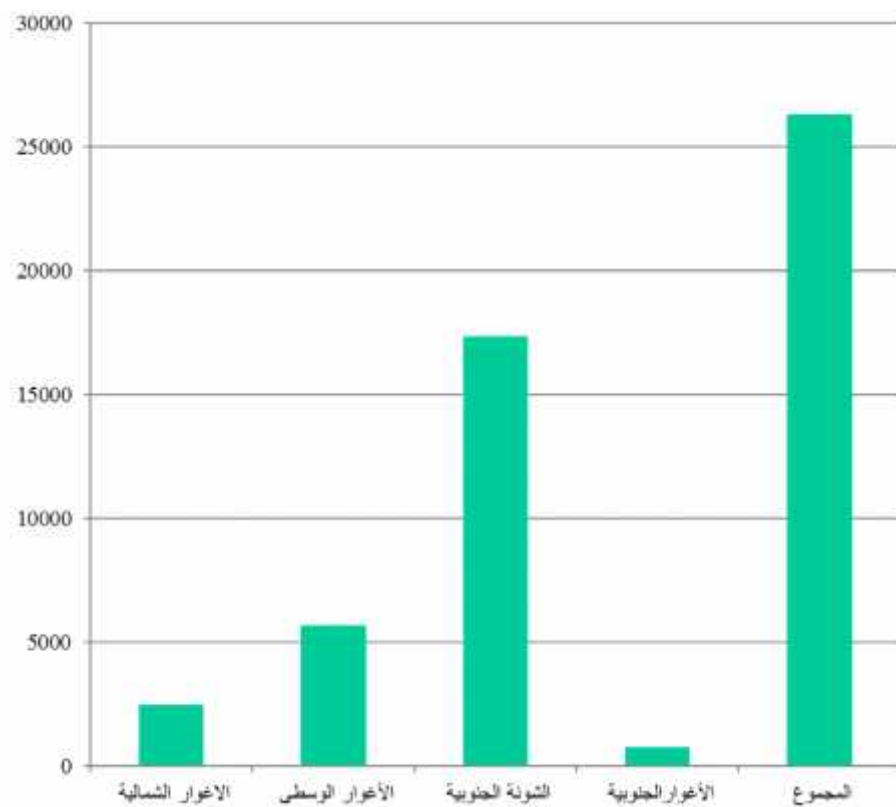
Facts Related to Date Palm Production in the Jordan Valley

- Planting of Date Palm Was Initiated Significantly in the Year 2000 and Peaked in 2013.
- High Investment and Running cost.
- High Revenue.
- Risk in Marketing.
- Average Water Requirement 1200 cm/d/year.
- Average Water Allocation 600 cm/d/year.

Authorized Zones and Areas for Date Palm in The JV

- North JV : Not More Than 5 d/Farm Unit.
- Middle JV and South Shoneh : Unlimited Area.
- Southern JV : Unlimited Area.
- Water allocation for Date Palm Should not Out Weigh Allocation for Vegetable and Depends on Water Availability.

Irrigated Areas of Date Palm in JV Related the Region (2016)



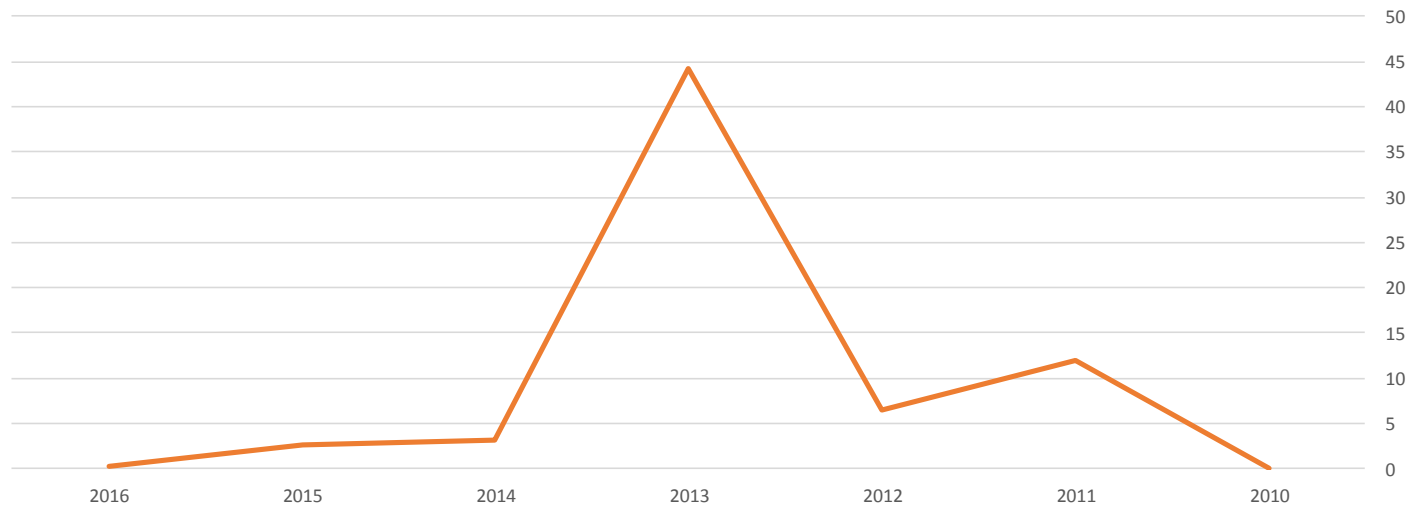
Region	Area(donum)
North JV	2497
Middle JV	5695
South Shonah	17334
Southern JV	791
Total	26317

Area & Variety of Date Palm in JV (in donum) (2016)

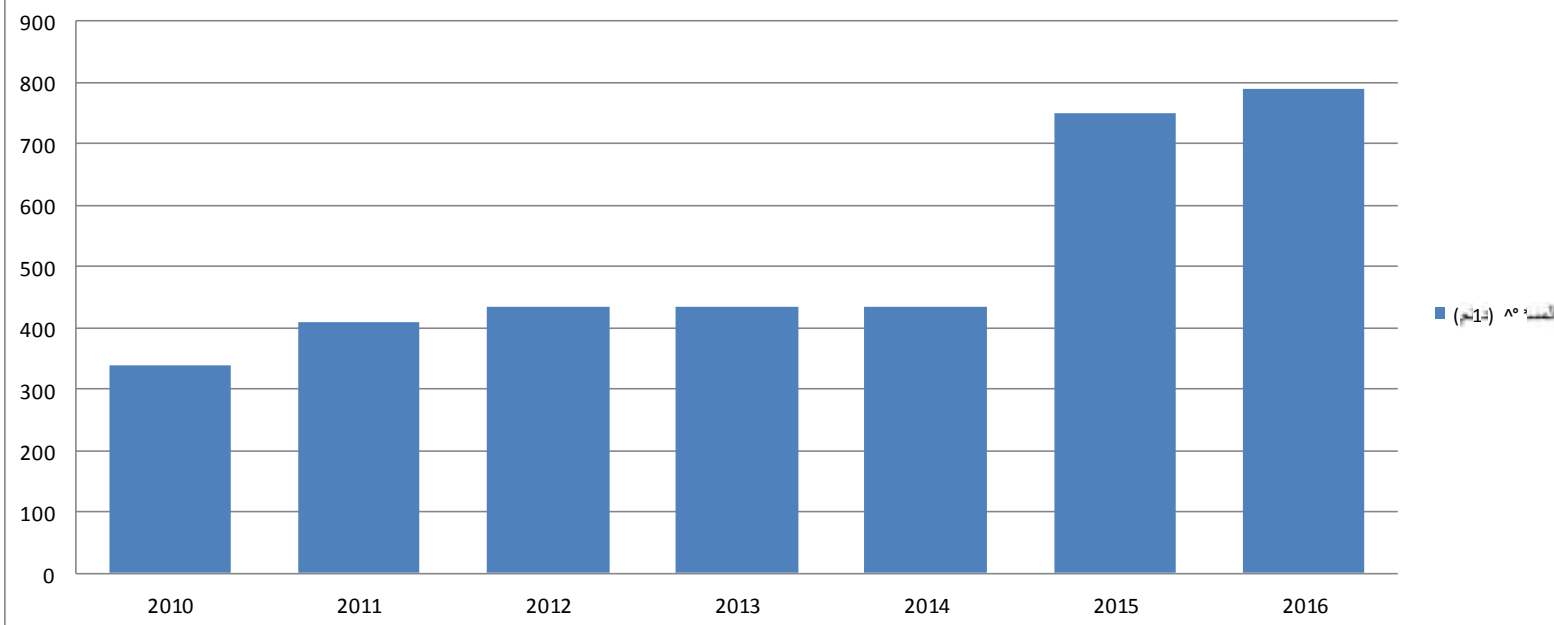
Variety	Southern JV	South Shonah	Middle JV	North JV	Total
Medjoul	710	14290	4940	1050	20990
Barhi	81	1608	755	915	3359
Other	-	1436	-	532	1968
Total	791	17334	5695	2497	26317

Total Area and Average Yearly Increases(%) of Date Palm in N&M JV

Year	2010	2011	2012	2013	2014	2015	2016
Area(du)	14013	15677	16688	24065	24812	25446	25526
Average yearly increasing (%)	-	%11,9	%6.45	%44.20	%3.10	%2.60	%0.30



Cumulative & Total Area and Yearly Expansion(%)in Date Palm in Southern JV (2010-2016)



Year	2010	2011	2012	2013	2014	2015	2016
Area(do)	339	410	434	434	434	749	791
Average yearly incr.(%)	-	2.10%	0.60%	0.00%	0.00%	72.60%	5.60%

Projected Annual Increases of Date Palm Areas and Associated Water Needs 2017-2025

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Expected Area(do) in N&M JV	26,900	28,220	29,635	31,116	32,672	34,300	36,000	37,822	40,000
Additional Water Req.(MCM)	16.4	16.95	17.77	18.66	19.60	20.60	21.60	22.7	23.82

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Expected Area in Southern JV(do)	831	872	915	960	1,010	1,060	1,115	1,170	1,300
Additional Water Req.(MCM).	0.5	0.52	0.55	0.58	0.6	0.63	0.66	0.70	0.75

Water availability in Northern JV

- Average Available Fresh Water for Irrigation in Summer Season About 45 MCM.
- The Main Cropping pattern in NJV is Citrus and its Peak Demand During May-Oct.
- Average Water Requirement for Legal Crops (Water Right) During Summer Season is About 70 MCM (25 MCM Deficit).
- No Available Water for Additional Supply.

Available Water for Use in KTD 2017-2025

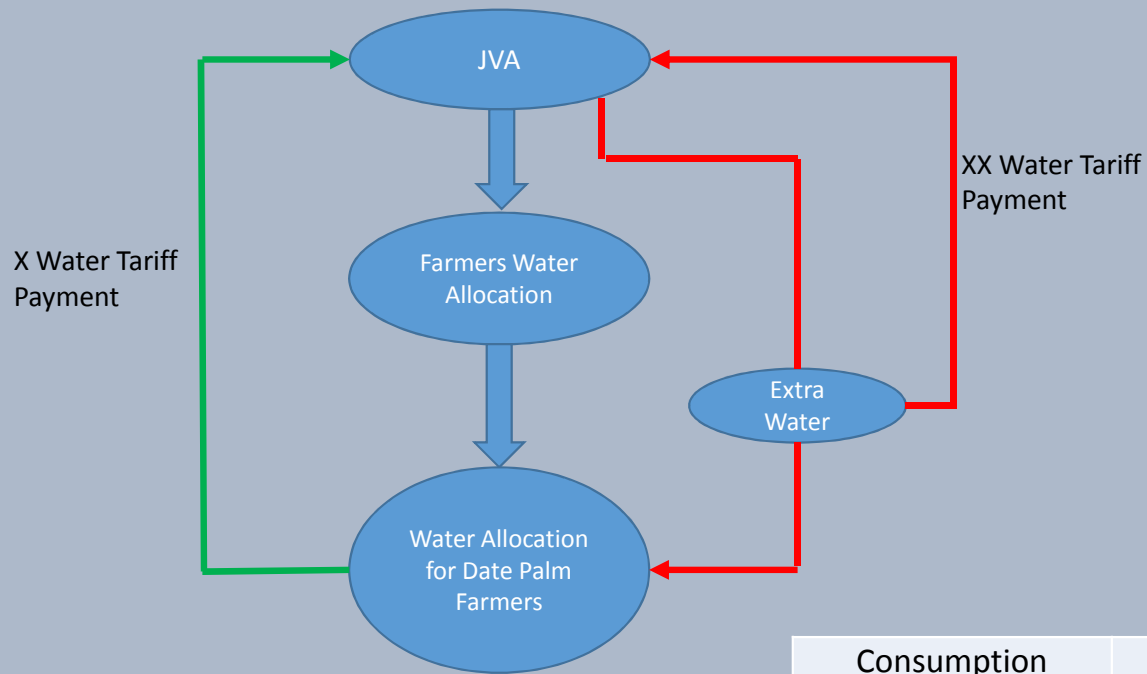
Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Expected Available Water(MCM)	120	121.2	122.4	123.6	124.9	126	127.4	128.6	130
Water Right(MCM)	105	105	108	108	108	110	110	110	110
Available Water for Use(MCM)	15	16,2	14,4	15,6	16,9	16	17,4	18,6	20,0
Additional Water Req. for Date Palm(MCM)	16,14	16,95	17,77	18,66	19,60	20,60	21,60	22,7	23,82
Expected Deficit (MCM)	(1,14)	(0,75)	(3,37)	(3,06)	(2,7)	(4,6)	(4,2)	(4,1)	(3,82)

Available Water for use in Southern JV 2017-2025

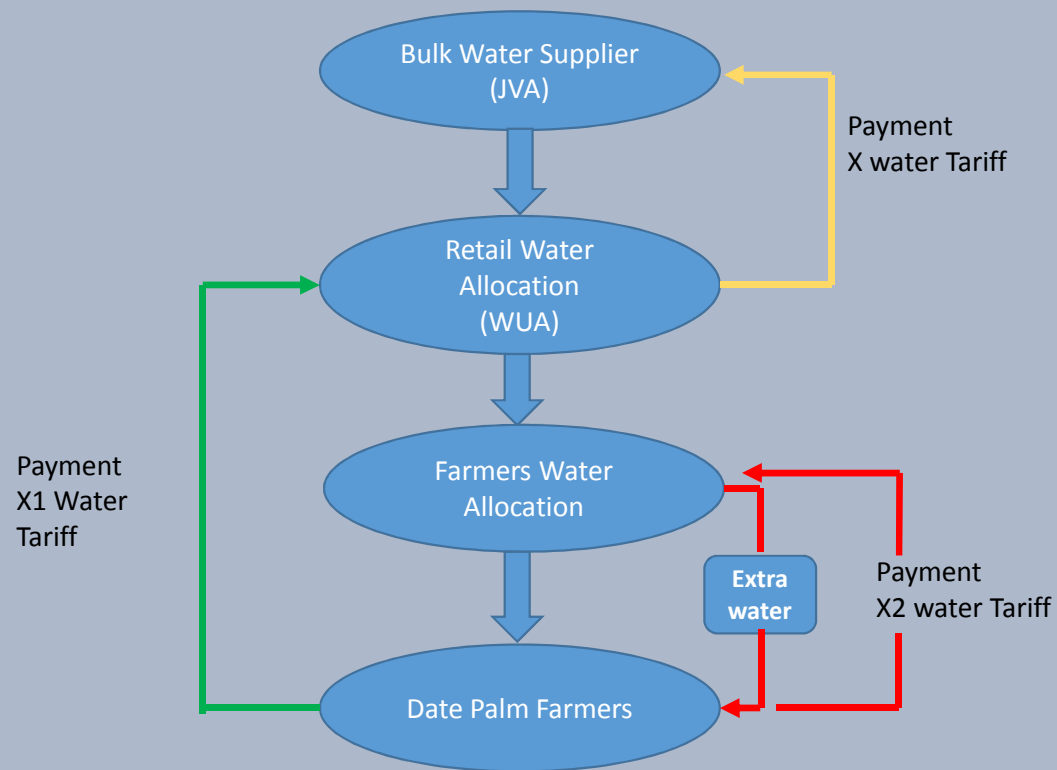
- Total Available of Fresh Water About 36 MCM (3MCM/Month).
- The Peak Irrigation Demand for Traditional Crops is During August-April ,While the Demand for Date Palm is Min. During this Period.
- The Peak Irrigation Demand for Date Palm is May-August.
- 1.5 MCM of Water /Month is Available in Case no Any Planed Investment in Future.

Conclusion and Recommendation

- Northern Jordan Valley:
 - ✓ Remain the Existing Strategy(Not More Than 5 d/Farm Unit).
- Middle Jordan Valley:
 - ✓ Max. Area Should Not Exceed 40,000 donum By 2025.
- Southern Jordan Valley:
 - ✓ The Area Can be Extending to 3,000 don. By 2025
 - Improvement of the Water Management in both JVA Scheme and on Farm Levels.
 - Improve the Concept of Water Value (Water Trading).



Consumption (CM/M/FU)	Fils/CM
0 - 2500	8
2501 - 3500	15
3501 - 4500	20
More than 4500	35



A tropical landscape featuring several tall palm trees in the foreground and a dense forest of green foliage in the background. The sky is blue with scattered white clouds. The text "THANK YOU" is overlaid in the center in a bold, red, serif font.

THANK YOU