



# Opportunistic adaptation of conserved moisture for food sustainability in arid zone



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## Introduction

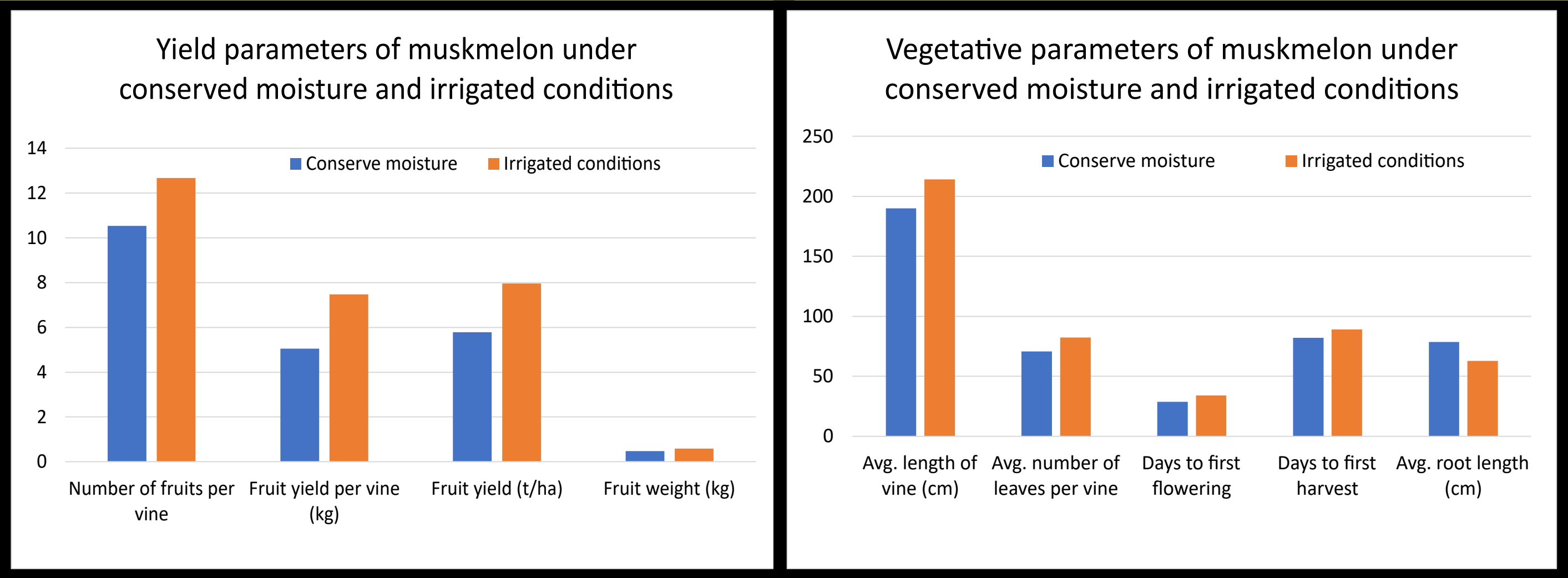
- The case study pertains to Pali district of Rajasthan which lies in semi arid zone. This zone is characterized by saline sodic soils and ground water with high pH and high EC.
- Agriculture under these conditions is not a profitable enterprise. But the area has number of water bodies which are flooded during rains and water stored in these reservoirs is retained upto December depending on leaching and evaporation losses.
- The farmer in these catchment areas use this water as opportunity and take winter crop and muskmelon as early summer crop.
- This utilization of conserved moisture in the reservoir bed due to subsequent drying of water provides good yield and suitable returns to the farmers.
- Keeping the above points in view a study was conducted to examine the adaption of conservation agriculture principles to muskmelon in arid zone

## Material and method

The study was carried out in Hemawas dam of Pali district where water from surrounding 150 hact. of catchment area gets harvested and collected. A sample of 120 respondents was selected randomly for study purpose using conserved moisture for muskmelon cultivation. It was also compared with the farmers using irrigation water for cultivation for knowing the difference in vegetative and fruiting characteristics of muskmelon. The data was collected through personal interview technique with a structured schedule prepared for the present investigation and subjected to appropriate statistical analysis.

## Results and discussion

The comparison of muskmelon cultivated under conserved moisture and under irrigated conditions indicated that the plants under conserved moisture performed better with longer roots and took less days for flowering and fruiting. Although the yield was less under conserved moisture but the fruits fetched more price due to their earliness in the market and their sweeter taste and aroma. These reservoirs act as rain water harvesting structures besides imparting intangible benefits like eco-restoration and drought mitigation etc. These microwatersheds have ample benefits of water resource conservation, mitigating the effect of floods and droughts and improving crop quality by supplementing fertile water (Choudhary et al., 2013).



The distribution of farmers according to their level of adoption indicated that most of the farmers have medium adoption (49.2%) regarding cultivation of muskmelon on conserved moisture and the number of farmers having high adoption (20.8%) and low adoption (20%) were relatively less. Amongst different practices of cultivation it was observed that the farmers had a very good extent of adoption regarding field preparation, selection of suitable variety, time and method of sowing having a mean percent score (MPS) of 83.3, 79.2, 74.7 and 68.4 respectively. With regard to the use of wind breaks (65%), grading and marketing (59.0%), application of organic manure (60.3%), fruit harvesting (61.9%) and moisture management (50.4%) the farmers had moderate level of adoption whereas for seed treatment and plant protection measure the adoption was low. These adoption strategies boosted the farmers confidence. The enhanced water availability not only increased crop productivity but also farmers get confidence and they start experimenting new crop and varieties (Ranadae et al., 2018)

Table 1 Distribution of farmers according to their level of adoption (N= 120)

Adoption level	Frequency	MPS
Low adoption (up to 35)	24	20.00
Medium adoption (36-80)	71	59.17
High adoption (Above 80)	25	20.33

F=Frequency MPS=Mean per cent score



Table 2 Level of adoption of muskmelon production under conserved moisture conditions by the farmers (N=120)

S. No.	Package of practices	MPS	Rank	Adoption gap (%)
1	Field preparation	83.3	I	16.7
2	Selection of suitable varieties	79.2	II	20.8
3	Seed treatment	34.6	XII	65.4
4	Time of sowing	74.7	III	25.3
5	Method of sowing	68.4	IV	31.6
6	Use of wind breaks for preventing hot winds	65.0	V	35.0
7	Application of organic manure	60.3	VII	39.7
8	Weed management	57.5	IX	42.5
9	Irrigation management	50.4	X	49.6
10	Plant protection	39.0	XI	61.0
11	Fruit harvesting	61.9	VI	38.1
12	Grading and marketing	59.0	VIII	41.0

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Different steps in musk melon cultivation under conserved moisture

## Conclusion

Natural resource management is the key to sustainable agriculture. Drying beds of seasonal water reservoirs opens a new avenue to the farmers of arid zone as these practices has huge potential to overcome water shortage and meet out water requirements of crop efficiently besides, enhancing water use efficiency and yield of the crops under rainfed conditions. Hence There is need to promote and rectify these opportunities.

## References

Choudhary, A.K., Singh, A., Yadav, D.S. and Thakur, S.K. (2013). Paddy cultivation in terraced fields in hills – A traditional technique for sustainable soil and water conservation. Indian Farmers’ Digest, 46(1): 31–33.  
Ranade, D.H., Mujalde, Santosh and Swarup, Indu. (2018). Modified Traditional Water Harvesting System for Irrigation in Malwa and Nimar Region. Indian Journal of Dryland Agricultural Research and Development. 33. 86.  
10.5958/2231-6701.2018.00027.1.

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