Bandsar,
An Iranian Traditional Rainwater Harvesting for Dryland Agriculture

J. Tabatabaee Yazdi, PhD,
Agricultural Research, Education and Extension Organization, I.R. Iran
Tabatabaee_j@yahoo.com
What is Bandsar?
Bandsar components and How it works:
1: main stream, 2: Bandsar inlet, 3: Conveying channel, 4: Levee, 5, 7: subsidiary weir and wall, 6: End side weir
Types of Bandsar:

1- Harvesting water from one side

2- Harvesting water from two sides
Types (cont.):

3- Harvesting water directly from upstream catchment
Construction:

Earthmoving by hand tools to shape levees and channels
Operation:
Bands may be near or faraway from the main stream
Operation (cont.):
Field is plowed for maximum infiltration to happen
Operation (cont.):
Shelter to save farmers against cold weather and wildlife
Operation (Cont.):
Conveying channels are stabilized with local shrub
(Vitex pseudo – negundo)
Operation (Cont.):

reeve’s spacing and dimension is selected for most regular water distribution
Operation (Cont.):

Sediment transported into the Bandsar improves soil texture and fertility
Utilization:

Cereal and summer crops are main products
Utilization (cont.):

Other products are: Almond, cumin, peas and herbs
Utilization (cont.):
The weeds grown in bansar during drought period is used for animal feeding.
Destructive Factors:

Expanding irrigated agriculture
Destructive factors (Cont.):

- Sand mining along stream bed
- Road passing through bansar
Destructive factors (Cont.):
Life’s break down due to piping, erosion and overtopping
Destructive factores:

Changing river morphology
Maintenance:

Sediment removal and Levees’ heightening
Some of the experienced Bansar owners
Conclusion

• Easy implementation and maintenance compared to irrigated lands
• Higher productivity compare to rainfed agriculture
• Animal manures and crop residue carried into Bansar increase soil’s porosity and texture.
• Chemical fertilizer is not needed (It is reported that factors such as phosphate have been increased by 3 to 17 times in bansar)
Conclution (Cont.)

- No pressure on fragile groundwater resources.
- Applicable in a wide range of the country’s remote area (It allows those living in a desert environment adjacent to a mountain watershed to create a large oasis in an otherwise stark environment)
- Less water losses by evaporation and contamination along downstream marshlands and deserts.
- Rural employment (Labor and raw material can be collected from surrounding places)
Clip: Floodwater harvesting
Operation:
Water is trapped in the upstream side and excess water is directed into the next basin via levees’s end points.