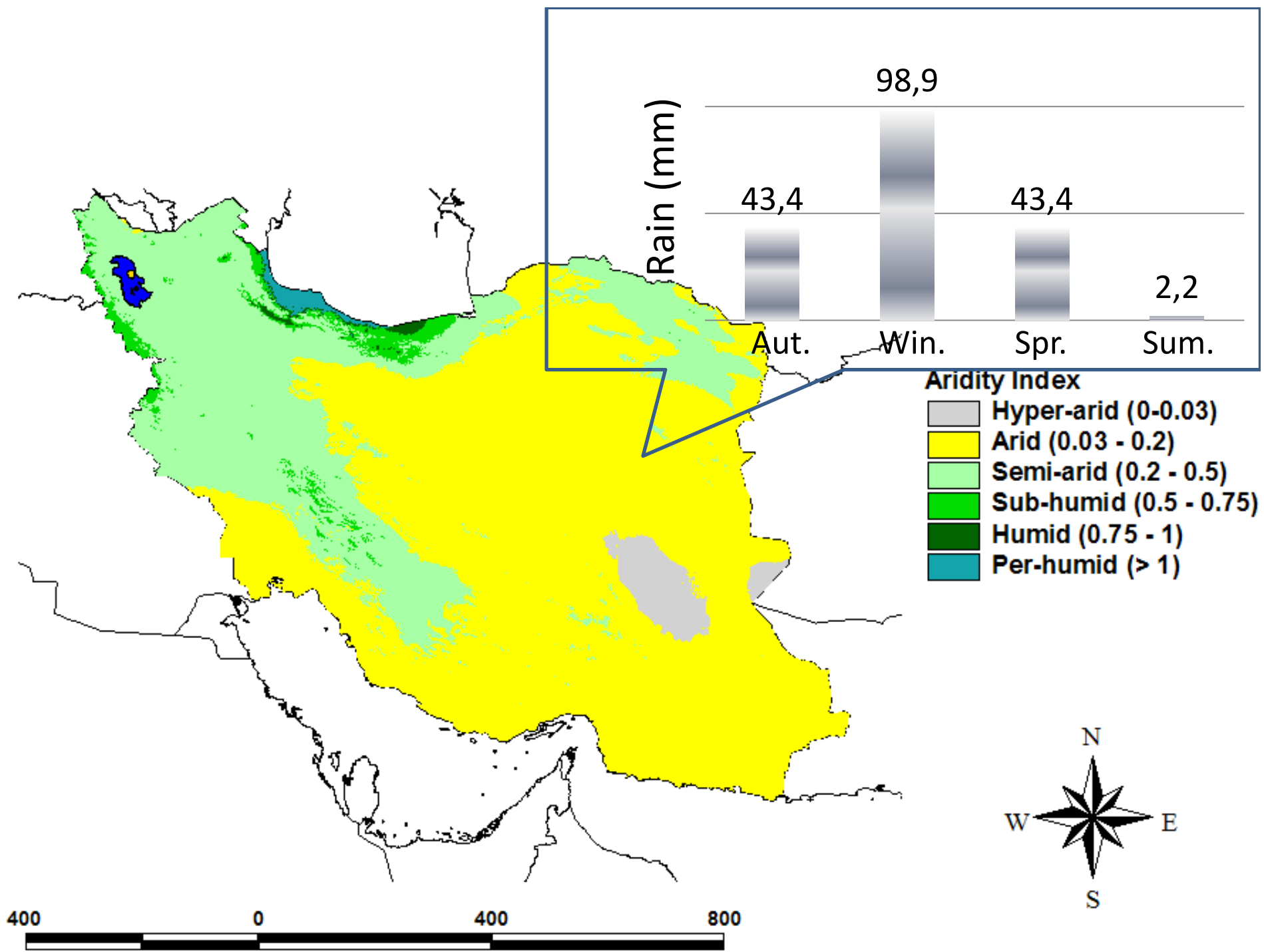


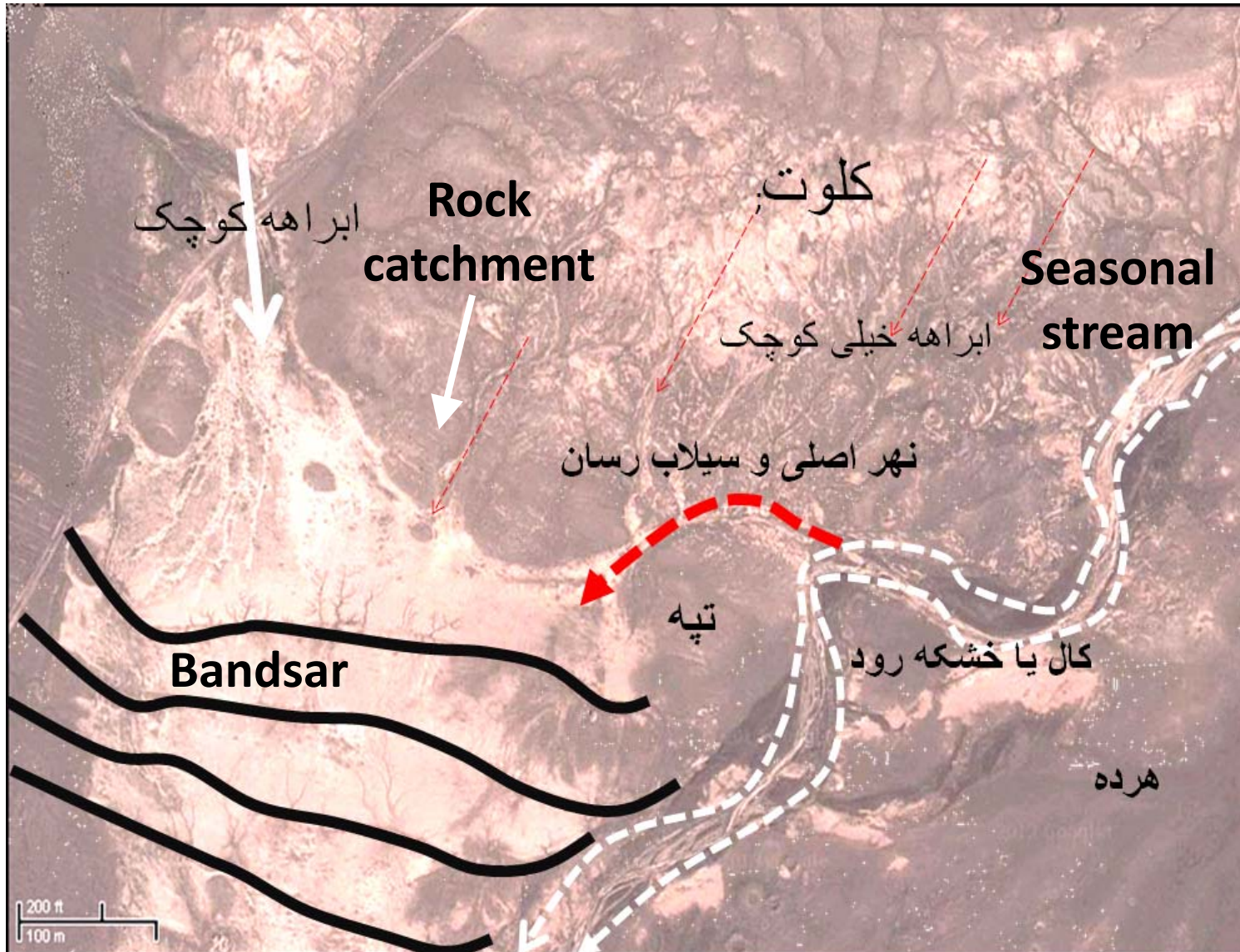
Small Water and Wastewater Systems
ATHENS, GREECE 14-16 Sep., 2016

**Bandsar,
An Iranian Traditional Rainwater Harvesting
for Dryland Agriculture**

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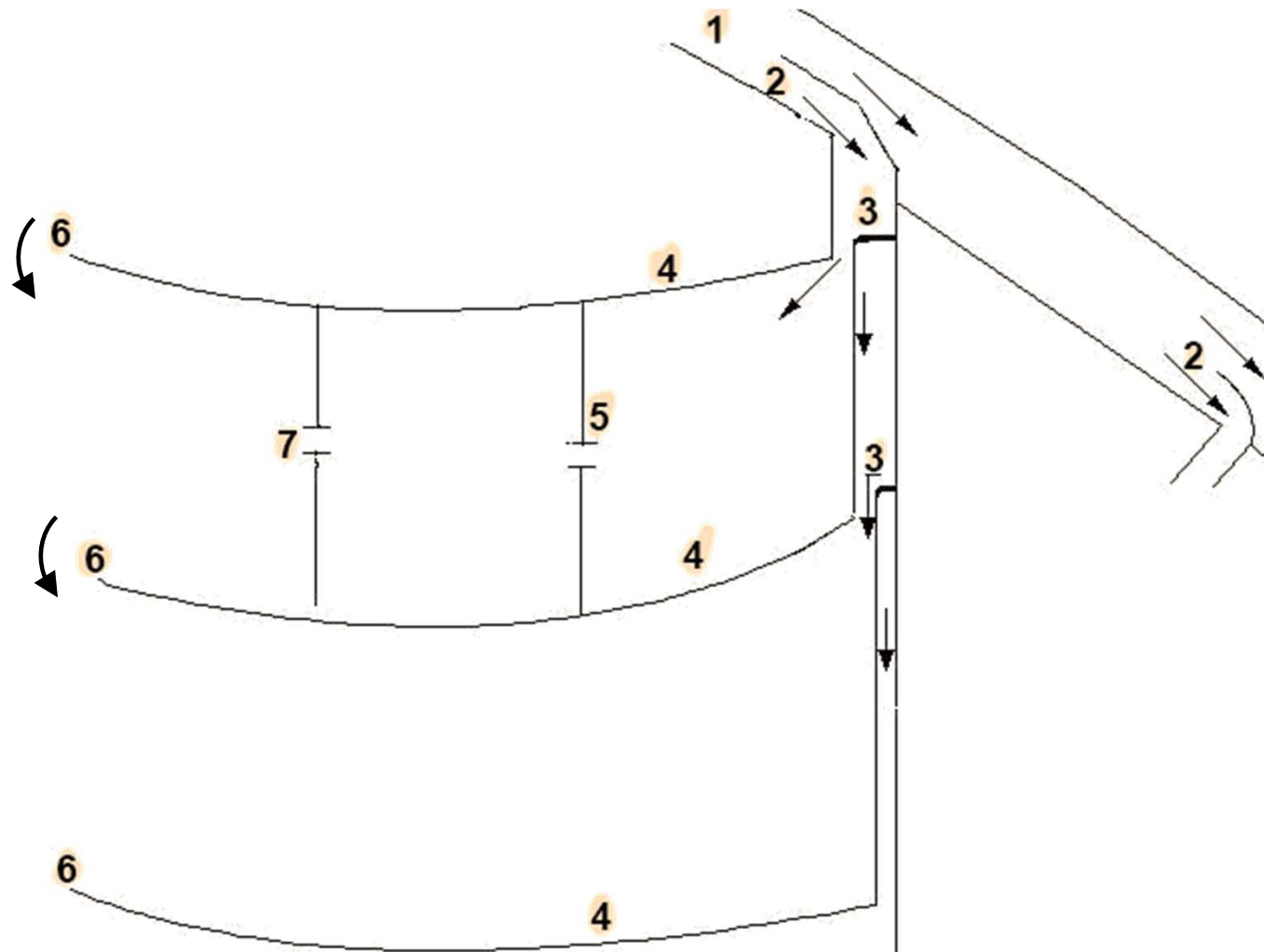


What is Bandsar?



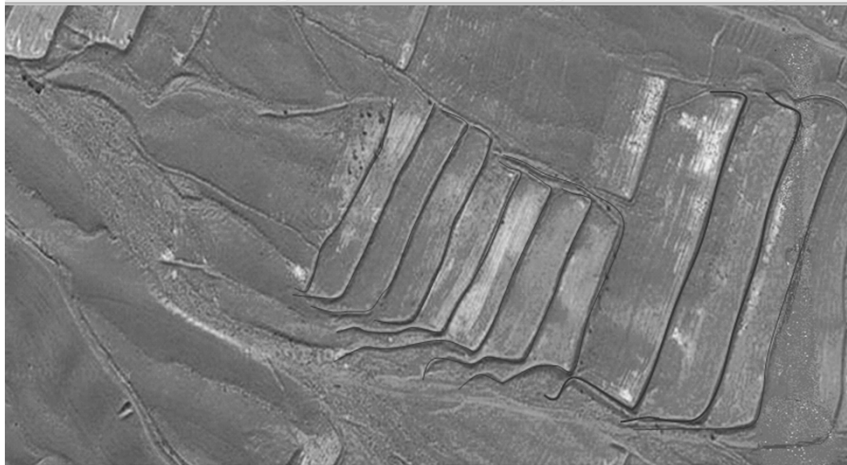
Bandsar components and How it works:

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

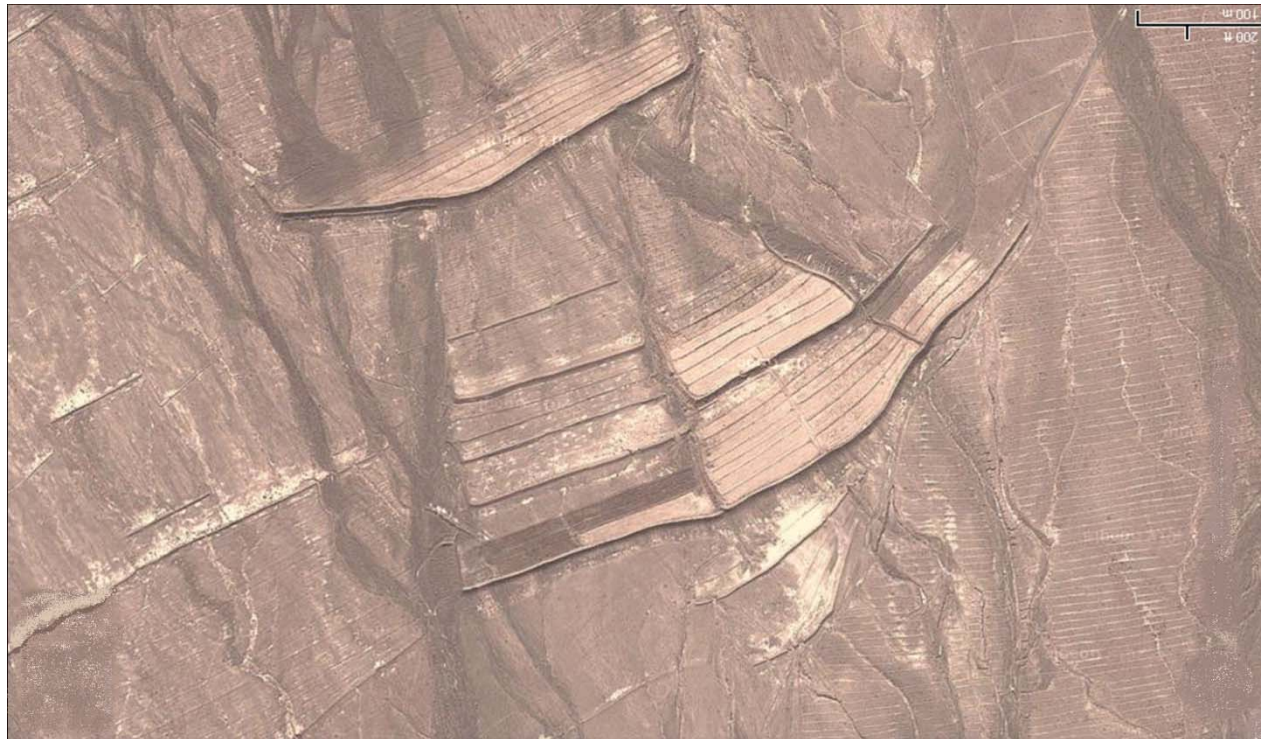


2- Harvesting water from two sides



Types (cont.):

3- Harvesting water directly from upstream catchment

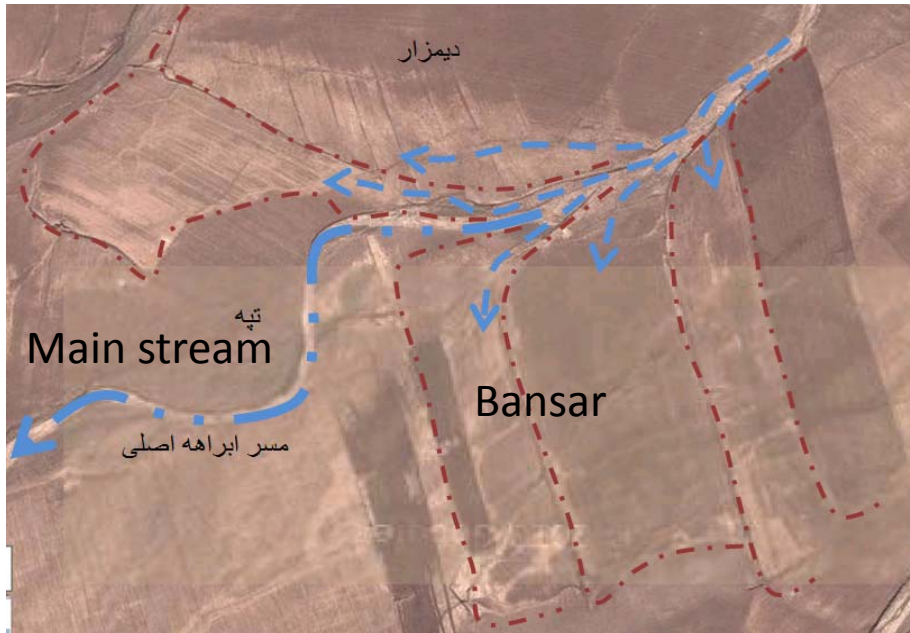


Construction:
Earthmoving by hand tools to shape levees and channels



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.):

levee'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.):

er 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

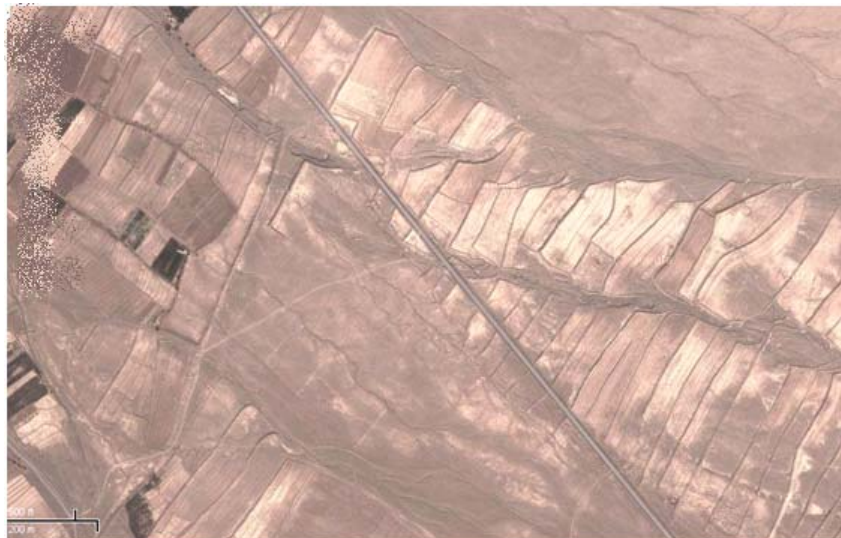


Destructive factors (Cont.):

and mining along stream
bed

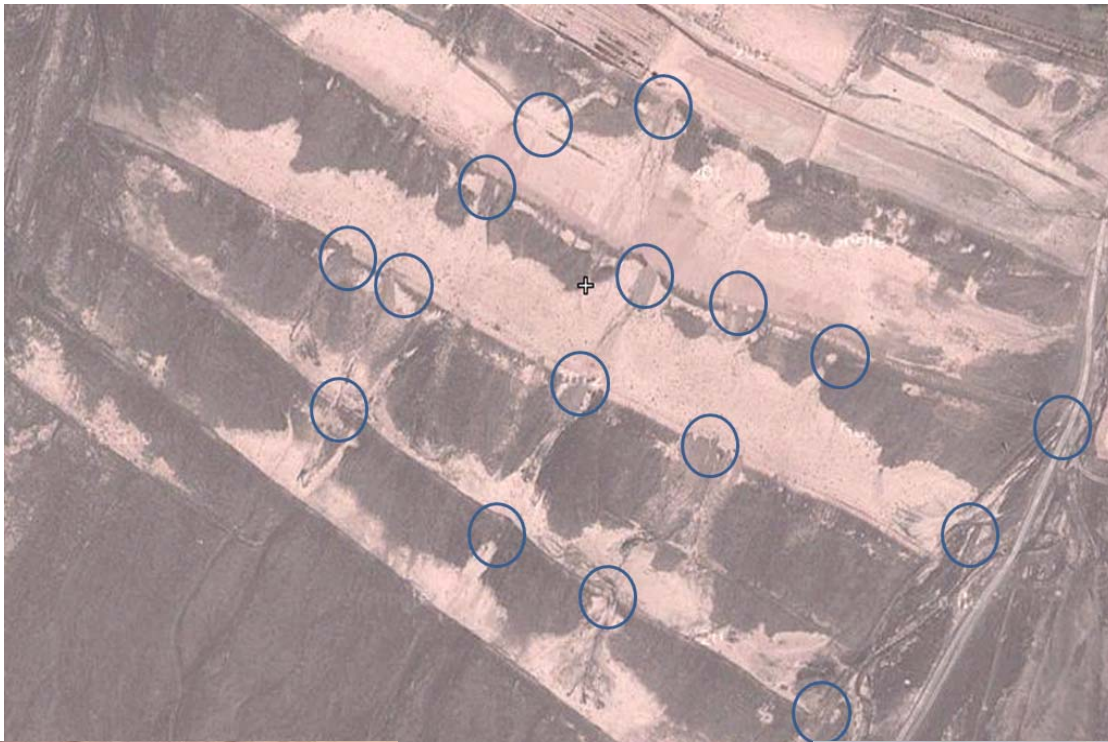


Road passing through
bansar



Destructive factors (Cont.):

e's break down due to piping, erosion and overtopping



Destructive factors:
Changing river morphology

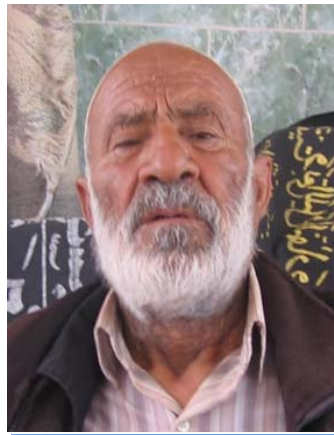


Maintenance:

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)

Conclusion (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

