

## Rainfall harvesting and management in water scarce regions

ICID WG Drought  
Adelaide June 2012  
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## Comparisons of four countries (data from ICID website)

	Australia	Iran	Taiwan	USA
Total geographical area (Mha)	774.1	164.8	3.6	962.9
Arable and perm. Crop area (% total area)	5.7%	11.3%	23.1%	18.0%
Irrigated area (% total area)	0.3%	5.5%	10.6%	2.9%
Population (mill) 2010	22.4	75.1	23.2	310.0
Cereal prod <sup>n</sup> (MT) 2009	34.9	20.8	1.3	419.8

## Climate and rainfall

### Australia

- Very variable rainfall and stream flows
- Mostly arid, but some tropical and some temperate areas

### Iran

- Similar to Australia without tropical area
- Very water short – no catchments exceed 420 mm average rainfall
- Flash floods recharge groundwater

### Taiwan

- Sub-tropical island
- High rainfall but scattered and uneven
- Recent severe droughts and floods

### USA

- Big variation in climate
- Includes mountainous, prairie and rolling hills
- Reasonably well watered in most parts

## Methods to maximise effective rainfall

### Australia

- Move stock to available feed
- Fallowing
- Improved plant varieties
- Perennial to annual pasture irrigated pasture
- Irrigation of root zone only
- Better weather forecasting
- Lining irrigation canals or replacing with pipelines
- "Total channel control" in gravity irrigation areas

## Methods to maximise effective rainfall

### Iran

- Supplement surface water with groundwater in dry periods
- Make use of flash floods for opportunistic irrigation
- Cropping using soil moisture following floods
- Improved methods of forecasting precipitation
- Annual operating programs prioritising supplies as necessary
- Water loss reduction projects
- Public information programs
- Cloud harvesting
- Satellite monitoring of snowpack to improve utilisation
- Earlier planting of rice to avoid high summer season
- Using water from swamps and marshes

## Methods to maximise effective rainfall

### Taiwan

- Plan for an average annual probability of water shortage of 20 – 25%
- Formal drought management plan
- Fallowing

## Methods to maximise effective rainfall

### USA

- Better weather forecasting to determine irrigation needs
- Increase water holding capacity of soils
- Move stock to available feed
- Fallowing
- Increase infiltration rates through improved tillage methods
- Loosen compacted soils to increase root penetration
- Eliminating chemical barriers to growth – e.g. pH correction
- Taking advantage of crop water needs at various stages of growth
- Improved delivery and use of irrigation water to maximise conjunctive use of precipitation and irrigation water

## New practices and experiences - Cloud seeding and cloud/fog trapping

### Australia

- Practices cloud seeding. No experience of cloud/fog trapping

### Iran

- Practices "cloud harvesting" Is this cloud seeding, cloud fog / trapping or both?

### Taiwan

- No?

### USA

- Practices cloud seeding. No experience of cloud/fog trapping?

- **Note** – it is likely that fog trapping is rarely practiced. The only example known at present is Peru,

## The way forward?

- We need more country experiences
- Suggest Theme Leader distributes a spreadsheet asking for comments along the lines of the topics shown in this presentation
- Who can commit to providing comment prior to meeting next year in Turkey?