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Agricultural water management for food security: more than modernization

Enhancing skills and attitudes of government officials and farmers

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Introduction

Improving agricultural water management for food security requires:

- Modernisation of irrigation infrastructure – on-farm and off-farm
- Maintenance of irrigation infrastructure
- Improved irrigation management skills
- Economic viability

Introduction

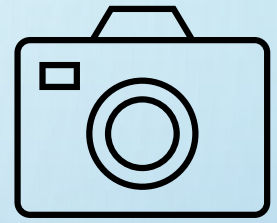
- Keep the end goal in mind: producing more food
- Plants need water – irrigation is simply the means of getting it there
- Pathway: water source → **conduit** → **outlets/emitters** → soil → roots → plants
- Poor infrastructure results in poor irrigation performance
- Poor management of good infrastructure results in poor irrigation performance
- Compromised economic viability results in less farmers producing food

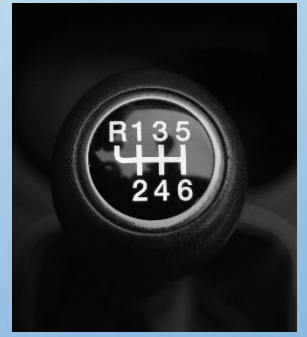
Introduction

- Efficient and effective irrigation requires:
  - Good ***planning*** – soils, topography, climate, crops
  - Good ***design*** – by qualified, experienced people
  - Good ***installation/construction*** – by qualified, experienced people
  - Good ***management*** – especially the timing and amount of irrigation applied, and proper maintenance

Government attitudes

- Australian government officials like to fund projects that are **physical and tangible** – provide good photo opportunities
- They are less likely to fund improvement in **skills and knowledge**
  - Funding the first without the second is like providing a high-performance motor car without providing the necessary training for the driver
- Australian governments are inclined to fund an issue once and consider it dealt with – irrigation is ongoing

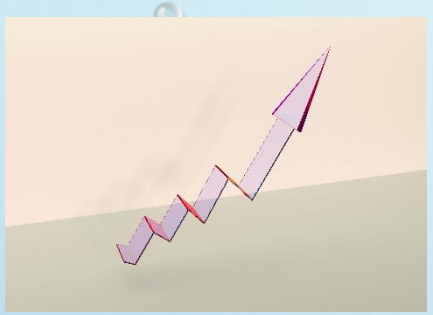




Farmer attitudes

- Farmers are very enthusiastic and focussed on whatever they are producing e.g.:
  - Grain crops – plant variety, fertilisers, pest control, etc.
  - Dairy – animal health, feed rations, pasture quality, etc.
  - Fodder crops – plant variety, feed value, machinery, baling/conservation activities, pest control, etc.
- Irrigation often viewed as secondary – hence not so much focus
- Ignoring irrigation may cost much in yield loss, increased operating costs, down time

How to improve government attitudes?



- Government priorities should strongly focus on **outcomes** – **irrigation productivity** – not outputs or short-term political gain
- Funding for irrigation should be more comprehensive – recognise the **importance of skills and knowledge** for better water management
  - Infrastructure might last for several life-times
  - But knowledge and skills need to be taught to new participants
  - Knowledge and skills also need updating as new information arises
- Government officials gain insight by visiting irrigation farm enterprises – don’t stay in the office

How to improve farmer attitudes?

- Highlight how modernised infrastructure and improved irrigation management **benefits them**:
  - Less wasted water
  - Reduced labour time
  - Reduced operating costs (usually)
  - Increased yield → Increased profit
- Irrigation is a vital component that should be **maintained well** (like their tractor, etc.)
- Impress on them that they are managing a **critical natural resource**
- Consider paying them for good stewardship of water – 'public good'

How to improve farmer attitudes?

- Provide **incentive funds** for on-farm infrastructure improvement – but **conditional** on farmers completing irrigation training courses
- Focus of govt initiatives should be **improved profit** which results from better irrigation infrastructure and improved management

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Successful govt programs in Australia

WaterWise on the Farm:

- Incentive funds for on-farm infrastructure improvement
- Funds for planning by professionals
- These funds were conditional on farmers completing a free 4-day irrigation training course
- Very successful

Sustaining the Basin:

- Incentive funds for improved on-farm infrastructure – in exchange for surrendering some water entitlement to Environmental Water Holder
- Funds for planning by professionals
- Free voluntary irrigation training available
- Moderately successful

Successful govt programs in Australia

Smarter Irrigation for Profit:

- Research funded in three areas:
  - Developing **new irrigation technologies** e.g. new sensors, advanced analytics for irrigation scheduling, strategies to reduce storage evaporation
  - Cost-effective, practical, **automated irrigation systems**
  - Establish 36 **farmer-led irrigation demonstration sites** on commercial farms

- Average water productivity increase: 18%

Private training courses in Australia

Irrigation Australia – funded privately (e.g. by student, employer, farmer associations)

Short courses:

- **Water Meter Installation & Validation**
- Irrigation Efficiency
- Irrigation Pumps & Systems
- Electrofusion & Butt Welding
- **Irrigation Systems Auditor**
- Irrigation Installer
- Basics in Drip Irrigation
- **Centre Pivot & Lateral Move Systems**

Qualifications:

- Certificate III in Irrigation

Collaboration

- Collaboration between government and farmers is ***essential***
- Partnerships that allow knowledge exchange can lead to solutions tailored to local conditions
  - Participatory approaches involving farmers help to ensure policies are practical and relevant
  - Collaboration builds a sense of ownership and responsibility among all stakeholders