

How Does Ag Use Water?

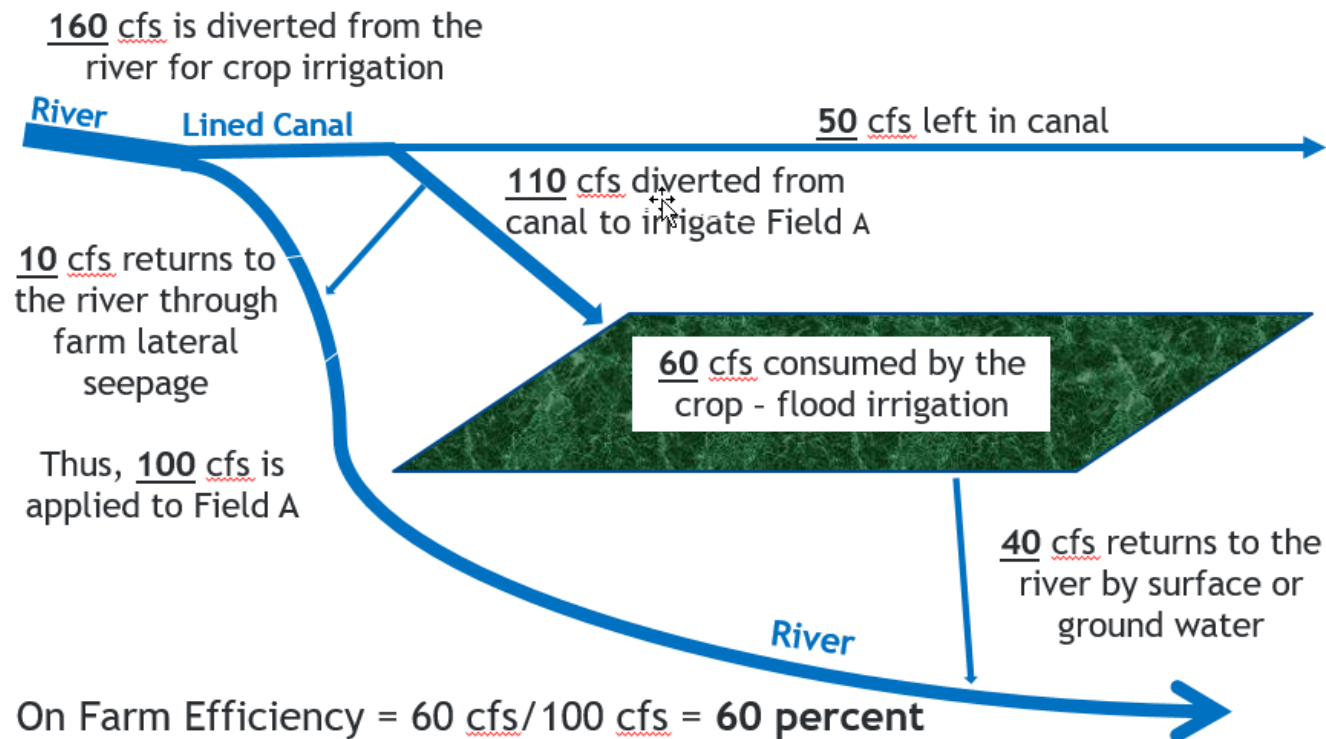
Irrigation methods:



How Does Ag Use Water?

Explanation of Efficiency

First consider Field A...



Source: Adapted from Colorado Division of Water Resources graphic.



Conservation vs. Efficiency?

Conservation: results in reduced consumptive use.

Efficiency: is the ratio of the amount of water consumed (by the crop) versus the amount of water diverted.

Example 1:

100 AF applied on field, 60 AF used by the crop = __ % efficiency?

Example 2:

80 AF applied on field, 60 AF used by the crop = __ % efficiency?

Questions (for irrigation water rights):

- Is field runoff water part of consumptive use (CU)?
- Is deep percolation past the root zone part of CU?
- Is plant transpiration part of CU?
- Is evaporation from the field surface part of CU?

Water Rights: based on how much water we put to beneficial use.

Beneficial use: based on Consumptive Use (CU)

Consumptive Use: (Irrigation right) = crop ET (+ transit water)

Irrigation Efficiency by method:

Table 1: Typical application efficiencies of irrigation systems.

Type	Percent
Micro sprinklers and drip	85-95
Low pressure center pivots	80-90
High pressure center pivots	75-85
Side roll/hand move sprinklers	60-70
Flood irrigation	20-50
Border irrigation	40-60
Furrow no cutback	40-60
Furrow with cutback	60-80
Furrow with surge	70-90

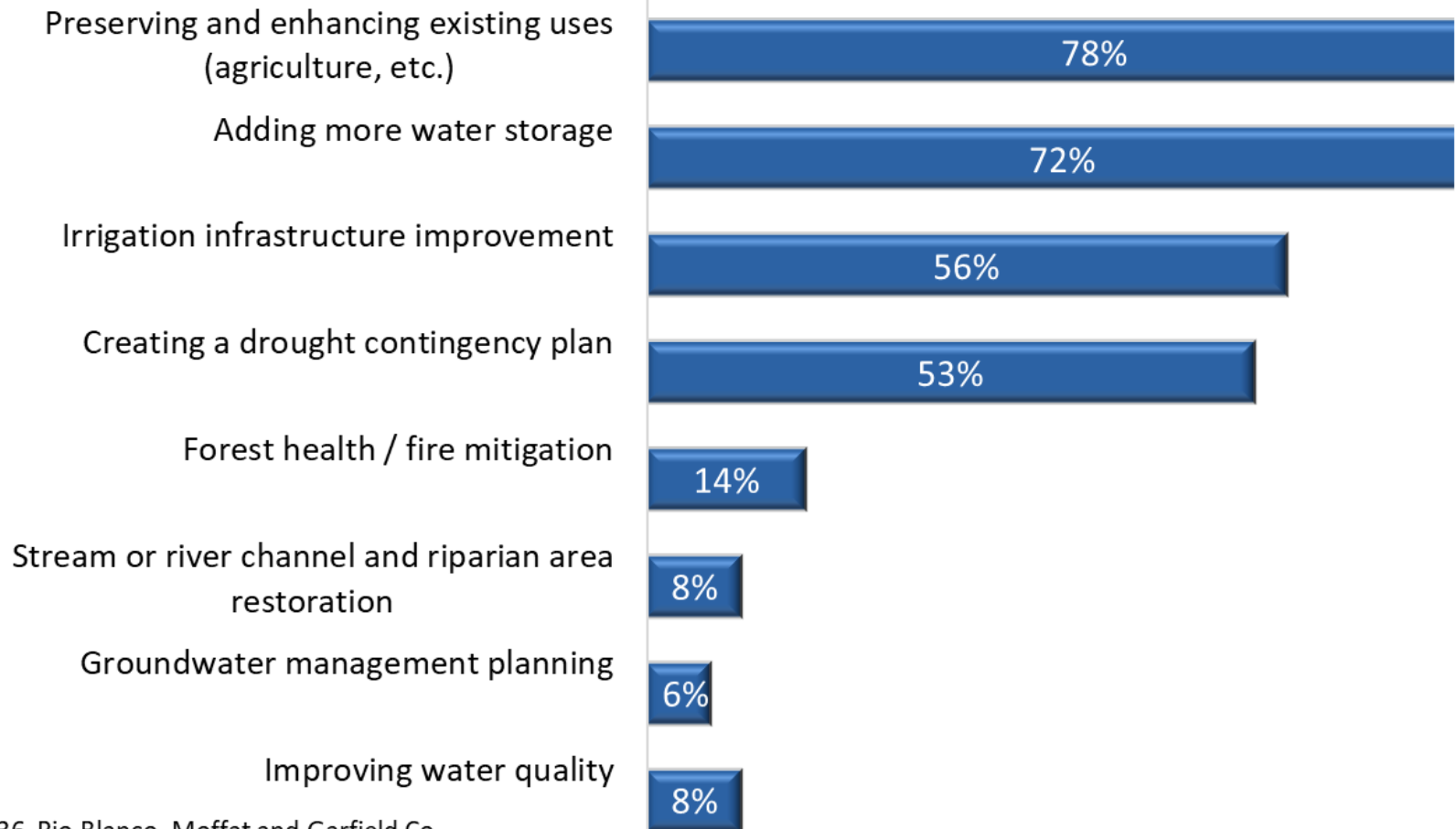
Water Stakeholders:

What's important to each group?



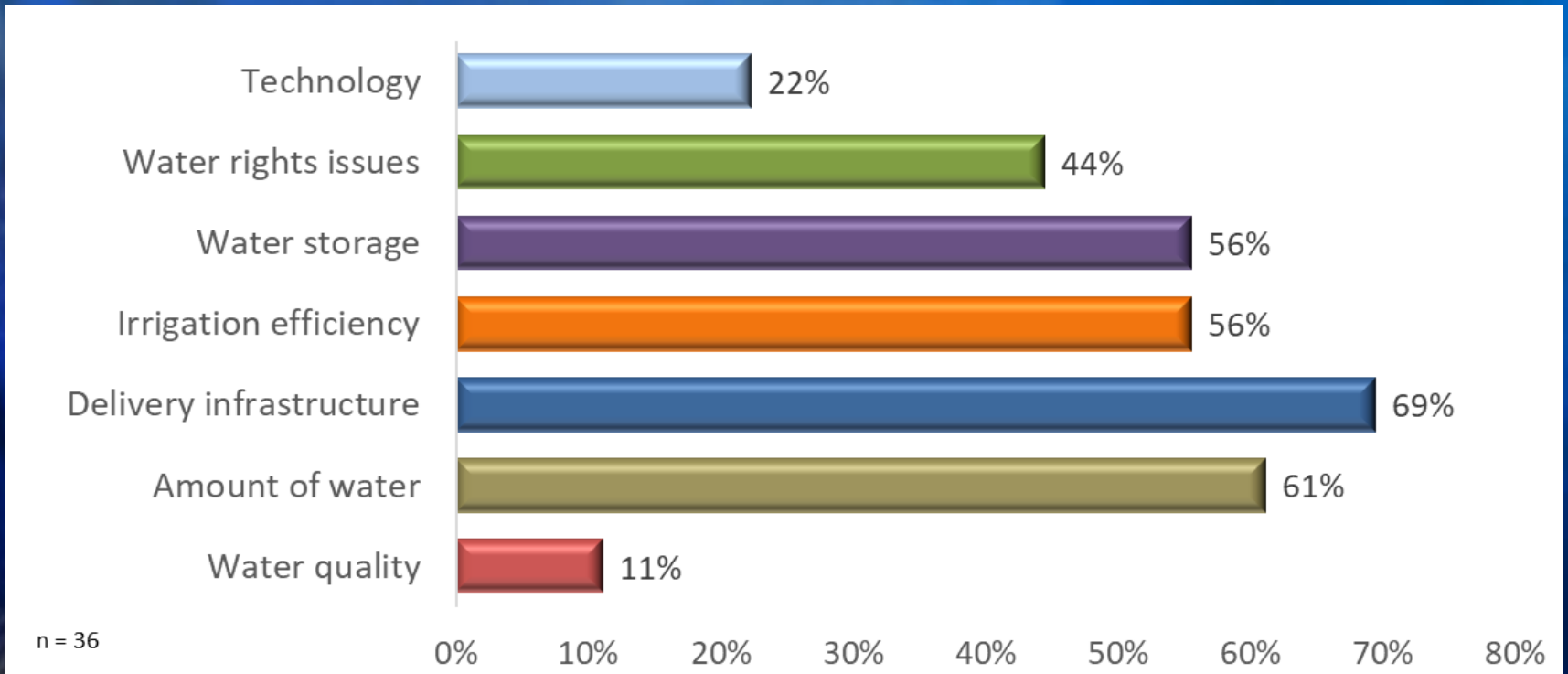
2019 Ag producer survey:

What should the Priorities of a Watershed Management Plan be in your area?



n = 36 Rio Blanco, Moffat and Garfield Co.

What water-related Challenge(s) would you most like to improve upon?



Environmental & Recreation water needs:

Functional, resilient streams, rivers and lakes capable of supporting uses (aquatic life, recreation)

Important issues for Env. & Rec. stakeholders:

- **Flow volume** adequate to support uses (low flow & dry up pts)
 - Yampa in Steamboat: Exceedances of cold-water aquatic life standards due to low flows
 - 2005 Recreational In-channel Diversion right: 4/15 – 8/15
 - 2013: released 4,000 AF of water from Stagecoach Res. for in-channel flow support using C.R.S. 37-83-105.
 - Supports recreation and helps city comply with discharge permit.

Bottom Line: In-stream flows are often the single most important thing to Env. & Rec.



Environmental & Recreation water needs (continued):

Important issues for Env. & Rec. stakeholders:

- Water quality (temperature, DO, sediment, pH, metals, bacteria, pollutants)
- Stream system functions well and is connected.
- Improving recreational economic development opportunities.
- Limiting development near streams / in floodplains
- Wildlife habitat protection / improvement
- Healthy forests
- Access



Municipal and Industrial Interests:

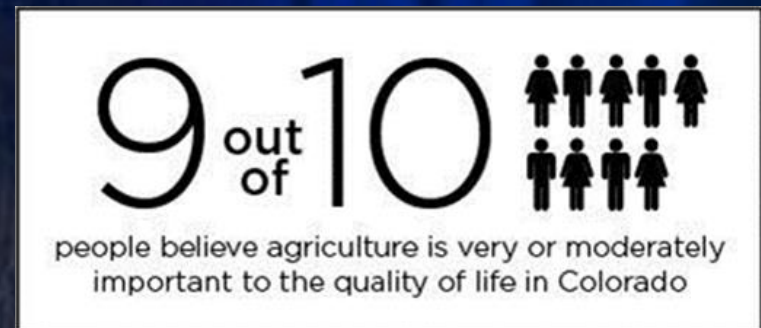
- Reliable supply (Senior water rights)
- Water quality (drinking, recreation, industrial processes)
- Multiple sources (watersheds, storage – surface & groundwater)
- Permit compliance: treated wastewater discharges, stormwater



Potential Areas of Common Interest: Ag, Rec, Environmental and M & I:

- Assessment of stream conditions and flow regimes
 - influence of irrigation return flows
- Forest health assessment & fire mitigation
- Removing Phreatophytes / non-native veg. from riparian areas.
- Stream restoration
- Diversion structure improvement that benefits other use(s)
- Water quality

Interesting Fact:



(source: 2016 CDA survey)

Other Potential Common Interests?

- Storage
- ATMs (ag water leasing to other uses)
- Fixing failing augmentation plans
- Irrigation efficiency upgrades
- Irrigation flow control and measurement upgrades
- Agro-tourism?
- Others?



Thoughts?

