



Improving Productivity of Gash Agricultural Scheme through better farming practices.

Amel Ahmed Ali

Out line

- ❑ Background.
- ❑ Problem statement.
- ❑ Vision.
- ❑ Research question.
- ❑ Field works.
- ❑ Result.
- ❑ Conclusions.
- ❑ Acknowledgment.

Background

- ❑ Some **75%** of the world's poorest people live in rural areas, and for them, water mean the difference between life and death.
- ❑ Spate irrigation was the oldest water manegment system, existed for 50 - 70 centuries.
- ❑ Livelihood for 13 million in over 20 countries.
- ❑ The system is eligible to semi arid and arid areas.

Con... Background

- ❑ In Sudan some 146 200 ha is under spate irrigation in the Gash and Tokkar delta.
- ❑ During the rainy period, the water flow drawn off into canals and spread over the land forming a very fertile delta area, highly suitable for crop production and easily workable.
- ❑ Big limiting factor is the availability of the water, thereby it depends on the seasonal recharge of the Gash River.

Big issues

❑ Conflicts and poor or erratic rainfall caused widespread low crop production by 50% of 2010's harvest (FAO, 2012). Rising cereal prices further pushed basic food stuffs beyond the reach of the poor households

This implies very efficient use
of water resources

which is locally known as Ariamni, which is a low yielding variety and CWR is less than the capacity of the irrigation system by 50%.

❑ Water demand by 2027 was 52.6 bcm, according to MOIWR.

The **vision** of this research is to improve livelihood of the local communities in GAS through better farming practices.



Existing system

Disc plough



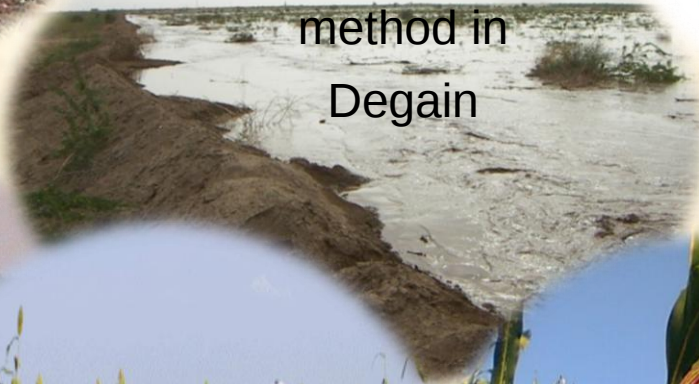
Pre irrigation



Ridge



Irrigation
method in
Degain



Sowing



Crops



Harvesting



Field work

❑ Two months of field work were done throughout the Gash project started in November 2011.

- total area
- irrigable area
- farmers
- area for each farmer
- irrigation efficiency
- land use
- soils and crop types, varieties, ...etc

❑ Climatic data were collected from Kassala Station, River Floods behavior, by Gash Training management and Irrigation diversion.

❑ Visits: Elgira gauge station, IFAD office .GAS and ARC to pull together their works and plans.

Gravimetric soil sampling

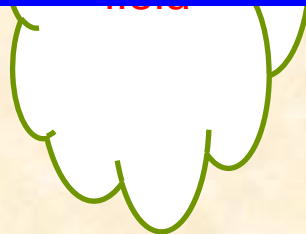


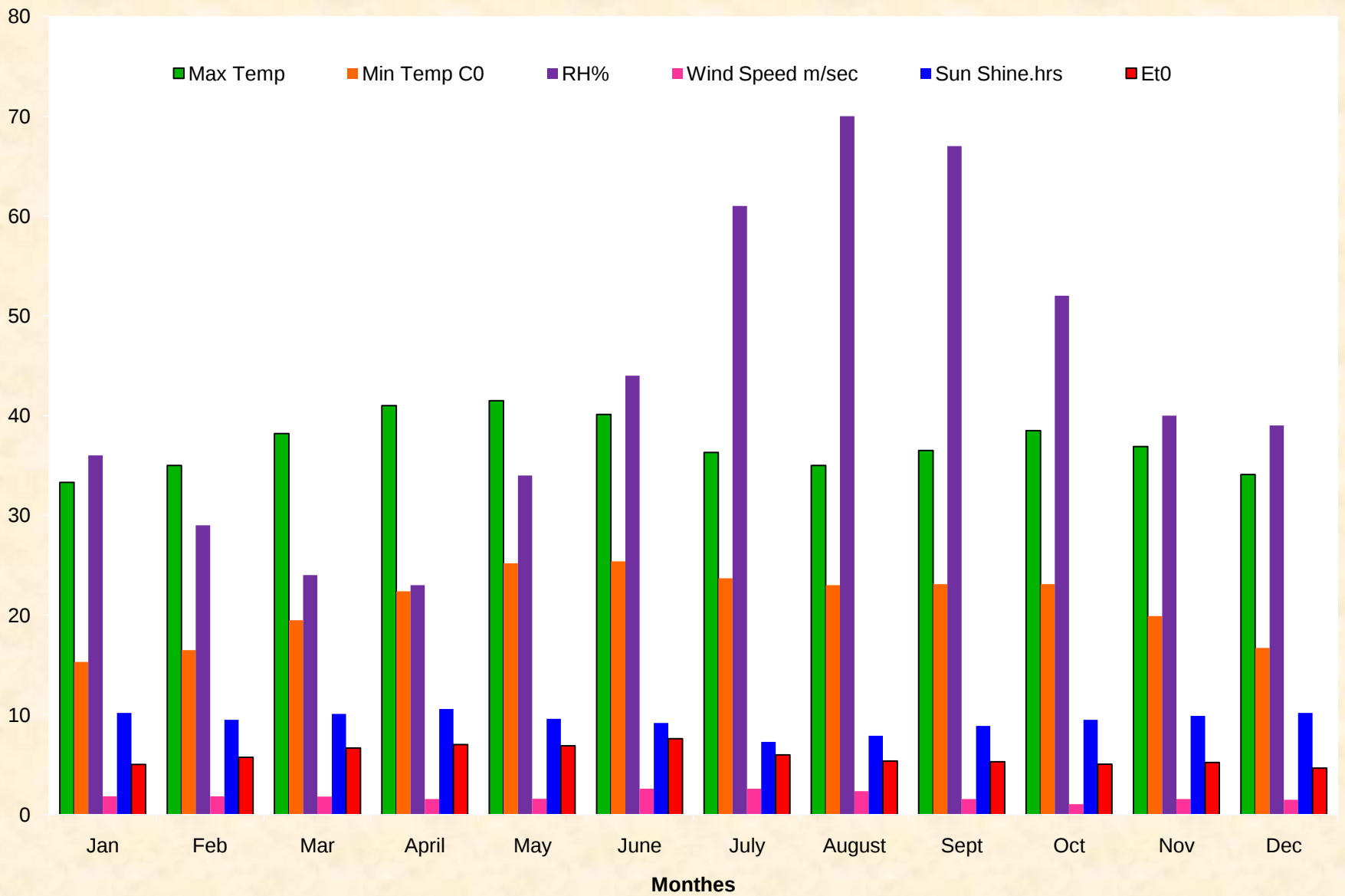
ARC Recommendations

- ❑ Scarifying machine is a field cultivator and single-acting disc harrowing was recommended by (Khalid, 2008) in Gash Delta.
- ❑ Since 2005 up to now numerous crop types and varieties were recommended for production in Gash Delta like (Cotton, Sorghum, Hibiscus, Sunflower, Groundnut, Maize, Sesame, Watermelon and Guar).
- ❑ Crop technical packages such as (land preparation, sowing date, seed rate and harvesting methods) to maintain high productivity in Gash Delta was also recommended.

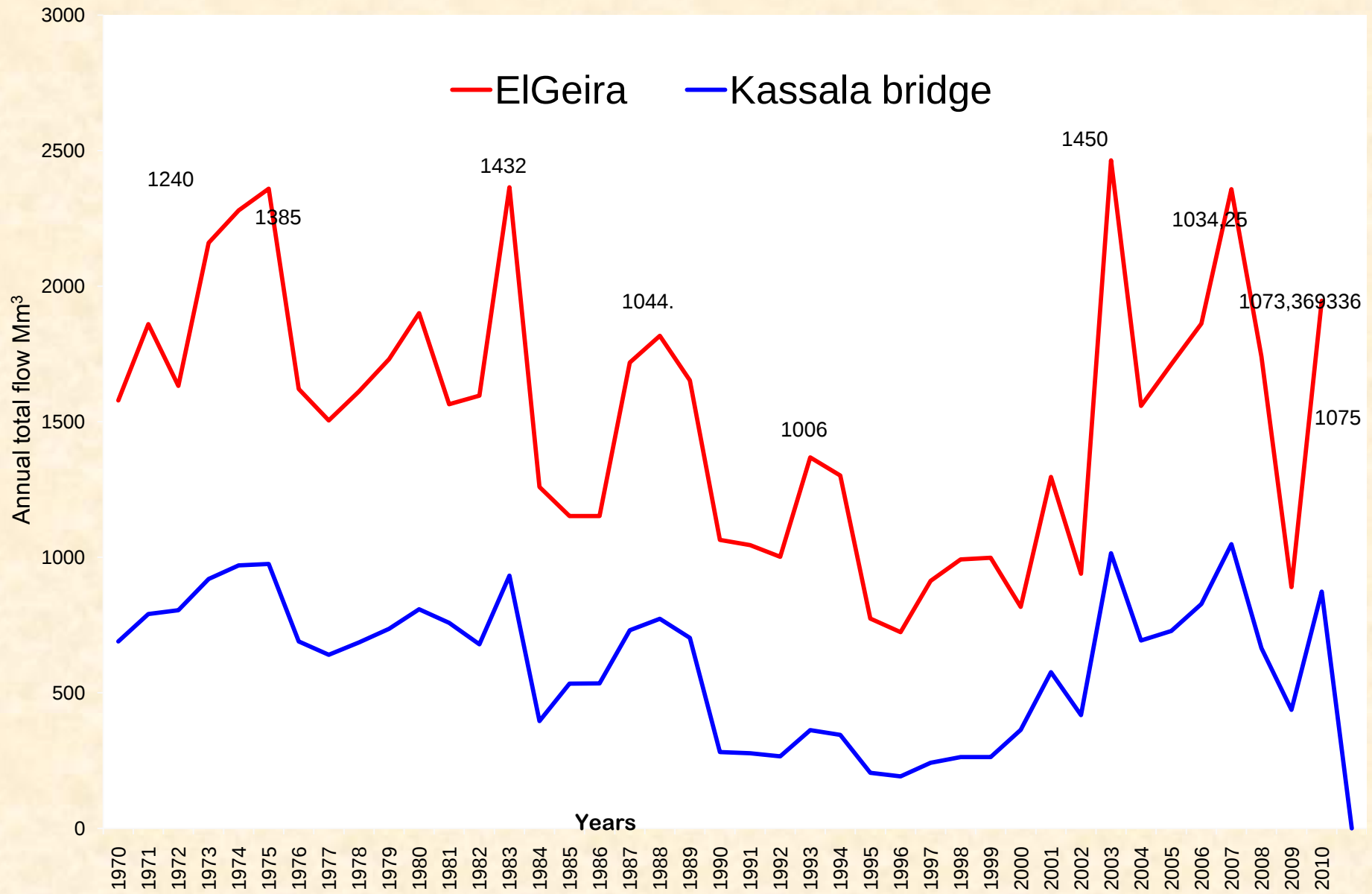


RESULTS

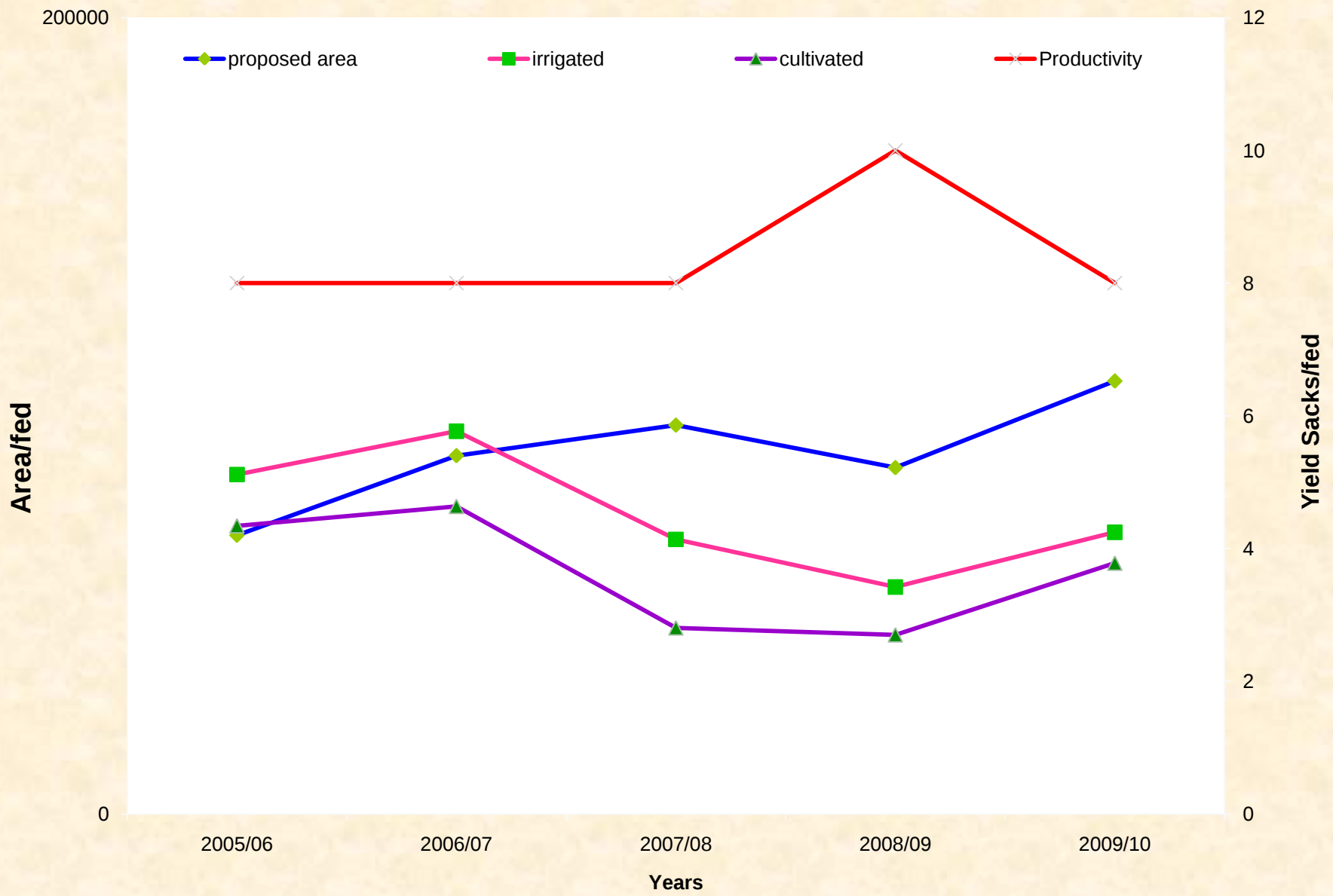




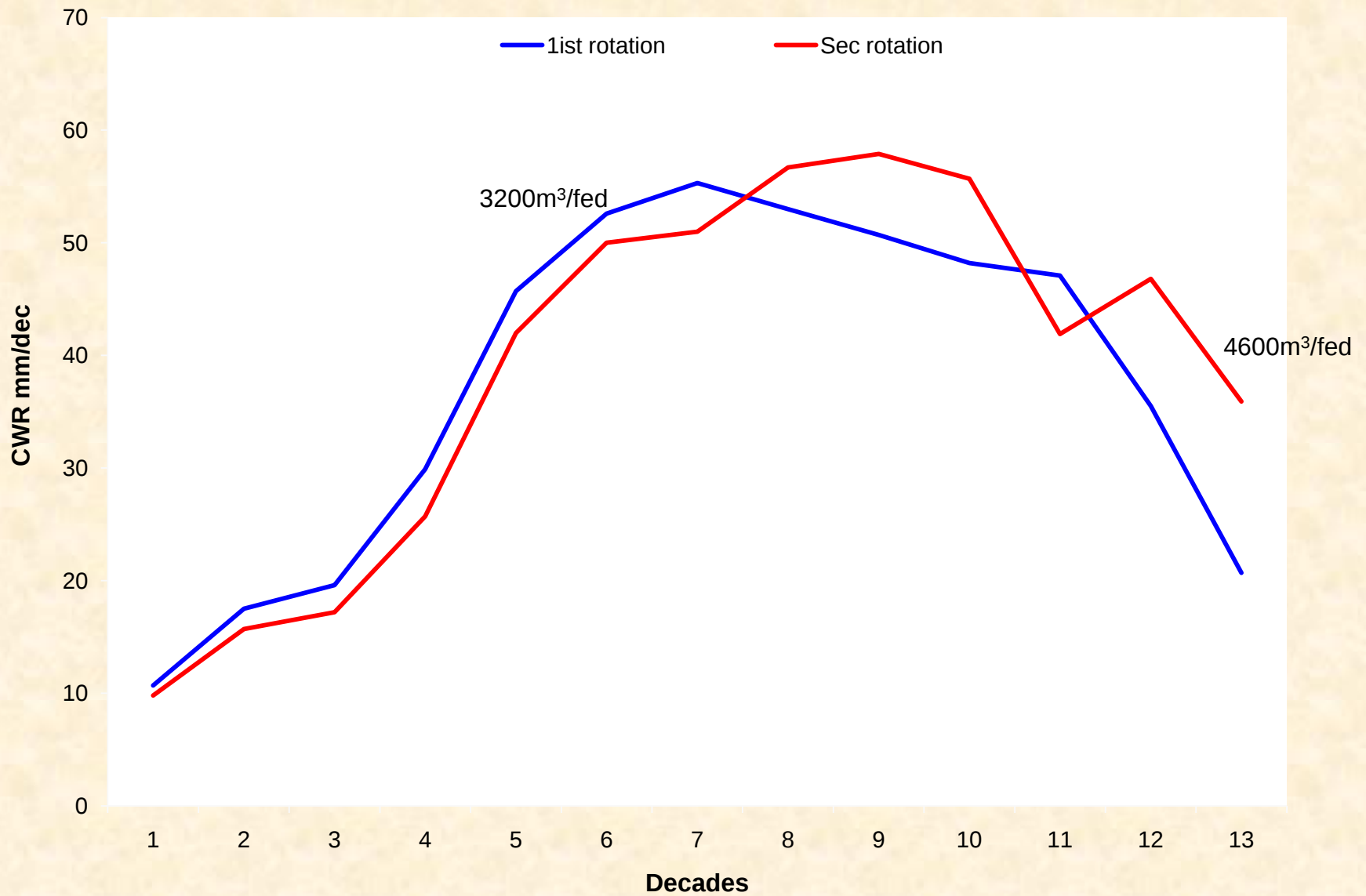
METROLOGICAL DATA



FLOODS BEHAVIOUR

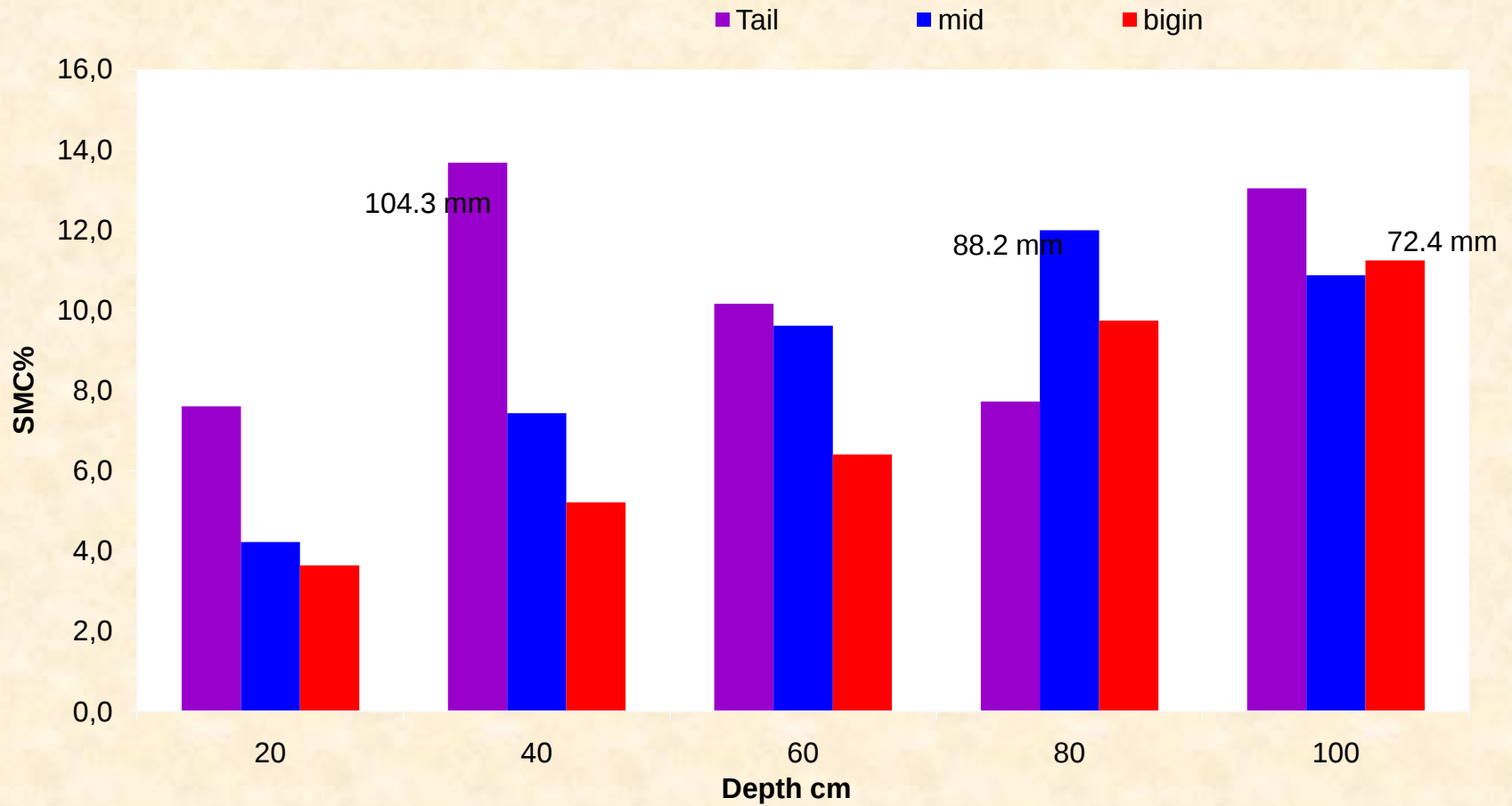


PRODUCTIVITY

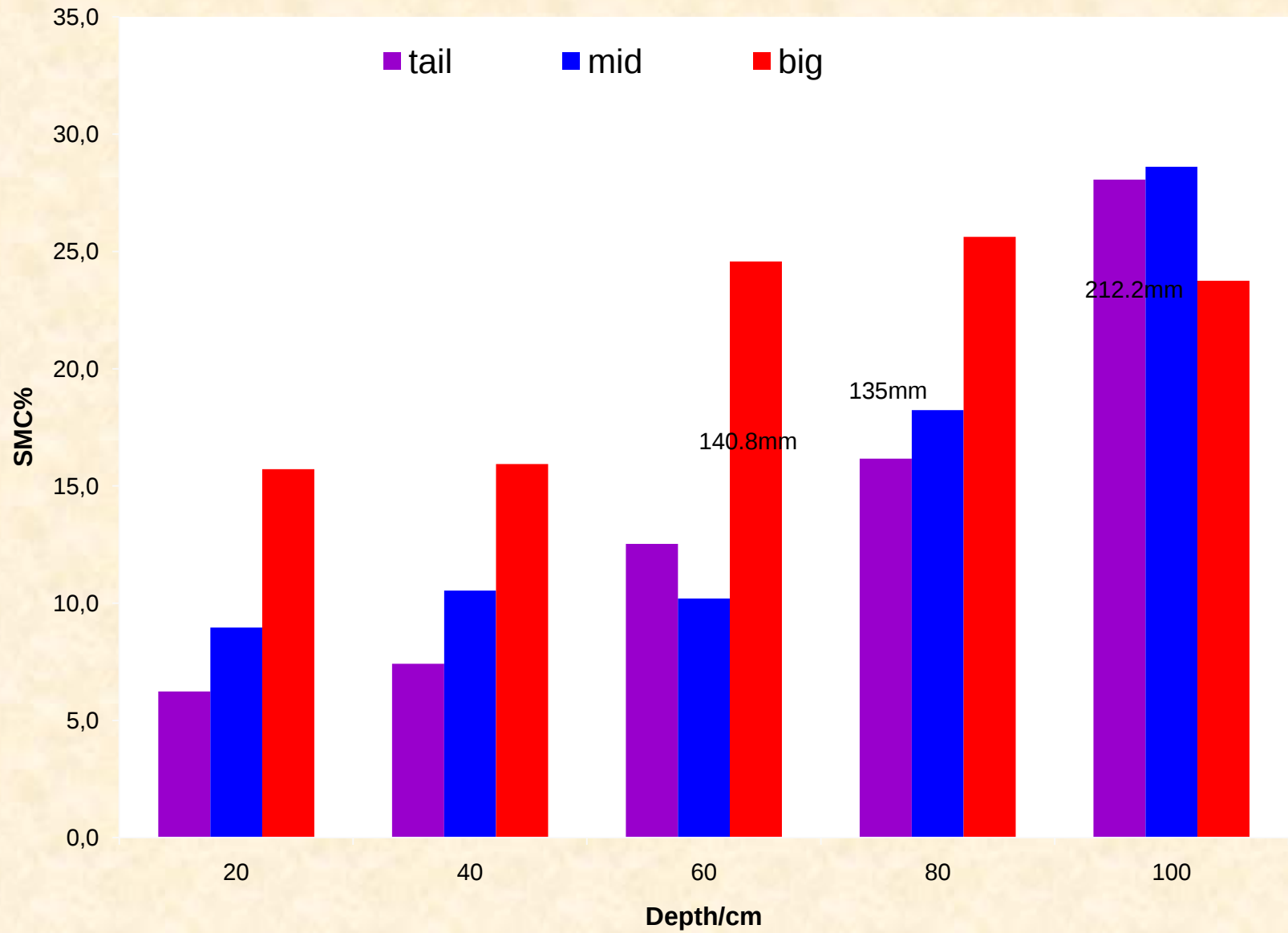


Crop Water Requirements

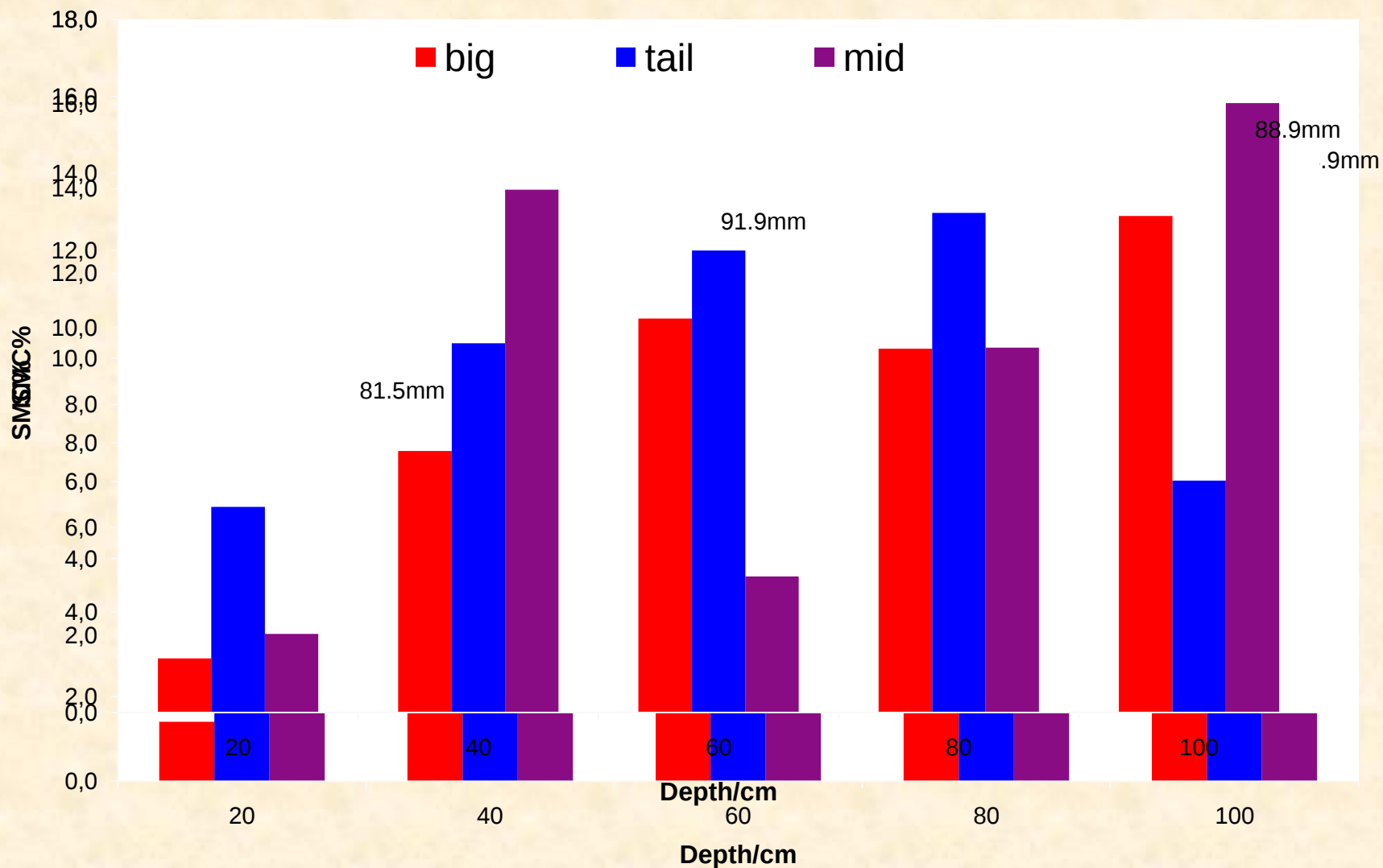
Gravimetric Soil Moisture Content %



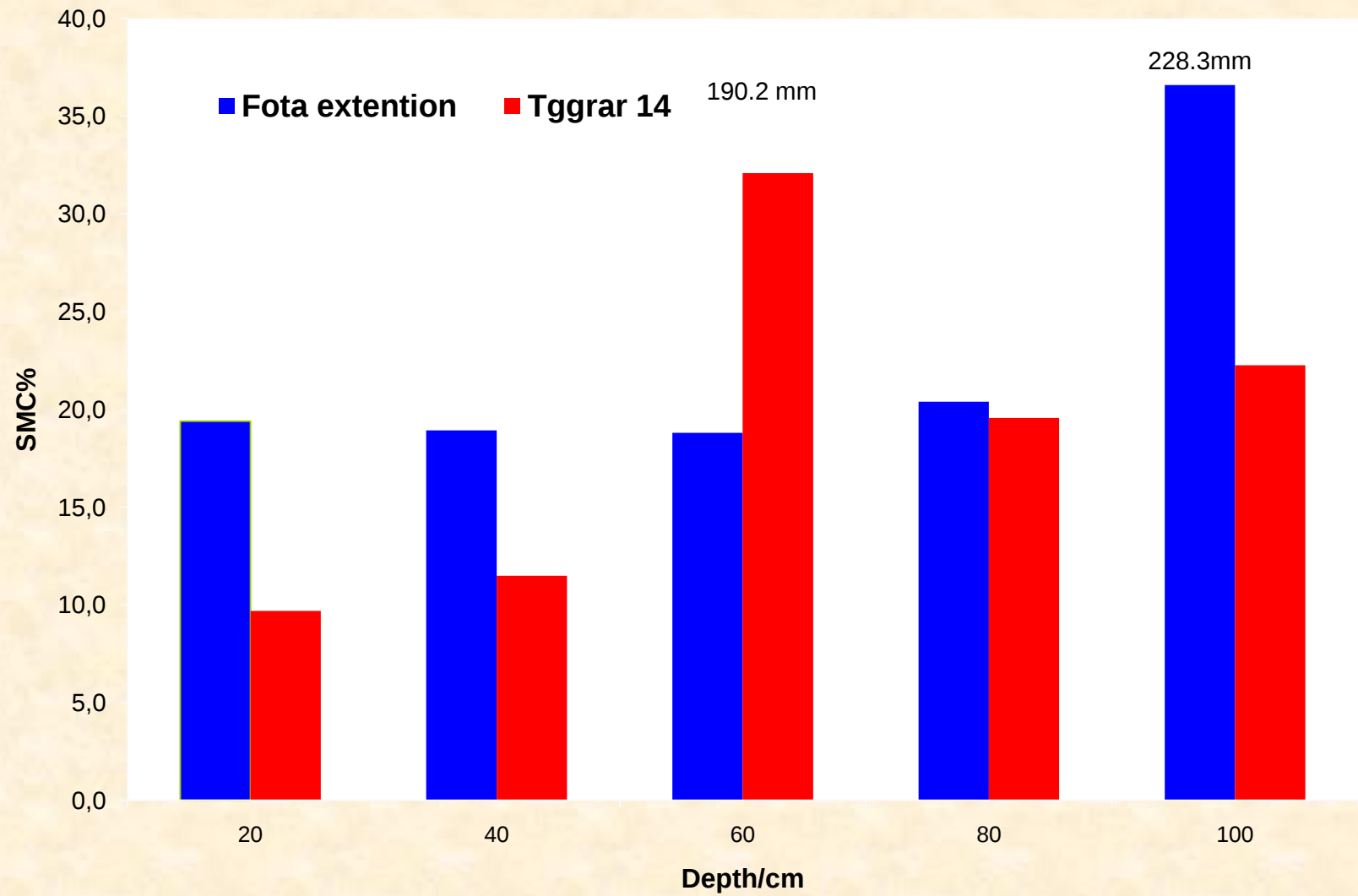
Ksr Rpakasa



Rpakasa 3

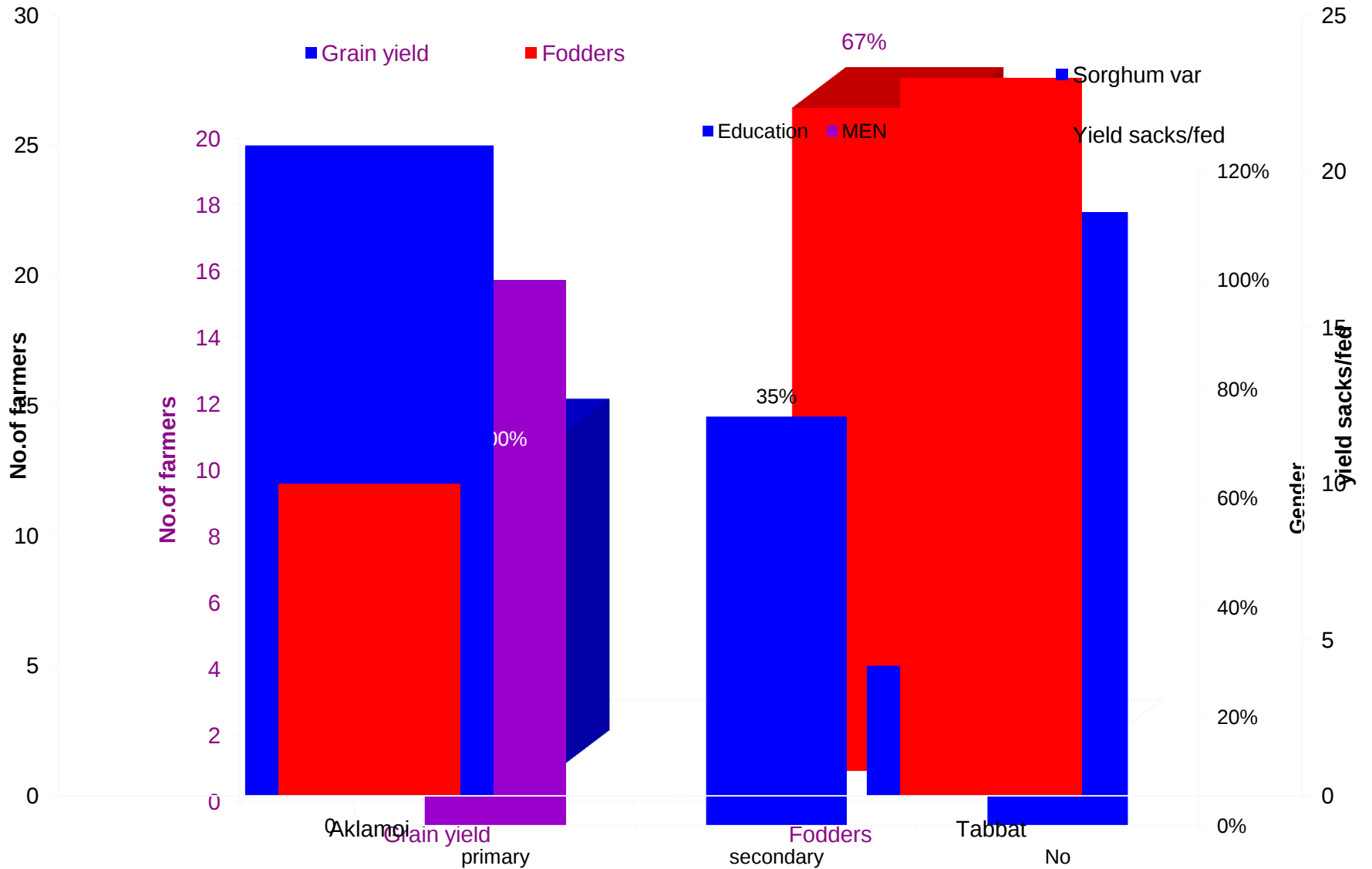


TGRRAR 1



TGRRAR 14 & FOTTA EXTENSION

Data analysis



Feed back

- The high water holding capacity of Gash soils with the high level of water table, which supplement the extracted moisture by the crop (evapotranspiration process) through capillary rise.
- The beginning of the Misga receives abundant water, while the opposite in the rest of the Misga. **Cash Crops like (maize, cotton, in the beginning while the sorghum in the mid or tail of the misga.**
- Farmers can divide their area between sorghum (Aklamoi and Tabbat) and other recommended crops .As well can grow other crops after harvesting to achieve high water productivity and save water.
- Using Ridger (80 cm between rows) can increase the productivity 30% compared to disc plough (160 cm between rows).**Due to low evaporation.**

- When farmers cultivate their areas in November as second course rotation can cultivate crops with high productivity such Water Melon. with less yield reductions.
- Expanding irrigated land ,thereby decrease water duration to the misga than 20 days with out high yield reduction.
- Moisture conservation method like mulching or light layers of soil needed.
- Communicate with farmer out side the region to transfer their experience is required.



WE NEED TO DO MORE THAN JUST STARE AT THE PROBLEM!

ACKNOWLEDGMENT



UNESCO-IHE
Institute for Water Education



Thank You!

