



## ASSESSMENT OF TRADITIONAL DRAINAGE SYSTEM WITH SPECIAL REFERENCE TO KARNATAKA STATE, INDIA- A CASE STUDY

**RAMANA GOWDA, P.**

[drrg.btib45@gmail.com](mailto:drrg.btib45@gmail.com)

**KRISHNAMURTHY, N.**

[Krishnamurthynagappa@yahoo.co.in](mailto:Krishnamurthynagappa@yahoo.co.in)

**RANJITHKUMAR, T. M.**

[Ranjithtm942@gmail.com](mailto:Ranjithtm942@gmail.com)





## Presentation outlines

- **Introduction**
- **Methodology**
- **Results and Discussion**
- **Impact Of Traditional Drainage System On Ensuring Better Drainage**



## INTRODUCTION

- India accounts for 5101 major dams for irrigation and hydro power also highest irrigated area in the world.
- Among the top ten drained area in the world India stands 6<sup>th</sup> position (5.80 m ha).
- 65 % of the population engaged in Agriculture.
- 30 % of the total cropped area (3 m ha) is under irrigation in Karnataka State.





## EFFECTS OF ILL DRAINAGE



ICID2015 - NAME OF THE SESSION  
OR THE WORKSHOP

5



## METHODOLOGY

- The study was carried out as on farm in fifty farmers field during 2012-14.
- Red sandy loam was the predominant soil type of the study area.
- Study area is located on mid reach of the command area.
- The first year was spent in interacting with farmers, visiting their field, refining the methodology.
- During second year collection of data on drained water, crop yield and feedback.





## TRADITIONAL DRAINAGE SYSTEM



ICID2015 FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES

7



## RESULTS AND DISCUSSION

- The annual water drained from the cultural drainage system was  $250 \text{ m}^3 \text{ ha}^{-1}$ . Among the systems ridges and furrow system with highest water drained ( $358.50 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ ).
- The mechanical drainage system drained  $698 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ . The broad bed furrow drained  $730 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ .
- Among the biological drainage system bamboo ( $7300 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ ) and eucalyptus ( $3650 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ ) drained higher than the traditional methods  $4107 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ .

Continued.....





## TRADITIONAL DRAINAGE SYSTEM



ICID2015 FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES

9



## RESULTS AND DISCUSSION

- The use of appropriate crops viz. Banana, Baje Rice, Water melon, Buffalo grass.. has drained on an average of  $704.58 \text{ m}^3 \text{ ha}^{-1} \text{ annum}^{-1}$ .
- In addition, the above crops yielded economic returns.



FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES

10



# ECO FRIENDLY SYSTEM



ICID2015 - FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES




# BIOLOGICAL SYSTEM



ICID2015 - FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES



## IMPACT OF THE STUDY

- For short term (3-6 months) drainage improvement cultural methods can be adopted.
- For better drainage in mid duration (6-9 months) both cultural and mechanical drainage system are highly suitable.
- The locations with permanent and long duration (> 1 year) drainage problem combination of cultural, mechanical and biological drainage system are more appropriate.
- Locations without options for drainage treatment still crops like Rice (*Oryza sativa.L*), Baje (*Acorus calamus.L*), Banana (*Musa paradisiacal.L*), Water melon (*Citullus lanatus*), Buffalo grass (*Boutelova dactyloides .L*).
- The traditional drainage system resulted in more human energy use for imposing various field operations by creating employment.  provide better livelihood.

## PRACTICE TO POLICY



