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Optimizing cropping patterns under the influence of climate change

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Global climate change

Critical challenges

- ❑Water sustainability
- ❑Food security

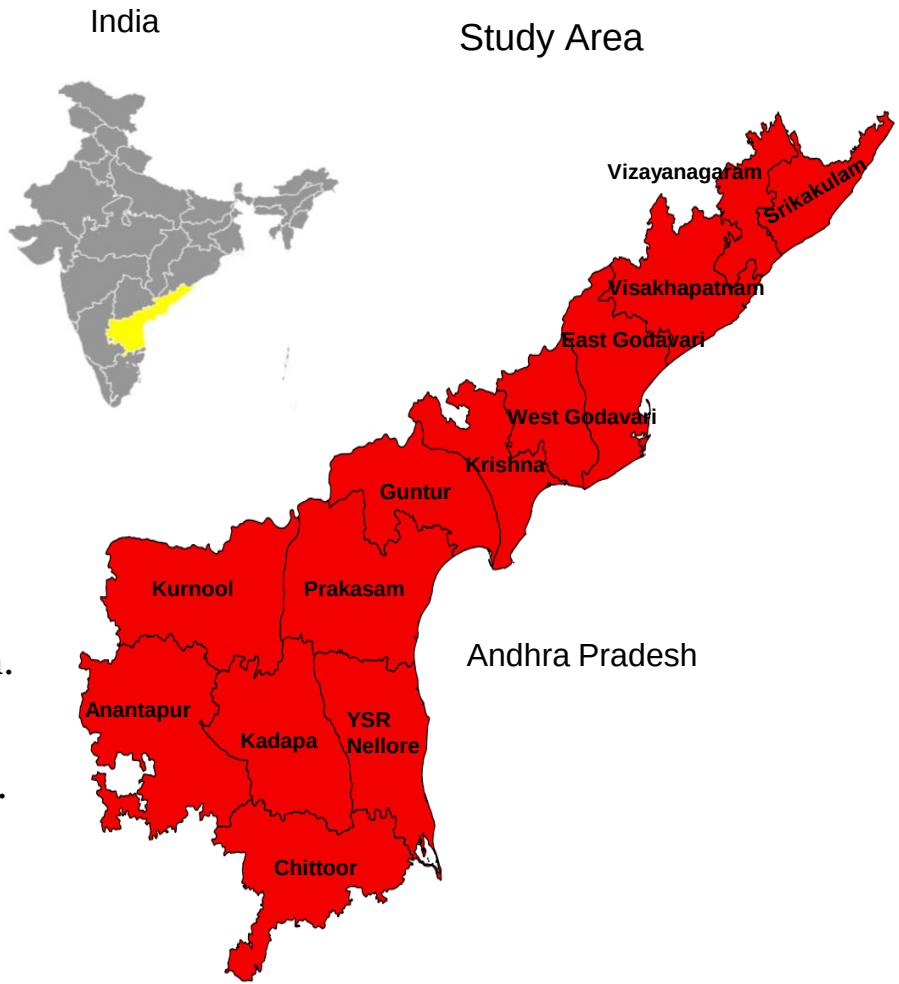
Agricultural sustainability → water & food security

Optimizing cropping patterns → way to go

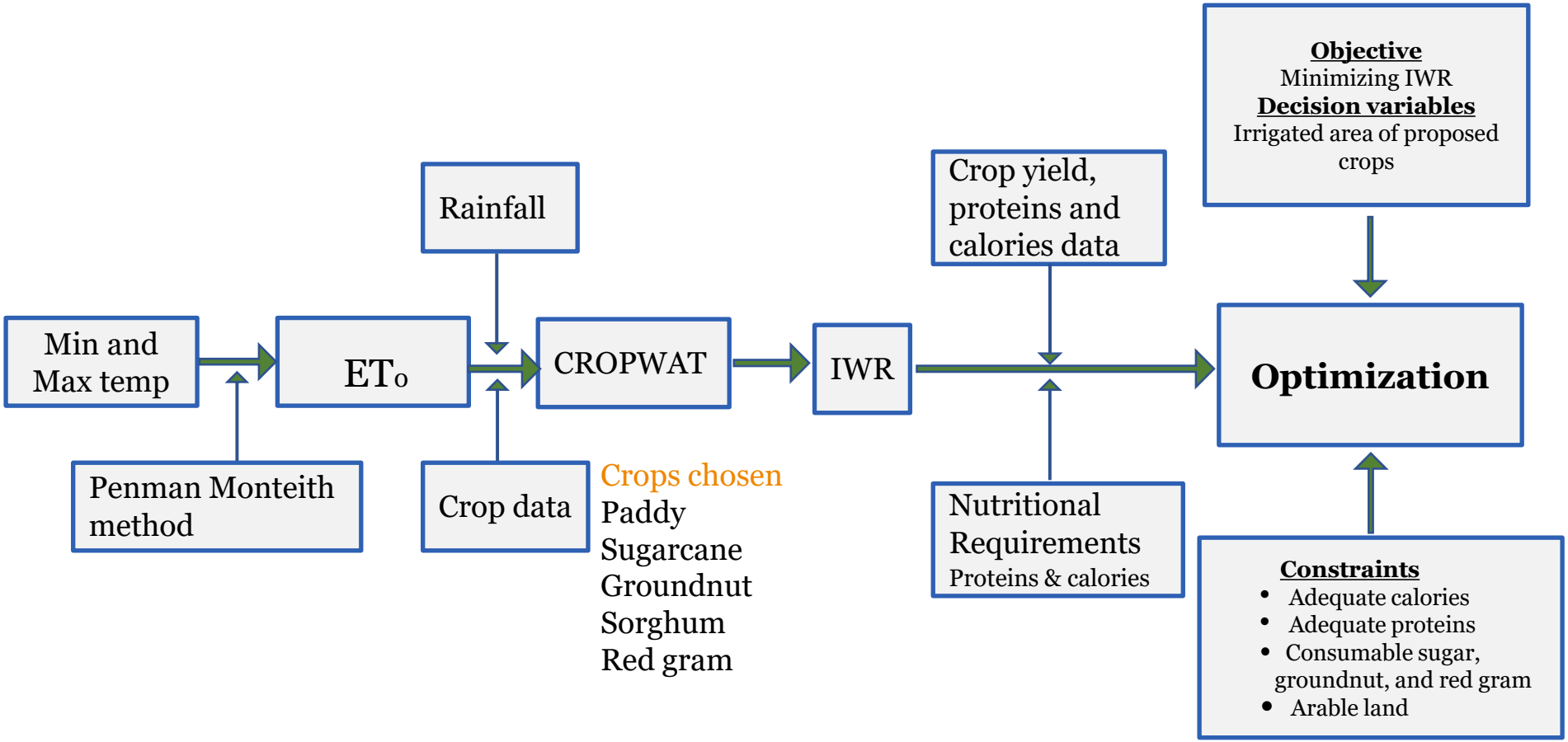
Objective:

Optimizing crop pattern for the state of Andhra Pradesh.

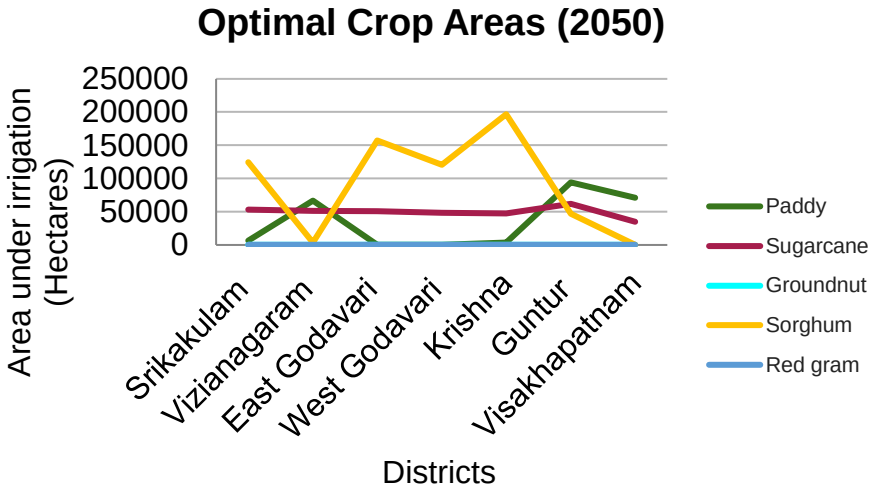
- ➢ Estimating IWR under climate change up to 2050.
- ➢ Minimizing water consumption

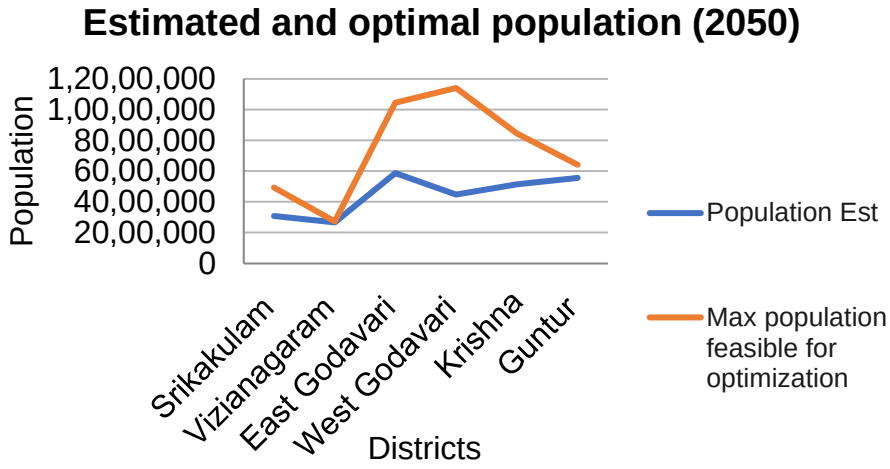


Methodology:

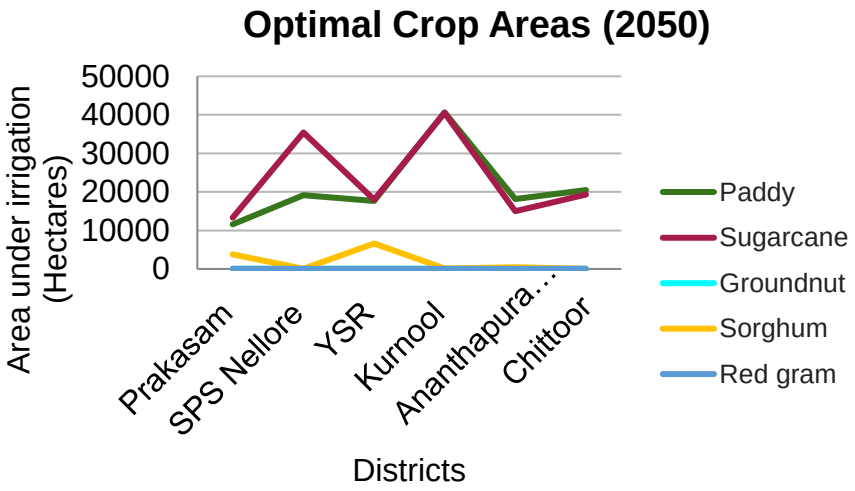


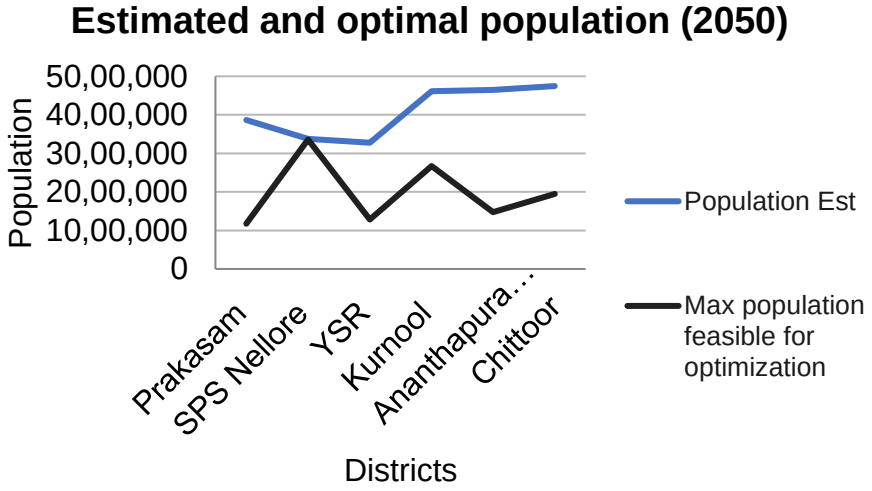
Results





- The optimization was feasible for six northern districts for the estimated population but not in most of the southern districts.
- Increasing yield by approximately 15% for all the crops gave feasible results for the district Visakhapatnam.





- The optimization was nonfeasible for these southern districts.
- Optimal areas of irrigation were estimated by decreasing the population.

Conclusions and future scope

- The results indicate a major shift from water-intensive crops like sugarcane to relatively more nutritious crops.
- The districts with more capacity for food production can compensate for the districts with inadequacy.
- Including more detailed constraints for the nutritional benefits of groundnut and red gram will make the optimization more efficient.
- Implementation of such optimal crop patterns enhances the water-food security under different climate change scenarios.

Thank you

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