

Efficient Water Use

Policy For Promotion of ID Crops

Rice is the staple diet of people residing in the north eastern and peninsular India. It is mostly cultivated as irrigated crop and grown under network of canals, tanks, reservoirs and the like. Groundwater exploitation for growing rice is rampant in low rainfall areas of peninsular India. Popularist policies of state governments regarding credit and power tariff have resulted in increased private investments in bore-wells and large inefficiencies in use of groundwater. As a result, groundwater, which is a common pool resource, characterized by high subtractability and low excludability is indiscriminately extracted. Lack of political will on the part of governments to enforce the laws (although WALTA, 2002 limits spacing between two bore wells) has aggravated the situation. Therefore, there is a need for direct and indirect interventions that facilitate sustainable use of groundwater. Developing and transferring technologies (in the form of new crop choices that are less water demanding) with attractive economic returns is a potential solution to cope with growing overexploitation of groundwater for cultivation of paddy. Answer to this paradox lies in finding out alternatives to paddy, which can survive with less water and are economically attractive. Such technological options need to be complemented by social and legal regulations on groundwater use. Social regulations can come only through generating awareness, while legal solutions to the problem need to come forth through proper policy measures.

Project interventions in the Mahaboobnagar Cluster

A two-pronged strategy (direct and indirect interventions) has been launched in the Mahaboobnagar cluster comprising of 4 villages in the Telangana region of Andhra Pradesh, under the DFID-NRSP Project “Enabling Rural Poor For Better Livelihoods Through Improved Natural Resource Management in SAT India” executed by CRIDA and BAIF. At present some farmers are leaving a part of the farm as fallow because of lack of sufficient water for cultivating the entire area under paddy crop especially in *rabi* (post monsoon) season. Farmers have been convinced to move away from rice particularly during *rabi* by educating them that some crops like chickpea, maize, ragi, etc., requires less water and hence can be cultivated in more area using the same quantity of water as required for rice.

Table 1. Water requirements of paddy and ID crops

Crop	Water requirement (mm)	Area equivalent of paddy (ha)
Paddy	1200	-
Groundnut	400	3.0
Maize	400	3.0
Chickpea	250	4.8
Ragi	400	3.0

Alternative crops namely chickpea, maize and ragi which are essentially dryland crops but are able to produce substantially high yields with limited irrigation have been introduced in the cultivators fields through supply of seed. [These crops are also called irrigated dry (ID) crops].

These crops could give substantially higher returns to the cultivators because of their higher water use efficiency.



Groundnut with maize

Table 2. Net returns and water use efficiency of different cropping systems based on water requirements during *kharif* and *rabi* for a 3 acre farm

Practice / Intervention	Cropping system	Total net returns (Rs)	Water use efficiency Rs. per mm
Farmers' practice 1*	Rice (3)- Rice (3)	36000	5.00
Farmers' practice 2**	Rice (3)-Rice (1)	24400	5.08
Farmers' practice 3**	Rice (3)-fallow (3)	18300	5.08
Intervention 1	Rice (3) - Groundnut (3)	37560	7.83
Intervention 2	Rice (3) - Maize (3)	31854	6.64
Intervention 3	Rice (3)-Chickpea (3)	27936	6.42
Intervention 4	Rice (3)-Rice (1), chickpea (2)	30824	5.82
Intervention 5	Rice (3)-Rice (1), maize (2)	33436	5.97

Note: Figures in parentheses indicate acreage

* When sufficient water is available for cultivating all the area in both the seasons.

** When water is available for cultivating all area in *kharif* season and less area in *rabi* season.

However, availability of quality seed sometimes constrains farmers from growing some of the ID crops. The project promoted chickpea and maize during *rabi* to limit the area under paddy and to reduce the area under fallow through supply of quality seed of these crops. Considering that the farmers would be reluctant to do away with rice completely, crop rotations involving rice in *rabi* in a lesser area may be encouraged initially. However, growing groundnut followed by maize and chickpea in *rabi* is more profitable. Chickpea has an added advantage, as it did not attract wild boar compared to groundnut, which is a menace in this area. Thus, taking into consideration these factors in addition to the crop profitability and water use efficiency, growing ground nut / maize / chickpea during *rabi* can be viable alternative to rice to cope up with growing limitation of groundwater.



Chickpea

Policy Implications

- There is a need to generate and disseminate information on suitability of different crop alternatives to paddy in this area.
- Inclusion of coarse cereals in the Public Distribution System might help in enhancing the demand for these commodities and to that extent release the demand-side constraints faced by the producers.
- Higher support price to ID crops to promote cultivation of oilseeds (groundnut/sunflower) and pulses (chickpea/black gram).
- Supply of quality seeds of ID crops at subsidized rates, particularly groundnut.
- Implementation of the Act (Walter Land and Trees Act, WALTA 2002) promulgated by Government of Andhra Pradesh in true spirit.
- Development of water markets which may result in more equitable access to ground water.
- Favourable policy initiatives for reforms in power sector, will be beneficial to augmentation of ground water.
- Development of water sharing mechanism where in farmers can share the water with the neighboring farmers may result in more equitable access to ground water.



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