

# Perforated Pipe Irrigation System



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Traditional way of conveying irrigation water supplies through on-farm watercourses causes heavy seepage losses in the range of 20 to 40%, decreasing irrigation efficiency to 40%. In this context, there is a need to minimize conveyance

losses to improve water productivity and irrigation efficiency. Perforated pipe irrigation system conveys water directly from source i.e. tubewell to the fields improving conveyance efficiency to 100% and application efficiency to 72% (Figure 1).

A more efficient diversion of water is made through corrugated pipe from source to ground surface and then applied through perforated pipe. The perforated pipe irrigation system has appropriate openings size of 1 inch in the pipe at about 2 ft spacing.

To check the effectiveness of perforated efficient irrigation system, an experiment was conducted at PARS, UAF. The setup for the experiment is shown in figure 1.

Comparison of irrigation and conveyance time of perforated and conventional irrigation method is given in table 1.

Perforated system has 72% application efficiency. This system has water saving potential and economic benefit of about 40%.

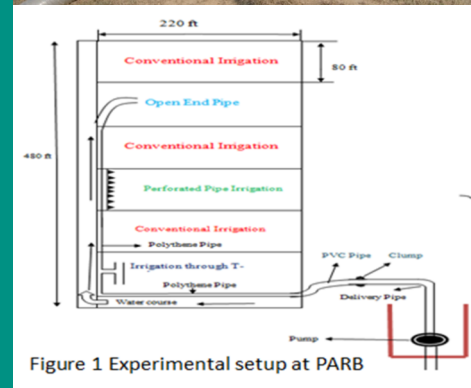


Figure 1 Experimental setup at PARB

**Table 1 Comparison of irrigation time and efficiency for plots of 220×80 ft, in size**

Perforated pipe irrigation method				Conventional irrigation method			
Plots	Conveyance time (min)	Irrigation time (min)	Depth of water (inch)	Plots	Conveyance time (min)	Irrigation time (min)	Depth of water (inch)
1st	0.50	50.00	2.15	2nd	10.00	80.00	3.70
3rd	0.75	57.50	2.50	4th	15.00	83.00	3.90
5th	1.00	62.00	2.70	6th	20.00	90.00	4.00
Average	0.75	56.50	2.6	Average	15.00	84.30	3.86

## Developing the technology of the workbench

Average total irrigation time for efficient method per plot	= 57.25 min
Average total irrigation time for conventional method per plot	= 99.30 min
Average time savings per plot	= 42 min
Percent time savings	= 40%
Percent economic savings (economic benefit)	= 40%
Conveyance efficiency for efficient irrigation method	= 100%
Application efficiency for efficient irrigation method	= 72%

Cost of perforated pipe irrigation system may vary from Rs. 25,000 to 100,000 depending on site conditions as well as quality of the pipes.

## Impact

It is the simplest efficient irrigation system having 100% conveyance efficiency and 72% application efficiency. It is equally suitable for close growing row crops on flat lands.

The system is economically viable with payback period of 2 to 3 years depending of types of crops to be grown.

The system does not require very high skill for its operation but has potential to save water in the range of 30 to 40%.

