



Research Article

Studies on economics of drip and surface irrigated banana in Dharwad district of Northern Karnataka

■ C.B. METI

ARTICLE CHRONICLE :

Received:
04.07.2012;

Revised :
14.09.2012;

Accepted:
10.10.2012

SUMMARY : The study was conducted on drip and surface irrigation banana crop in Dharwad district of Northern Karnataka during the year 2010 -11 and 2011-12. The increase in gross and net income in drip irrigation over surface irrigation were in the range of 25.73 to 36.91 and 35.12 to 50.38 per cent, respectively. The increase in net present worth, internal rate of return and B:C ratio in drip irrigation over surface irrigation were in the range of 23.14 to 35.80, 7.46 to 17.80 and 20.86 to 39.373 per cent respectively. The pay back period was 2 and 3 years for drip and surface irrigation methods, respectively. The 100.00, 98.86, 96.59, 93.18, 92.05, 90.91 and 87.50 per cent of drip irrigation farmers were benefited by saving of irrigation water, expenditure on irrigation, expenditure on weeding, expenditure on fertilizer application, leveling expenditure, increase in yield and obtained good quality produce, respectively.

How to cite this article : Meti, C.B. (2012). Studies on economics of drip and surface irrigated banana in Dharwad district of Northern Karnataka. *Agric. Update*, 7(3&4): 334-337.

KEY WORDS:

Gross income, Net income, Net present worth, Internal rate of return, Payback period

BACKGROUND AND OBJECTIVES

India has made a appreciable progress in creating irrigation potential. However, it is still insufficient to meet the long term requirement of irrigation. The ever increasing population has put tremendous pressure on food demand. Every unit of available land resource and other critical inputs needs to be exploited to reap maximum benefits. In feature, the most critical input happens to be water, which has become scarce. In an effort to make irrigation more efficient to obtain more crop per drop, farmers have adopted alternatives to flooding and other conventional irrigation methods. Among all the irrigation methods drip irrigation is an efficient method to provide irrigation water directly into the soil at the root zone of plants and it permits the irrigator to limit the watering closely to the crop water requirements.

RESOURCES AND METHODS

The study was conducted in Dharwad district in Karnataka state and among the five

taluks of Dharwad district, three taluks namely Dharwad, Hubli and Khalghatagi were purposively selected based on the highest area under drip irrigation. The village wise list of drip irrigation farmers was obtained from the Deputy Director of Horticulture, Dharwad district. The revenue villages were arranged in descending order based on the drip area and top ten villages in each taluka were selected. The selection of the farmers was made on the basis of major crops, holding size and year of plantation. The study was restricted to those crops which are in normal yielding stage, accordingly banana was the only crop and hence, it was selected for the study.

The seventy five per cent of the farmers who have installed drip irrigation system for banana, planted during 2009-10 amounting to eighty eight were selected from the Dharwad, Hubli and Khalghatagi taluks of Dharwad district by following proportionate random sampling technique. The corresponding number of farmers with all criteria except drip irrigation were selected randomly from surface irrigation farmers. The fruit yield, quality parameters such as hands per

Author for correspondence :

C.B. METI

Department of
Agricultural Engineering,
Agriculture College,
University of
Agricultural Sciences,
DHARWAD (KARNATAKA)
INDIA

Email: chanabasappameti@gmail.com

bunch, fingers per bunch, length of banana finger, girth of banana finger and bunch weight were recorded. The project evaluation parameters like net present worth, internal rate of return, benefit cost ratios and the pay back period were worked out. Appropriate statistical tools such as frequency distribution, percentage, mean, range, standard deviation, t-test, z-test were used to summarize data and draw the inferences.

OBSERVATIONS AND ANALYSIS

It was observed from the Table 1 that the gross income for small, medium and large farmers was Rs. 224020, 217480 and 211810, respectively in drip irrigation method and the same was Rs. 172970, 168290 and 161470, respectively for small, medium and large farmers in surface method of irrigation. The increase in gross income in drip irrigation over surface method of irrigation was 29.51, 29.23 and 31.18 per cent in small, medium and large farmers, respectively. The higher gross income was due to the superiority of the drip irrigation. The data presented in the Table 2 revealed that the net income for small, medium and large farmers was Rs. 124901, 106202 and 107743, respectively in drip irrigation method and the same was Rs. 86801, 75983 and 74248, respectively for small, medium and large farmers in surface method of irrigation. The increase in net income in drip irrigation over surface method of irrigation

was 43.83, 40.12 and 45.16 per cent in small, medium and large farmers, respectively. The higher net income observed under drip irrigation was significantly superior over the surface method of irrigation. The findings of the study are consistent with the results of Bheemappa *et al.* (2004), Balaganvi and Kumathe (2005), Misra *et al.* (2008), Timbadia *et al.* (2008) and Dunage *et al.* (2009).

The data presented in the Table 3 revealed that the net present worth for small, medium and large farmers was Rs. 406444, 353916 and 357914, respectively in drip irrigation method and the same was Rs. 310607, 279957 and 272454, respectively for small, medium and large farmers in surface method of irrigation. The increase in net present worth in drip irrigation over surface method of irrigation was 30.85, 26.42 and 31.37 per cent in small, medium and large farmers, respectively. The higher net present worth values observed under drip irrigation were significantly superior over the surface method of irrigation. The higher net present worth in drip irrigation was due to the superiority of the drip irrigation.

The data presented in the Table 4 revealed that the internal rate of return for small, medium and large farmers was 26.12, 23.98 and 24.20 per cent, respectively in drip irrigation method and the same was 22.87, 21.99 and 21.77 per cent, respectively for small, medium and large farmers in surface method of irrigation. The increase in internal rate of return in

Table 1 : Holding wise gross income and increase in gross income in drip over surface irrigation

Sr. No.	Holding size	Gross income (Rs./ha)		Increase in gross income in drip over surface irrigation (%)	't' value	'z' value
		Drip irrigation method	Surface irrigation method			
1.	Small	224020	172970	29.51	10.25**	-
2.	Medium	217480	168290	29.23	-	15.55**
3.	Large	211810	161470	31.18	13.73**	-
	Average	217770	167577	29.97	-	-

** indicates significance of value at P=0.01

Table 2 : Holding wise net income and increase in net income in drip over surface irrigation

Sr. No.	Holding size	Net income (Rs./ha)		Increase in gross income in drip over surface irrigation (%)	't' value	'z' value
		Drip irrigation method	Surface irrigation method			
1.	Small	124901	86801	43.83	9.97**	-
2.	Medium	106202	75983	40.12	-	14.77**
3.	Large	107743	74248	45.16	12.98**	-
	Average	112949	79011	43.03	-	-

** indicates significance of value at P=0.01

Table 3 : Holding wise net present worth and increase in net present worth in drip over surface irrigation

Sr. No.	Holding size	Net present worth (Rs.)		Increase in gross income in drip over surface irrigation (%)	't' value	'z' value
		Drip irrigation method	Surface irrigation method			
1.	Small	406444	310607	30.85	10.33**	-
2.	Medium	353916	279957	26.42	-	15.57**
3.	Large	357914	272454	31.37	12.47**	-
	Average	372758	287672	29.55	-	-

** indicates significance of value at P=0.01

Table 4 : Holding wise internal rate of return and increase in internal rate of return in drip over surface irrigation

Sr. No.	Holding size	Internal rate of return (%)		Increase in gross income in drip over surface irrigation (%)	't' value	'z' value
		Drip irrigation method	Surface irrigation method			
1.	Small	26.12	22.87	14.19	7.94**	-
2.	Medium	23.98	21.99	9.05	-	10.35**
3.	Large	24.20	21.77	11.12	8.63**	-
	Average	24.77	22.21	11.45		-

** indicates significance of value at P=0.01

Table 5 : Holding wise B:C ratio and increase in B:C ratio in drip over surface irrigation

Sr. No.	Holding size	B : ratio		Increase in gross income in drip over surface irrigation (%)	't' value	'z' value
		Drip irrigation method	Surface irrigation method			
1.	Small	1.86	1.45	30.91	4.85**	-
2.	Medium	1.61	1.26	30.74	-	6.75**
3.	Large	1.68	1.24	34.80	5.77**	-
	Average	1.72	1.32	32.15		-

** indicates significance of value at P=0.01

drip irrigation over surface method of irrigation was 14.19, 9.05 and 11.12 per cent in small, medium and large farmers, respectively. The higher in internal rate of returns observed under drip irrigation were significantly superior over the surface method of irrigation. The higher internal rate of return in drip irrigation was due to the superiority of the drip irrigation.

The data presented in Table 5 revealed that the B:C ratio for small, medium and large farmers was 1.86, 1.61 and 1.68, respectively in drip irrigation method and the same was 1.45, 1.26 and 1.24, respectively for small, medium and large farmers in surface method of irrigation. The increase in B:C ratio in drip irrigation over surface method of irrigation was 30.91, 30.74 and 34.80 per cent in small, medium and large farmers, respectively. The higher B:C ratio observed under drip irrigation was significantly superior over the surface method of irrigation.

The higher B:C ratio in drip irrigation was due to the superiority of the drip irrigation. The findings of the study are consistent with the results of Bheemappa *et al.* (2004), Gulshan *et al.* (2007), Shashidhara *et al.* (2007), Misra *et al.* (2008) and Dunage *et al.* (2009).

The data on pay back period revealed that, it was 2 and 3 years for drip and surface irrigation methods, respectively. The one year less pay back period in drip irrigation may be due to the higher fruit yield and good quality fruits obtained in drip irrigation.

Conclusion:

The increase in gross income in drip irrigation over surface method of irrigation was in the range of 25.73 to 31.53, 26.14 to 34.97 and 26.78 to 36.91 per cent in small, medium and large farmers, respectively. The increase in net income in drip irrigation over surface method of irrigation was in the range of 40.57 to 54.22, 39.00 to 50.83 and 43.48 to 54.18 per

cent in small, medium and large farmers, respectively. The increase in net present worth in drip irrigation over surface method of irrigation was in the range of 7.34 to 14.84, 7.10 to 13.19 and 8.04 to 14.39 per cent in small, medium and large farmers, respectively. The increase in internal rate of return in drip irrigation over surface method of irrigation was in the range of 27.87 to 43.90, 42.42 to 62.14 and 42.45 to 57.20 per cent in small, medium and large farmers, respectively. The increase in B:C ratio in drip irrigation over surface method of irrigation was in the range of 17.60 to 26.92, 18.49 to 27.93 and 18.55 to 25.45 per cent in small, medium and large farmers, respectively. The pay back period was 2 and 3 years for drip and surface irrigation methods, respectively. This may be due to the higher fruit yield and good quality fruits. Therefore, it is concluded that drip irrigation is superior over surface irrigation.

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