

## **A TEST TO MEASURE SKILLS OF FARMERS ABOUT SPRINKLER IRRIGATION SYSTEM**

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### **ABSTRACT**

*Sprinkler Irrigation System is one of the best methods which can encounter many of the problems of conventional method of irrigation. However, farmers are unable to avail due benefits of it mainly due to lack of skills in handling and operation of this system. In absence of scientifically developed test/scale to measure the skills of the farmers, it has been measured on ad-hoc basis. Such methods lack precision as they are not objective in nature. Keeping this point in view, the present study was taken up to develop an objective test to measure skills of farmers in handling and operation of sprinkler irrigation system. After making the task analysis, items (sub-steps) were constructed under each major step. The experts were requested to assign weight to each item out of 100 for each of two dimensions i.e. relative importance and difficulty in performance. The 25 experts replied which were included for analysis. Evaluators should observe the operation for a particular skill assigned to the individual trainees and allot marks according to their performance. Maximum marks for each step is given against the sub-steps in observation sheet and evaluator should assign marks out of that to the farmers. (Footnotes)*

### **INTRODUCTION**

The availability of sufficient quality of good water for irrigation is a problem in many areas. Efficient and optimum use of water through adoption of better methods of irrigation has been well recognized by all the concerned agencies. Sprinkler Irrigation System (SIS) is one of the best methods which can encounter many of the problems faced by conventional method of flood irrigation. Government of India and some state government have taken efforts to popularize this new method and are also supporting it by providing capital subsidy to farmers. However, farmers are unable to avail due benefit of SIS mainly due to lack of skills in handling and operation of SIS. The training and TOT institutions shall therefore, concentrate on extending skills to such farmers.

In absence of scientifically developed test/scale to measure the skills of the farmers, it has been measured on the basis of their opinions. Such methods lack precision as they are not objective in nature. Keeping this point in view the present study was taken up to develop an objective test to measure skills of farmers in handling and operation of SIS.

The skill can be defined as the ability to perform an operation accurately in a given time with a given energy. Skill of farmers in operation and handling of SIS play an important role in efficient use of it. For measurement of skill of farmers in operation of SIS, a performance test was developed. The procedures and methods followed in developing the test is discussed as below:

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**Task analysis**

Task here is related to a particular operation to be performed by an individual. It consists of listing of activities in some systematic order. The job of handling and operation of SIS was divided into following sub items:

- I Identification of different components of SIS
- II Consideration of various points before run the SIS
- III Skill in laying out the system in field
- IV Actual operation of SIS in field condition
- V Care to be taken while dissembling the SIS.

**Item construction**

After making the task analysis, items (sub-steps) were constructed under each major steps of SIS. The details of major steps and sub-steps are given in final format of the test in Appendix - 1.

**Scoring procedure**

After splitting each operation into major steps and sub-steps, it was referred to 50 experts. The experts selected for the purpose comprised of agricultural engineers and agricultural scientists working in Gujarat Agricultural University, irrigation specialists working in Water and Land Management Institute, Anand and technical expert of the dealers of SIS. The letter of instruction was sent along with annexure to guide the experts for assigning the marks to major and sub-items. They were requested to assign weight to each item keeping in view its relative importance and operational difficulty involved in carrying out the particular operation. These weights were to be assigned out of 100 for each of two

dimensions i.e. relative importance and difficulty in performance. Out of 50 only 25 experts replied which were included for analysis.

The scores given by 25 experts were tabulated and mean score of all judges in respect of each sub-items were calculated for both the dimensions viz. difficulty and relative importance, separately. These mean scores were then pooled and divided by two. These scores were, thus, the maximum obtainable scores for each item. The final observation sheet is given in Appendix 1.

**Guideline for evaluation**

Evaluators should observe the operation of a particular skill assigned to the individual trainees and allot marks according to their performance. Maximum marks for each step is given against the sub-steps in observation sheet and evaluator should assign marks out of them.

**APPENDIX 1**

Final observation sheet for assessment of skill in operation and handling of Sprinkler Irrigation System  
 1. Name of Farmer: \_\_\_\_\_ 2. Max. Marks: 100

Sr. No.	Steps involved	Maximum Marks	Marks Obtained
Step I	Identification of different components of Sprinkler Irrigation System (SIS)	(19.50)	
	a. Electric motor/engine	2.30	
	b. Suction line	1.60	
	c. Foot valve	1.60	
	d. Screen unit	1.20	
	e. Fertilizer tank	1.00	
	f. Main line	1.00	
	g. Lateral lines	1.75	
	h. Sprinkler heads	1.50	
	i. Sprinkler nozzle	1.00	
	j. End plug	1.00	
	k. Tee	0.75	
	l. Bend 90 degree	0.80	
	m. Flow line coupler	1.00	
	n. Steel battern	1.00	
	o. Riser quick coupler	1.00	
	p. Riser connector	1.00	
Step II	Consideration of various points before run the system	(21.90)	
	a. Check carefully the workability of foot valve	3.00	
	b. Check carefully the box of available wrenches and spannle.	2.00	
	c. Check carefully the pipeline fitting of the pump set.	2.50	
	d. Check carefully the inlet diameter of pump and available suction pipe line	2.40	
	e. Check functioning of power unit	2.70	
	f. Check alignment of pump and prime mover	2.40	
	g. Check carefully the starter and switches if electric motor is used/or the fuel tank if diesel set used.	2.50	
	h. Check carefully for damage or shortage of parts	2.40	
	i. Start motor/diesel set after installation for pre-testing	2.00	
Step III	Skill in laying out the system in field	(26.20)	
	a. Roughly or approximately survey the field or crop area	2.50	
	b. Selecting the location for main line, sub main and lateral	2.50	
	c. Check carefully the main line pipe and sub main pipe line for debris cleanliness	2.00	
	d. Connect main line to power source	1.30	
	e. Steel battern should be properly fitted under each sprinkler coupler	1.50	
	f. Check gasket of coupler	1.50	
	g. Connect sub main to main along with coupler	1.00	
	h. Put riser along with lateral line according to distance	1.30	
	i. Check cleanliness of riser and Sprinkler head	1.70	
	j. Check gasket or riser	1.20	
	k. Connect the system with main by lateral and riser	1.00	
	l. Run the system for ten minutes without end plug	1.30	
	m. Check the gasket of end plug	1.20	
	n. Put the end plug at end of the lateral	1.30	
	o. Close the main line valve before operating the system	1.30	
	p. See that pump must attain the pressure stated on type plate	2.00	
	q. After the pump reaches the regulation Pressure, the delivery valve is opened slowly	1.60	

Sr. No.	Steps involved	Maximum Marks	Marks Obtained
<b>Step IV</b>	<b>Skill in laying out the system in field</b>	<b>(26.20)</b>	
a.	Area covered by each riser	6.50	
b.	Over lapping by each riser	6.20	
c.	Area uncovered around the each riser	4.50	
<b>Step V</b>	<b>Care to be taken while disassembling the sprinkler system</b>	<b>(15.20)</b>	
a.	Stop the power	1.50	
b.	Close the delivery valve	1.60	
c.	Remove the system in such a way that standing crop should not be damaged	2.50	
d.	Remove end plug so that remaining water from the pipeline drain out	1.50	
e.	While disassembling the system care should be taken that rubber gaskets seats should not be damaged	2.10	
f.	Remove debris from the pipeline	1.60	
g.	Disassemble the system in reversed order of assembling	1.50	
h.	Keeping main pipe, lateral pipe and riser in one bunch	1.60	
i.	Collect wrenches and spanners in box in proper places	1.30	