



Natural Resources Conservation Service
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September 10, 2003

Rhett Bradford
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P.O. Box 99
Irwin, Idaho 83428

I consulted with Bob Lehman, Civil Engineer, NRCS in Rexburg. We used the *Farm Irrigation Rating Index (FIRI)* program to evaluate gross irrigation for a typical situation in the Irwin, Idaho area. It is a relative rating that is the product of management, irrigation system, and potential efficiency factors. For example: the conveyance efficiency uses the length of canal and/or ditch used on fields and the type of soil (Bagerton Variant Sandy Loam) for a conveyance efficiency of 50%.

The flood method of irrigation used on many fields has a potential application efficiency of 50%.

Net crop needed for alfalfa/grass in your climatic area is 21.3 inches (divided by 12 inches/foot = 1.8 acre feet). The attached evaluation resulted in a gross irrigation requirement of 104.33 acre inches per acre, divided by 12 inches = 8.7 acres feet of water per acre of crop. $1.8 \text{ acre feet} / 8.7 \text{ acre feet} = 21\%$ overall efficiency.

Obviously the gravelly soils in the Irwin area would require much more water to irrigate than the silt loam soils around Idaho Falls.

A handwritten signature in black ink, appearing to read "D. Hadley", is written over the printed name.

Dennis Hadley
District Conservationist
Natural Resources Conservation Service

attachments

Farm Irrigation Rating Index (FIRI)

Job:

Anybody

09/08/03

Location:

Irwin

Job planner: Dennis Hadley

Farm ID/OPID:

Farm name/number: 1

Acres this field:

100

Crop grown:

Alfalfa/grass

Annual net irrigation requirement (inches):

21.2

Soil name or description:

Badgerton Variant Sandy L

Analysis of Yearly Data

Year:

2003

System type:

Flood

System description:

Uncontrolled

Gross irrigation requirement (inches):

104.33

Evapo transpiration, average peak month (ET):

0.25

Runoff (inches):

41.57

(

50

% of losses)

Total required acre feet:

869.42

Deep percolation (inches):

41.57

(

50

% of losses)

Seasonal Efficiency (%):

20.32

Potential efficiency (%):

50

FIRI Factors		Note: FIRI factors marked with C have changed since last year	
Management Factors		System Factors (Surface Systems)	
Md	0.96	Water Measurement	L 0.79 Land Leveling
S	0.94	Soil Moisture Monitoring and Scheduling	System Factors (Surface and Sprinkler)
I	0.92	Irrigation Skill and action	R 1 Tailwater Reuse
M	0.94	Maintenance	System Factors (Sprinkler)
D	0.83	Water Delivery	C NA Climatic
Sc	0.96	Soil Condition	Sd NA Sprinkler Design
System Factors (All Systems)		System Factors (Sprinkler and Spray Trickle)	
Wc	0.94	Water Distribution Control	W NA Wind
Ce	0.88	Conveyance Efficiency	System Factors (Trickle)
Improvements made this year		E NA	Emitter Clogging
		T NA	Trickle Design

Conveyance (Ce) Data		Type	Length (feet)	EEF factor
	Reach 1	Gravelly Sand	1000	0.55
	Reach 2	None		
	Reach 3	None		
	Reach 4	None		

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Anybody

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Farm ID/OPID:

Farm name/number: 1

Acres This Field:

100

Crop Grown:

Alfalfa/grass

Annual Net Irrigation Requirement (inches):

21.2

Soil Name or Description:

Badgerton Variant Sandy L

Item	Year (1)	Year (2)	Year (3)	Year (4)
Year:	2003			
SystemType:	Flood			
SystemDescription:	Uncontrolled			
Total required acre feet:	869.42			
Potential efficiency (%):	50			
Seasonal efficiency (%):	20.32			
Runoff (in):	41.57			
Deep Percolation(in):	41.57			
F I R I Factors	-----			
Md Water measurement:	0.96			
S Soil moist mon & scheduling:	0.94			
I Irrigation skill and action:	0.92			
M Maintenance:	0.94			
D Water delivery:	0.83			
Sc Soil condition:	0.96			
Wc Water distribution control:	0.94			
Ce Conveyance efficiency:	0.88			
L Land leveling:	0.79			
R Tailwater reuse:	1			
C Climatic:	NA			
Sd Sprinkler design:	NA			
W Wind:	NA			
E Emitter Clogging:	NA			
T Trickle design:	NA			