Practice: 449 - Irrigation Water Management

Scenario # 1 **Basic IWM ≤ 30 acres**

Scenario Description: **Louisiana**

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	30	Acre	Unit Cost	$28.97

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	Supervisor or Manager	24	Hour	$36.21	$869.04
				Total Cost:	$869.04

Practice: 449 - Irrigation Water Management

Scenario # 2 **Basic IWM > 30 acres**

Scenario Description: **Louisiana**

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with a sprinkler irrigation system.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	125	Acre	Unit Cost	$10.46

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	General Labor	8	Hour	$18.57	$148.56
Labor	Supervisor or Manager	32	Hour	$36.21	$1,158.72
				Total Cost:	$1,307.28

Practice: 449 - Irrigation Water Management

Scenario # 3 **Intermediate IWM ≤ 30 acres**

Scenario Description: **Louisiana**

A medium intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. For a typical scenario, soil moisture is determined by in-field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	30	Acre	Unit Cost	$38.62

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	Supervisor or Manager	32	Hour	$36.21	$1,158.72
				Total Cost:	$1,158.72

Practice: 449 - Irrigation Water Management

Scenario # 4 **Intermediate IWM > 30 acres**

Scenario Description: **Louisiana**

A medium intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. For a typical scenario, soil moisture is determined by in field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program.

Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.

Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with a sprinkler irrigation system.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	125	Acre	Unit Cost	$13.37

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	General Labor	12	Hour	$18.57	$222.84
Labor	Supervisor or Manager	40	Hour	$36.21	$1,448.40
				Total Cost:	$1,671.24

Practice: 449 - Irrigation Water Management

Scenario # 5 **Advanced IWM ≤ 30 acres**

Scenario Description: **Louisiana**

A high intensity irrigation water management system for producers using a checkbook method with advanced methods of determining irrigation water applied, and estimating crop evapotranspiration, monitoring field soil moisture, or monitoring crop temperature stress. The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. Typical methods include flow measurement, daily record keeping, and use of real-time evapotranspiration estimates (such as those provided dedicated weather stations) and/or soil moisture sensors with automated data logging to monitor field soil moisture content and/or crop temperature. For this scenario, soil moisture is determined by automated soil moisture monitoring stations equiped with telemetry data. Irrigation amounts are recorded from a flow meter near the pump. Telemetry data is automatically sent to a computer with irrigation software. Irrigator also receives real time data via mobile phone applications. Some data such as total water applied may be entered into computer software manually.
Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.
Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	30	Acre	Unit Cost	$48.28

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	Supervisor or Manager	40	Hour	$36.21	$1,448.40
				Total Cost:	$1,448.40

Practice: 449 - Irrigation Water Management

Scenario # 6 **Advanced IWM > 30 acres**

Scenario Description: **Louisiana**

A high intensity irrigation water management system for producers using a checkbook method with advanced methods of determining irrigation water applied, and estimating crop evapotranspiration, monitoring field soil moisture, or monitoring crop temperature stress. The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. Typical methods include flow measurement, daily record keeping, and use of real-time evapotranspiration estimates (such as those provided dedicated weather stations) and/or soil moisture sensors with automated data logging to monitor field soil moisture content and/or crop temperature. For this scenario, soil moisture is determined by automated soil moisture monitoring stations equiped with telemetry data. Irrigation amounts are recorded from a flow meter near the pump. Telemetry data is automatically sent to a computer with irrigation software. Irrigator also receives real time data via mobile phone applications. Some data such as total water applied may be entered into computer software manually.
Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities.
Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Practice Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with sprinkler irrigation.

After Practice Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Scenario Feature Measure:

Irrigated Area Managed

Scenario Typical Size:	125	Acre	Unit Cost	$16.28

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Labor	General Labor	16	Hour	$18.57	$297.12
Labor	Supervisor or Manager	48	Hour	$36.21	$1,738.08
				Total Cost:	$2,035.20

Practice: 449 - Irrigation Water Management

Scenario # 7 **Soil Moisture Sensors_YR1**

Scenario Description: **Louisiana**

This practice includes the installation of soil moisture sensors such as tensiometers, gyp blocks, capacitance sensors etc, that are installed and read to determine point in time soil moisture by depth. The installation includes the purchase of soil moisture meters and sensors, installation equipment, and labor to install and read sensors or meter. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season. Meters used to read sensors may be portable.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plantproductivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Practice Situation:

Producer uses feel method to estimate soil moisture for scheduling irrigation.

After Practice Situation:

Producer has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer uses periodic soil moisture measurements to schedule irrigation resulting in improved irrigation water managment and reduced energy use.

Scenario Feature Measure:

Number of Measuring Sites

Scenario Typical Size:	2	Each	Unit Cost	$1,036.56

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Soil Moisture Meter	1	Each	$333.50	$333.50
Materials	Soil Moisture Sensor	8	Each	$44.80	$358.40
Labor	General Labor	8	Hour	$18.57	$148.56
Labor	Supervisor or Manager	32	Hour	$36.21	$1,158.72
Mobilization	Mobilization, very small equipment	2	Each	$36.97	$73.94
				Total Cost:	$2,073.12

Practice: 449 - Irrigation Water Management

Scenario # 8 **Soil Moisture Sensors with Data Recorder_YR1**

Scenario Description: **Louisiana**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. The installation includes the purchase of soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plantproductivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Practice Situation:

Producer uses feel method to estimate soil moisture for scheduling irrigation in the field.

After Practice Situation:

Producer has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer periodically downloads continuously recorded soil moisture measurements that are used to schedule irrigation more effectively resulting in improved irrigation water managment and reduced energy use.

Scenario Feature Measure:

Number of Measuring Sites

Scenario Typical Size:	2	Each	Unit Cost	$1,619.04

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Data Logger	2	Each	$567.25	$1,134.50
Materials	Soil Moisture Sensor	8	Each	$44.80	$358.40
Labor	General Labor	12	Hour	$18.57	$222.84
Labor	Supervisor or Manager	40	Hour	$36.21	$1,448.40
Mobilization	Mobilization, very small equipment	2	Each	$36.97	$73.94
				Total Cost:	$3,238.08

Practice: 449 - Irrigation Water Management

Scenario # 9 **Soil Moisture Sensors w. Telemetry_YR1**

Scenario Description: **Louisiana**

This practice includes the installation of electrical soil moisture sensors such as capacitance or resistance sensors that are monitored to determine soil moisture. The installation includes the purchase of soil moisture sensors, installation equipment (probe or auger), and a data logger to log continuous soil moisture data that can be downloaded to a personal computer and associated graphing software. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season.

Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plantproductivity and health, and Inefficient Energy Use - Equipment and facilities.

Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Practice Situation:

Producer uses feel method to estimate soil moisture for scheduling irrigation in the field.

After Practice Situation:

Producer has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer periodically downloads continuously recorded soil moisture measurements that are used to schedule irrigation more effectively resulting in improved irrigation water managment and reduced energy use.

Scenario Feature Measure:

Number of Sensors in field

Scenario Typical Size:	2	Each	Unit Cost	$1,793.65

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Data Logger with Telemetry System	1	Each	$1,119.75	$1,119.75
Materials	Soil Moisture Sensor	8	Each	$44.80	$358.40
Labor	General Labor	16	Hour	$18.57	$297.12
Labor	Supervisor or Manager	48	Hour	$36.21	$1,738.08
Mobilization	Mobilization, very small equipment	2	Each	$36.97	$73.94
				Total Cost:	$3,587.29