

Instructions for Recording Field Data to fulfill Requirements of NRCS Conservation Innovation Grant Awards

Field data for field activities and inputs are to be recorded with the Excel data sheet entitled “Conservation Innovation Grant Field Data Record - Natural Resource Conservation Service, Soil Health Division” which is presented in Appendix Table A-1. The data sheet may be printed to provide copies for recording data at the field location. Final collected data should be entered in worksheets and submitted as a collection with a worksheet for each crop and soil management system in a single Excel file for each CIG award.

The field data sheet includes three sections with the top section (Table 1 in the following section) recording general information for the crop in production, Conservation Innovation Grant (CIG) award and farm operator identification, irrigation acre-inches and date for each application, and the type of soil management system which includes listing individual species for cover crop mixes, as well as the total cover crop seed price per acre. The center section (Table 2 through Table 10 in the section below) records itemized field activities on a per acre basis with inputs and includes equipment type for tillage operations and input applications. The bottom section (Table 11 in the section below) records activities associated with operations that are not on a per acre basis. Rows for activities may be added in the center and bottom sections with the “insert, row” function of Excel. Also, row heights may be increased, and the cell “wrap” format may be applied to increase space for data entry.

General Crop Information and CIG Award Identification

Table 1 presents the top section completed for a cotton example. Planted and harvested dates should include the month, date, and year. Irrigation type includes system (gravity such as furrow, sprinkler such as center pivot or other overhead, and other type such as drip irrigation). Irrigation information should include power source for pumps (diesel, electricity, natural gas, liquid petroleum, or gasoline), as well as water source such as well (include pumping depth) or surface source. Electric systems should state either a vertical line shaft pump or a submersible pump. Row width is recorded as inches. Reported yield is quantity per acre that corresponds to typical market prices reported such as lint only for cotton and dried weight for corn. For each irrigation application, the month, date, and year, as well as the corresponding acre-inches should be reported. Total production season acre-inches should be entered in the indicated section.

Soil management system should include a description to convey practices such as no-till, strip till, reduced till, cover crops, and conventional tillage. Practices that include cover crops should be reported with seed/species constituting a mix and the corresponding percentage by weight. Cover crops with one seed should indicate the seed and 100% for percentage by weight. Seed price per acre should be reported for situations with a single cover crop seed or as an aggregate price per acre for cover crop seeds of a mix.

Each CIG site for which data are recorded should include the state and county in which the farm is located. CIG program year for which data are recorded should be reported. Information for CIG award identification should correspond to documentation approved or issued by NRCS.

Acreage for the CIG field is reported, as well as total farm acreage for the operator and total acreage in which all soil health management systems are currently practiced by the operator.

Table 1. General Crop Information and CIG Award Identification

Crop: Cotton	CIG Field Acres	Total Cover Crop Seed Price	CIG Contact Name:	Irrigation M/D/Yr	Inches
Planting Date: 5/8/2019	30.0	\$/Acre 30.00	CIG Award ID No.:	07/07/19 2.00	00/00/00 0.00
Harvest Date: 10/22/2019		Cover Crop Seed/Species & % by wt.	CIG Field ID:	07/21/19 2.00	00/00/00 0.00
Irrigation Type: Furrow, Diesel, Well (120 ft)		cereal rye (100%)	State & County of Field:	08/10/19 2.00	00/00/00 0.00
Row Width: 38"			CIG Reporting Year: 2020	00/00/00 0.00	00/00/00 0.00
Yield: 1200 Lint lb/A			Farm Operator:	00/00/00 0.00	00/00/00 0.00
<u>Soil Management System</u>			Operator Farm Acres:	00/00/00 0.00	00/00/00 0.00
Standard Tillage with Cover Crop			Operator SHMS Acres:	Total Inches	6.00

Itemized Field Activities and Inputs on a per Acre Basis

This section records all information associated with production of a crop. Table 2 is an example of entering field data for two activities occurring on different dates. The chisel ripper activity is a tillage operation with a single field trip on the date indicated and with no additional inputs. Implement size is 6-row which corresponds to the row width recorded in the section for general crop information. The implement was pulled by a 225 horsepower tractor. On the following day, cover crop seed was applied with a broadcast spreader with seed dispersed a total width of 60 feet. The broadcast spreader was pulled by a 190 horsepower tractor and the seed was applied with a single trip. The cereal rye cover crop seed was applied at a rate of 60 lbs. per acre. The cover crop seed corresponds to the information reported in the section for general crop information. Table 3 has field activities that are identical to Table 2, but the two separate field activities occurred on the same date.

Table 2. Designating Field Activities by Dates, Operation, Equipment, and Inputs

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/22/2019	Chisel Ripper	Tractor	6 Row	225	1					
10/23/2019	Broadcast Cover Crop	Tractor	60'	190	1			Cereal Rye	lbs.	60

Table 3. Designating Field Activities with Identical Dates by Operation, Equipment, and Inputs

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/22/2019	Chisel Ripper	Tractor	6 Row	225	1					
10/22/2019	Broadcast Cover Crop	Tractor	60'	190	1			Cereal Rye	lbs.	60

Table 4 is an example of a single field trip in which two or more operations are performed simultaneously, planting and application of herbicides. The date is entered only on the first line representing the field activity. Lines without dates indicate that these operations were performed in the field trip represented by the nearest line above listed with a date. Multiple inputs applied during a single field are entered with each input, unit, and rate applied on the line for the corresponding input.

Table 4. Identifying Multiple Operations and Input Types in a Single Field Trip

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
5/8/2019	Planter	Tractor	12 Row	190	1			Stonville 4946 GLB2 Cruiser + Dynasty Seed Treatment	seed	48,000
	Herbicide							Gramoxone	pts.	2
	Herbicide							Caporal	pt.	1
	Surfactant							crop oil concentrate	oz.	6.4

Table 5 is an example of two field activities performed on the same date with two separate custom applications. It is not necessary to report equipment size or horsepower for custom applications. Insecticide and growth regulator were applied simultaneously by a custom hired airplane. The custom rate for the airplane application is \$8.00/acre. The insecticide and growth regulator are entered as inputs on separate lines with unit and rate for each. Fertilizer was applied by a spreader on the same date with a separate custom ground application. The custom rate was \$7.50/acre. The input entry, N-P-K, is interpreted as a mix with a rate of 60 units of potash (100% formulation) per acre.

Table 5. Identifying Multiple Field Activities on Identical Dates with Custom Applications

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
7/6/2019	Insecticide	Custom Airplane			1	8.00	acre	Orthene	lb.	1
	Growth Regulator							Pix	oz.	8
7/6/2019	Fertilizer	Custom Spreader			1	7.50	acre	N-P-K	lb.	0-0-60

Table 6 is an example of a chemical tank mix applied by a boom sprayer. The boom has a width of 100 feet and the sprayer is 245 horsepower. Each herbicide and the surfactant are listed on separate lines with each corresponding unit and rate of application. Lines without dates indicate a tank mix applied in a single field trip with the sprayer.

Table 6. Identifying Chemical Tank Mixes with Operator Owned Boom Sprayer

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
3/21/2019	Herbicide	Sprayer	100'	245	1			Glyphosate	pts.	3
	Herbicide							First Shot	oz.	0.6
	Herbicide							Banvel	oz.	8
	Herbicide							Select	oz.	5
	Surfactant							crop oil concentrate	oz.	5.12

Table 7 includes alternative presentations for fertilizer quantities. Chicken litter is custom applied at a custom rate of \$30/ton. Litter quantity applied is 2 tons/acre, and the entry in the column that identifies inputs states that the custom rate of \$30/acre includes cost for the litter.

The three fertilizer applications by a spreader pulled with a 190 horsepower tractor, the custom fertilizer application by airplane, and the two custom ground fertilizer applications show fertilizers reported in common formulations. The formulation for zinc sulfate is typically 36% percent zinc and 14% sulfur. When formulations are entered or implied in the input column, quantity rates applied per acre are for the formulation. For example, Urea (46-0-0) applied at a rate of 120 lbs. per acre is equal to 55 (120 lbs. x 46%) units of nitrogen. Units are not reported for fertilizers represented by formulations. As an alternative method of reporting, fertilizer applied by custom spreader on 4/31/2019 is entered as N-P-K-S-B mixed fertilizer with no formulation. In this case, quantities entered for rate per acre, 4-16-32-4-1, are units (lbs. at 100%) applied per acre.

Table 7. Examples of Reporting Fertilizer Quantities

DATE	OPERATION or IMPLEMENT TYPE\DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/22/2018	Chicken Litter	Custom Spread				30.00	ton	custom rate includes litter	tons	2
3/21/2019	Fertilizer Spreader	Tractor	60'	190	1			Urea (46-0-0)	lbs.	120
								Ammonium Sulfate (21-0-0-24)	lbs.	100
								Zinc Sulfate	lbs.	33
4/7/2019	Fertilizer Spreader	Tractor	60'	190	1			DAP (18-46-0)	lbs.	100
								Potash (0-0-60)	lbs.	150
4/15/2019	Fertilizer Spreader	Tractor	60'	190	1			Phosphate (0-46-0)	lbs.	120
								Potash (0-0-60)	lbs.	100
4/21/2019	Fertilizer	Custom Airplane				0.08	lb.	Urea (46-0-0)	lbs.	120
4/25/2019	Fertilizer	Custom Ground Application				15.00	acre	Anhydrous Ammonia (82-0-0)	lbs.	90
4/28/2019	Fertiizer	Custom Ground Application				8.00	acre	UAN 32%	lbs.	100
4/31/2019	Fertilizer	Custom Spreader			1	7.50	acre	N-P-K-S-B	lbs.	4-16-32-4-1

Table 8 through Table 10 present examples for reporting harvest activities. Table 8 represents corn harvested by a 475 horsepower combine with an 8-row corn head which corresponds to the row width recorded in the section for general crop information. In a simultaneous field operation, corn is dumped into an 850 bu. grain cart that is pulled with a 225 horsepower tractor. Table 9 is identical to Table 8, except the corn is dumped directly into a truck trailer for hauling. Reporting of dumping directly into a truck trailer is important to clarify that application of a grain cart is not inadvertently omitted.

Table 8. Harvest with Corn Dumped into a Grain Cart

DATE	OPERATION or IMPLEMENT TYPE\DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
8/25/2019	Harvest	Combine	8 Row	475	1					
	Grain Cart	Tractor	850 bu. Cart	225						

Table 9. Harvest with Corn Dumped into a Truck Trailer for Hauling

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
8/25/2019	Harvest	Combine	8 Row	475	1					
	Corn Dumped into Trailer for Hauling									

Table 10 is an example of harvesting cotton with a module building picker. Plastic wrap for covering modules is considered an input which is reported in the input column. Cotton harvested with a boll buggy and module builder is reported similarly to corn harvested with a grain cart in Table 8. Separate lines would be reported for each of the boll buggy and the module builder.

Table 10. Cotton Harvest with a Round Module Building Cotton Picker

DATE	OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/23/2019	Harvest	Module Building Picker	6 Row	500	1			Include Round Module Plastic Wrap		

Other Activities Associated with Operations

Some activities may be associated with farm production but are not reported on a per acre basis. Table 11 is an example of custom hiring a backhoe for cleaning all ditches that adjoin a CIG field in crop production. A total of 40 annual hours are for cleaning ditches that surround the entire land tract or farm section of 500 acres in which the CIG field of 30 acres is only a portion. Often, these reported activities may not be readily attributable to a field section that entails data reported for crop production. In this case, report total annual hours for all acreage of the land tract or farm section. Portion attributable to the CIG field reported for production may be adjusted based on field acreage reported in the section for general crop information indicated by Table 1.

Table 11. Activities Associated with Operations, not on a per Acre Basis

Other Operations not Applied on a per Acre Basis						
OPERATION (indicate if in production field or edge(s) of field)	TRACTORS & OTHER EQUIPMENT (if applicable, include description of operation)			CUSTOM OPERATION (if applicable)		OTHER DESCRIPTIVE INFORMATION (include total annual hours for custom operation or total cost for custom operation)
	EQUIPMENT TYPE	HOURS (annual)	HP	RATE (\$/unit)	UNIT	
edge of field ditch cleaning	backhoe	40		100	hr.	annual hours are for 500 acre land tract or farm section; custom rate includes operator

Summary

The Appendix includes two examples of completed field data reports. Table A-2 is for standard tillage without a cover crop. Table A-3 is for standard tillage with a cover crop. Rows representing complete field activities are presented with alternating row colors to facilitate identification of field trips. Data reported for each table are identical except for differing yields, differing irrigation applications, and a single field trip with broadcasting of a cover crop that has seed composition and seed price reported in the section for general crop information

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Table A-2. Example of Completed Field Data Report for Standard Tillage without a Cover Crop

DATE		OPERATION or IMPLEMENT TYPE/DESCRIPTION		TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS			CUSTOM OPERATION (if applicable)		INPUTS	
		TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/22/2018	Chisel Ripper	Tractor	6 Row	225	1					
3/21/2019	Herbicide	Sprayer	100'	245	1			Glyphosate	pts.	3
	Herbicide							First Shot	oz.	0.6
	Herbicide							Banvel	oz.	8
	Herbicide							Select	oz.	5
	Surfactant							crop oil concentrate	oz.	5.12
4/8/2019	Field Cultivator	Tractor	36'	225	1					
4/8/2019	Fertilizer	Custom Spreader			1	7.50	acre	N-P-K-S-B		4-16-32-4-1
4/8/2019	Bedder Roller	Tractor	12 Row	225	1					
5/8/2019	Planter	Tractor	12 Row	190	1			Stonville 4946 GLB2 Cruiser + Dynasty Seed Treatment	seed	48,000
	Herbicide							Gramoxone	pts.	2
	Herbicide							Caporal	pt.	1
	Surfactant							crop oil concentrate	oz.	6.4
6/8/2019	Herbicide	Sprayer	100'	245	1			Liberty	oz.	32
	Herbicide							Dual	pt.	1
6/9/2019	Liquid Knife Fertilizer	Tractor	12 Row	190	1			32% UAN	lbs.	56.8
6/20/2019	Row Crop Cultivator	Tractor	12 Row	225	1			Plowed Irrigation Middles		
6/20/2019	Liquid Knife Fertilizer	Tractor	12 Row	190	1			32% UAN	lbs.	56.8
7/6/2019	Insecticide	Custom Airplane			1	8.00	acre	Orthene	lb.	1
	Growth Reg.							Pix	oz.	8
7/6/2019	Fertilizer	Custom Spreader			1	7.50	acre	N-P-K	lb.	0-0-60
7/18/2019	Insecticide	Sprayer	100'	245	1			Orthene	lb.	0.5
	Growth Reg.							Pix	oz.	16
7/28/2019	Insecticide	Custom Airplane			1	8.00	acre	Transform	oz.	2
	Growth Reg.							Pix	oz.	20
8/9/2019	Insecticide	Sprayer	100'	245	1			Ravage	oz.	4
	Growth Reg.							Pix	oz.	24
9/20/2019	Harvest Aid	Custom Airplane			1	8.00	acre	Finish	oz.	10.67
	Harvest Aid							Dropp	oz.	4.27
9/27/2019	Harvest Aid	Custom Airplane			1	8.00	acre	Dropp	oz.	2.33
	Harvest Aid							Prep	oz.	42.67
10/23/2019	Harvest	Module Building Picker	6 Row	500	1			Include Round Module Plastic Wrap		
Other Operations not Applied on a per Acre Basis										
OPERATION (indicate if in production field or edge(s) of field)		TRACTORS & OTHER EQUIPMENT (if applicable, include description of operation)			CUSTOM OPERATION (if applicable)		OTHER DESCRIPTIVE INFORMATION (include total annual hours for custom operation or total cost for custom operation)			
		EQUIPMENT TYPE	HOURS (annual)	HP	RATE (\$/unit)	UNIT				

Table A-3. Example of Completed Field Data Report for Standard Tillage with a Cover Crop

DATE		OPERATION or IMPLEMENT TYPE/DESCRIPTION	TRACTOR, EQUIPMENT, & SELF-PROPELLED MACHINERY SPECIFICATIONS				CUSTOM OPERATION (if applicable)		INPUTS		
			TYPE	WIDTH or ROW	HP	FIELD TRIPS	RATE (\$/unit)	UNIT	INPUT, COVER CROP, CHEMICAL, FERTILIZER & FORMULATION, ETC.	UNIT (pts, lbs, oz, etc.)	INPUT RATE
10/22/2019		Chisel Ripper	Tractor	6 Row	225	1					
10/22/2019		Broadcast Cover Crop	Tractor	60'	190	1			Cereal Rye	lbs.	60
3/21/2019		Herbicide	Sprayer	100'	245	1			Glyphosate	pts.	3
		Herbicide							First Shot	oz.	0.6
		Herbicide							Banvel	oz.	8
		Herbicide							Select	oz.	5
		Surfactant							crop oil concentrate	oz.	5.12
4/8/2019		Field Cultivator	Tractor	36'	225	1					
4/8/2019		Fertilizer	Custom Spreader			1	7.50	acre	N-P-K-S-B		4-16-32-4-1
4/8/2019		Bedder Roller	Tractor	12 Row	225	1					
5/8/2019		Planter	Tractor	12 Row	190	1			Stonville 4946 GLB2 Cruiser + Dynasty Seed Treatment	seed	48,000
		Herbicide							Gramoxone	pts.	2
		Herbicide							Caporal	pt.	1
		Surfactant							crop oil concentrate	oz.	6.4
6/8/2019		Herbicide	Sprayer	100'	245	1			Liberty	oz.	32
		Herbicide							Dual	pt.	1
6/9/2019		Liquid Knife Fertilizer	Tractor	12 Row	190	1			32% UAN	lbs.	56.8
6/20/2019		Row Crop Cultivator	Tractor	12 Row	225	1			Plowed Irrigation Middles		
6/20/2019		Liquid Knife Fertilizer	Tractor	12 Row	190	1			32% UAN	lbs.	56.8
7/6/2019		Insecticide	Custom Airplane			1	8.00	acre	Orthene	lb.	1
		Growth Reg.							Pix	oz.	8
7/6/2019		Fertilizer	Custom Spreader			1	7.50	acre	N-P-K	lb.	0-0-60
7/18/2019		Insecticide	Sprayer	100'	245	1			Orthene	lb.	0.5
		Growth Reg.							Pix	oz.	16
7/28/2019		Insecticide	Custom Airplane			1	8.00	acre	Transform	oz.	2
		Growth Reg.							Pix	oz.	20
8/9/2019		Insecticide	Sprayer	100'	245	1			Ravage	oz.	4
		Growth Reg.							Pix	oz.	24
9/20/2019		Harvest Aid	Custom Airplane			1	8.00	acre	Finish	oz.	10.67
		Harvest Aid							Dropp	oz.	4.27
9/27/2019		Harvest Aid	Custom Airplane			1	8.00	acre	Dropp	oz.	2.33
		Harvest Aid							Prep	oz.	42.67
10/23/2019		Harvest	Module Building Picker	6 Row	500	1			Include Round Module Plastic Wrap		
Other Operations not Applied on a per Acre Basis											
OPERATION (indicate if in production field or edge(s) of field)		TRACTORS & OTHER EQUIPMENT (if applicable, include description of operation)				CUSTOM OPERATION (if applicable)		OTHER DESCRIPTIVE INFORMATION (include total annual hours for custom operation or total cost for custom operation)			
		EQUIPMENT TYPE	HOURS (annual)	HP	RATE (\$/unit)	UNIT					