Appendix A. Survey Protocol

**Interview Script for LCA of CSA farmers in California's Central Valley and Surrounding Foothills**

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**Introducing the study and recruitment to the interviewee**

As you know, we're working on a research project that is documenting CSA farmers' philosophies, farmers' journeys in becoming a CSA farmer, CSA farmers' marketing and production practices, and CSA farmers' views on future research needs and policy concerns. An additional component of this research focuses on environmental issues, including greenhouse gases and energy use. Our goal is to collect data and model life cycle energy and greenhouse gases in CSA farming and delivery systems using life-cycle methods. The life cycle methodology allows researchers quantify flows of energy, materials and emissions from a system. It is basically one type of accounting system for energy and greenhouse gases. Historically the methodology has focused on industrial systems but there is growing interest in the application to natural systems and agriculture. Institutions and organizations undertake life cycle assessments to support business strategy, research and development, inform product or process design, educate within and outside of the organization, and for value-added labeling.

While the amount of detail of our questions may seem excessive, the exercise can be very useful since together we will create a detailed accounting of all of the inputs and energy used on your farm and all of its food outputs. We will also be able to understand greenhouse gas emissions from the farming and delivery operation, and break it down by specific source in order to get a better idea of how to reduce emissions and your energy bill. For your participation we are also offering to create detailed farm maps if you would find this useful, as well as write up a brief description of what we are doing for your newsletter. Please let us know if you'd be interested in these. We would also like to compensate you for your time by offering you $500 for completing the questionnaire with me. We can pay $100 up front and then $400 at the end if it takes more than one session. We'll fill out paperwork at the end to make sure you are compensated.

To our knowledge, we are the first to undertake a detailed life-cycle assessment of CSA farming and delivery systems. There have been very few studies that have taken a look at diversified food production systems and they have almost exclusively been done in Europe. We recognize that each farming system is very different and highly variable due to location and production practices, as a result this tool will probably not be useful for generic conclusions, but instead identify particular energy intensive or carbon emitting sectors of production.

I want to emphasize that all of your responses are confidential, which means that no names will be used in any publications and we will disguise identifying characteristics of you and your CSA operation.  You can choose to skip any question and also can end the interview at any time.  I also want to ask you for your permission to record our conversation in a quiet location.

*[To be said when setting up the interview, on the phone or email, with confirmation that the participant understands:]*

If at all possible, we will need to access your records. Specifically, the following records for all parts of your farming & delivery operation would be very useful:

* electricity bills for 2009. If you use different sites with separate bills (such as farms or storage locations), please have each of these available.
* natural gas bills for 2009. If you use different sites with separate bills (such as farms or storage locations), please have each of these available.
* propane bills for 2009. If you have multiple tanks that serve different buildings or operations, please have separate bills are available.
* irrigation and water bills for 2009. If you use different sites with separate bills (such as farms or storage locations), please have each of these available.
* 2009 production details for all crops going into the CSA share
* 2009 purchasing orders for all materials, including
	+ diesel
	+ gasoline
	+ fertilizers (all kinds)
	+ single season drip tape/T-tape
	+ seeds
	+ soil for growing transplants
	+ flats for growing transplants
	+ starts for transplanting
	+ mulch (including straw, plastic, etc.)
	+ fertilizers and soil amendments
	+ purchased pesticides
	+ rinse or cleaner for produce
	+ packaging for shares (boxes, twist ties, plastic & paper bags, etc.)

# I. Time frame and farm context

Before we start, I want to let you know that when I ask about a specific resource use, I'll be referring to those resources used in both your farming operation and your CSA delivery operation.

1. When does your growing season begin and end? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. When does your CSA season begin and end? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How many farm locations do you have? \_\_\_\_\_ *[Fill in Table 0]*
	1. How many acres of cropland did you farm in these different farm locations in 2009? *[Fill in Table 0]*
	2. Do you know the dominant soil series at this location? *[Fill in Table 0]*
	3. Which of these locations have active utility services like electricity and gas? *[Fill in Table 0]*
	4. What are the addresses of these different farm locations? *[Fill in Table 0]*
	5. What percentage of that acreage is devoted to crops that go in your CSA shares? *[Fill in Table 0]*
	6. Have any of your production locations been converted from native vegetation to agriculture within the last 30 years? If so, do you know the previous dominant vegetation type? *[Fill in Table 0]*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TABLE 0: Farm location details**Location name | Acres [cropland] | Soil series | Utilities *[E for electricity, G for natural gas]* | Address | % land to CSA shares | Veg in last 30 years? |
| Loc 1:  |  |  | E G |  |  |  |
| Loc 2: |  |  | E G |  |  |  |
| Loc 3: |  |  | E G |  |  |  |
| Loc 4: |  |  | E G |  |  |  |
| Loc 5: |  |  | E G |  |  |  |

# II. Diesel, Gasoline, and Farm Machinery

1. During 2009, how much **diesel** did you use, either in volume or in value? \_\_\_\_\_\_
	1. *[Other option: use records to fill in monthly values below]*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|  |  |  |  |  |  |  |  |  |  |  |  |

1. How many **tractors** do you use on your farming operation? \_\_\_
	1. How many run on diesel, and how many run on gasoline? \_\_ (d)/\_\_ (g)
	2. What is their make, model, and year? [fill in table 1&2, column 1]
2. How many **trucks** do you use on your farm and in your delivery system? \_\_\_
	1. How many run on diesel, and how many run on gasoline? \_\_ (d)/\_\_ (g)
	2. How long do you keep a tractor? Or what is your usual interval for replacements? \_\_\_\_ years
	3. What is their make, model (HP), and year? [fill in table 1&2, column 1]
3. How many **generators** do you use on pumps for your farming operation? \_\_\_
	1. How many run on diesel, and how many run on gasoline? \_\_ (d)/\_\_ (g)
	2. What is their make, model, and year? [fill in table 1&2, column 1]
4. Is there any **other machinery or equipment** that you have that uses diesel or gasoline, like lawn mowers, weedwackers, or heavy equipment?
	1. What is their make, model, and year? [fill in table 1&2, column 1]

|  |  |  |
| --- | --- | --- |
| **TABLE 1: Diesel use**Machine: Make, HP, and year | *[Option 1]* % of all diesel use (if records available) | *[Option 2]* hours of use during a typical month |
| Tractor 1:  |  |  |
| Tractor 2: |  |  |
| Tractor 3: |  |  |
| Tractor 4: |  |  |
| Tractor 5: |  |  |
| Truck 1:  |  |  |
| Truck 2: |  |  |
| Truck 3: |  |  |
| Truck 4: |  |  |
| Truck 5: |  |  |
| Generator/pump 1: |  |  |
| Generator/pump 2: |  |  |
| Generator/pump 3: |  |  |
| Generator/pump 4: |  |  |
| Generator/pump 5: |  |  |
| Generator/pump 6: |  |  |
| Generator/pump 7: |  |  |
| Generator/pump 8: |  |  |
| Generator/pump 9: |  |  |
| Other 1: |  |  |
| Other 2: |  |  |
| Other 3: |  |  |

1. During 2009, how much **gasoline** did you use, either in volume or value? \_\_\_\_\_\_
	1. *[Other option: use records to fill in monthly values below]*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|  |  |  |  |  |  |  |  |  |  |  |  |

*[Table below is filled in at the same time as Table 1 above]*

|  |  |  |
| --- | --- | --- |
| **TABLE 2: Gasoline use**Machine: Make and year | *[Option 1]* % of all gasoline use (if records available) | *[Option 2]* hours of use during a typical month |
| Tractor 1:  |  |  |
| Tractor 2: |  |  |
| Truck 1:  |  |  |
| Truck 2: |  |  |
| Truck 3: |  |  |
| Truck 4: |  |  |
| Truck 5: |  |  |
| Generator/pump 1: |  |  |
| Generator/pump 2: |  |  |
| Generator/pump 3: |  |  |
| Generator/pump 4: |  |  |
| Generator/pump 5: |  |  |
| Other 1: |  |  |
| Other 2: |  |  |
| Other 3: |  |  |

# III. Electricity

1. During 2009, how much electricity did you use in kWhs (or cost, if kWh is not available)?
	1. *[Other option: use records to fill in monthly values for up to four locations below.]*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Loc | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |

* 1. Is this divided between residential uses and business uses at any of the locations? Y N
	2. *[If yes]* Are these different uses billed separately or together? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Do you know the approximate percentage used by these two kinds of uses? \_\_\_\_\_\_\_\_\_\_\_\_
1. Who provides your electricity service in your farm locations? *[fill in table 3a]*
2. Is there local electricity generation on site, like through photovoltaic cells or wind? *[fill in table 3a]*
3. How many buildings with active electric hookups are there on each of your farm locations? *[fill in table 3a]*
4. What equipment do you have in each location? *[fill in table 3a]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TABLE 3a: Electricity use by location** | Electricity Provider | Local generation? [*if yes:* age, technology, generation capacity] | # of buildings w/ hookups | Equipment |
| Loc 1:  |  |  |  |  |
| Loc 2: |  |  |  |  |
| Loc 3: |  |  |  |  |
| Loc 4: |  |  |  |  |
| Loc 5: |  |  |  |  |

# IV. Natural Gas

1. During 2009, how much gas did you use, either in therms, MCF, BTU (or cost, if other units aren’t available)? \_\_\_\_\_\_
	1. *[Other option: use records to fill in monthly values below.]*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Loc | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |

1. Who provides your natural gas service in your farm locations? *[fill in table 4]*
2. Is there local natural gas generation or methane capture on site? *[fill in table 4]*
3. How many buildings with active natural gas hookups are there on each of your farm locations? *[fill in table 4]*

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 4: Natural gas use by location** | Gas Provider | Local generation/methane capture? | # of buildings w/ hookups |
| Loc 1:  |  |  |  |
| Loc 2: |  |  |  |
| Loc 3: |  |  |  |
| Loc 4: |  |  |  |
| Loc 5: |  |  |  |

# V. Water

1. During 2009, how much water did you use, in acre-feet (or gallons if acre-feet not available)?
	1. [Other option: use records to fill in monthly values below]

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Loc | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |

1. Who provides your water in your farm locations? *[fill in table 5]*
2. What percentage of the water comes from canals in each location? *[fill in table 5]*
3. What percentage of the water comes from wells in each location? *[fill in table 5]*
4. What percentage of the water is used for irrigation in each location? *[fill in table 5]*
5. What percentage of the water is used for washing produce in each location? *[fill in table 5]*
6. What percentage of the water is used for all other uses in each location? *[fill in table 5]*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TABLE 5: Water use by location** | Water provider | Source:% canal | Source:% well | Use:% irrigation | Use:% washing produce | Use:% other |
| Loc 1:  |  |  |  |  |  |  |
| Loc 2: |  |  |  |  |  |  |
| Loc 3: |  |  |  |  |  |  |
| Loc 4: |  |  |  |  |  |  |
| Loc 5: |  |  |  |  |  |  |

1. During 2009, how much t-tape or drip tape did you use? \_\_\_\_\_\_
	1. How long do you use the tape? \_\_\_\_\_\_
	2. Where did you purchase the tape from? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Was it delivered to your property or did you pick it up? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Do you use a filtration system on any of your irrigation or washing systems? *[circle one]* Y N
	1. How often do you replace the filters? \_\_\_\_\_\_
	2. Where did you purchase the filters from? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Was it delivered to your property or did you pick it up? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# VI. Seeds and Transplants

Seeds

1. During 2009, what crops did you purchase seeds for (including cover crop)? *[fill in first column of Table 6]*
2. During 2009, where there any crops that you saved seed for? *[fill in first column of Table 6]*
3. What was the weight or volume (or cost if others not available) of your \_\_\_\_\_\_ *[crop x]* seed purchase?
4. Who did you purchase \_\_\_\_\_\_ *[crop x]* seeds from, and where are they located?
	1. What equipment do you use to save seed (hand/fuel powered thrashers, mesh bags and/or screens) and how long do you use the equipment?
5. How were the \_\_\_\_\_\_ *[crop x]* seeds transported to your farm?

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 6: Seeds**purchased/saved | Volume/weight/ value of seeds | Source of seed *[name of business]* & location *[town/city]* | Transport type |
| 1: 🞏/🞏 |  |  |  |
| 2: 🞏/🞏 |  |  |  |
| 3: 🞏/🞏 |  |  |  |
| 4: 🞏/🞏 |  |  |  |
| 5: 🞏/🞏 |  |  |  |
| 6: 🞏/🞏 |  |  |  |
| 7: 🞏/🞏 |  |  |  |
| 8: 🞏/🞏 |  |  |  |
| 9: 🞏/🞏 |  |  |  |
| 10: 🞏/🞏 |  |  |  |
| 11: 🞏/🞏 |  |  |  |
| 12: 🞏/🞏 |  |  |  |
| 13: 🞏/🞏 |  |  |  |
| 14: 🞏/🞏 |  |  |  |
| 15: 🞏/🞏 |  |  |  |
| 16: 🞏/🞏 |  |  |  |
| 17: 🞏/🞏 |  |  |  |
| 18: 🞏/🞏 |  |  |  |
| 19: 🞏/🞏 |  |  |  |
| 20: 🞏/🞏 |  |  |  |
| 21: 🞏/🞏 |  |  |  |
| 22: 🞏/🞏 |  |  |  |
| 23: 🞏/🞏 |  |  |  |
| 24: 🞏/🞏 |  |  |  |
| 25: 🞏/🞏 |  |  |  |
| 26: 🞏/🞏 |  |  |  |
| 27: 🞏/🞏 |  |  |  |
| 28: 🞏/🞏 |  |  |  |
| 29: 🞏/🞏 |  |  |  |
| 30: 🞏/🞏 |  |  |  |

Turning seeds into starts on the farm

1. During 2009, did you grow any seeds for transplants? *[circle one]* Y N
2. What's in your starting soil? *[fill in first column of Table 6a]*
	1. What amount of \_\_\_\_\_\_ *[component x]* did you use in 2009? *[fill in Table 6a]*
	2. Who did you purchase \_\_\_\_\_\_ *[component x]* from, and where are they located? *[fill in Table 6a]*
	3. How was \_\_\_\_\_\_ *[component x]* transported to your farm? *[fill in Table 6a]*

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 6a: Starting soil components** | Volume/weight/value of seeds | Source of seed *[name of business]* & location *[town/city]* | Transport type |
| 1:  |  |  |  |
| 2: |  |  |  |
| 3: |  |  |  |
| 4: |  |  |  |
| 5: |  |  |  |
| 6: |  |  |  |
| 7: |  |  |  |
| 8: |  |  |  |
| 9: |  |  |  |
| 10: |  |  |  |

1. What kind of start containers or flats did you use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. How many of each did you use in 2009? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Are they reusable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. How long do they typically last? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. Where did you purchase them from *[name of business & town/city]*? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. How were they transported to your farm? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Did you use a greenhouse or greenhouses to grow these transplants? *[circle one]* Y N Num. \_\_\_\_
	1. Does the greenhouse have active climate control? *[circle one]* Y N Source \_\_\_\_\_\_\_\_\_
	2. What is/are it/they made from? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Where is/are the greenhouse(s) located? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Purchased starts

1. During 2009, what crops did you purchase starts for? *[fill in first column of Table 7]*
2. What was the volume, weight, or value of your \_\_\_\_\_\_ *[crop x]* starts purchase? *[fill in Table 7]*
3. Who did you purchase \_\_\_\_\_\_ *[crop x]* starts from, and where are they located? *[fill in Table 7]*
4. How were the \_\_\_\_\_\_ *[crop x]* starts transported to your property? *[fill in Table 7]*

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 7: Starts (purchased)** | Number/weight/value of starts | Source of starts *[name of business]* & location *[town/city]* | Transport type |
| 1:  |  |  |  |
| 2: |  |  |  |
| 3: |  |  |  |
| 4: |  |  |  |
| 5: |  |  |  |
| 6: |  |  |  |
| 7: |  |  |  |
| 8: |  |  |  |
| 9: |  |  |  |
| 10: |  |  |  |
| 11: |  |  |  |
| 12: |  |  |  |
| 13: |  |  |  |
| 14: |  |  |  |
| 15: |  |  |  |
| 16: |  |  |  |
| 17: |  |  |  |
| 18: |  |  |  |
| 19: |  |  |  |
| 20: |  |  |  |

# VII. Mulch

1. During 2009, what kinds of mulches did you use, if any? *[fill in first column of Table 8]*
2. What was the volume, weight, or value of \_\_\_\_\_\_ *[mulch x]* you used? *[fill in Table 8]*
3. How long does \_\_\_\_\_\_ *[mulch x]* last? *[fill in Table 8]*
4. Who did you purchase \_\_\_\_\_\_ *[mulch x]* from, and where are they located? *[fill in Table 8]*
5. How was \_\_\_\_\_\_ *[mulch x]* transported to your farm? *[fill in Table 8]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TABLE 8: Mulches** | Volume/weight/value of mulch | Lifespan | Source of mulch *[name of business]* & location *[town/city]* | Transport type |
| Mulch 1:  |  |  |  |  |
| Mulch 2: |  |  |  |  |
| Mulch 3: |  |  |  |  |
| Mulch 4: |  |  |  |  |
| Mulch 5: |  |  |  |  |
| Mulch 6: |  |  |  |  |

# VIII. Fertilizers and soil amendments

1. During 2009, what kinds of fertilizers or soil amendments did you use, if any (including cover crops)? *[fill in first column of Table 9]*
2. What was the volume, weight, or value of \_\_\_\_\_\_ *[amendment x, or crop residues left on field (indicate whether dry or wet weights)]* you used? *[fill in Table 9]*
3. For \_\_\_\_\_\_ *[amendment x]*, did you make it on-farm, or did you purchase it? *[fill in Table 9]*
	1. Where did you purchase it from, and where are they located? *[fill in Table 9]*
	2. *[If purchased]* How was \_\_\_\_\_\_ *[amendment x]* transported to your farm? *[fill in Table 9]*
4. *[If compost is made on farm]* What is your C:N ratio generally? \_\_\_\_\_\_
	1. What is your source of C? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Did you purchase C, if so where was it delivered from? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. What is your source of N? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. Did you purchase N, if so where was it delivered from? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. How often do you turn your pile? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	6. What implement do you use to turn your pile? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	7. Do you water your pile? Y N
		1. *[If yes]* How often and for how long? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TABLE 9: Fertilizers** | Volume/weight/value of fertilizerwet/dry | Source *[name of business]* & location *[town/city]* | Transport type | Composition *[C:N ratio; N-P-K]* |
| 1:  |  🞏/🞏 |  |  |  |
| 2: |  🞏/🞏 |  |  |  |
| 3: |  🞏/🞏 |  |  |  |
| 4: |  🞏/🞏 |  |  |  |
| 5: |  🞏/🞏 |  |  |  |
| 6: |  🞏/🞏 |  |  |  |
| 7: |  🞏/🞏 |  |  |  |
| 8: |  🞏/🞏 |  |  |  |
| 9: |  🞏/🞏 |  |  |  |
| 10: |  🞏/🞏 |  |  |  |

# IX. Pesticides

1. During 2009, what kinds of pesticides did you use, if any? *[fill in first column of Table 10]*
2. What was the amount of \_\_\_\_\_\_ *[pesticide x]* you used? *[fill in Table 10]*
3. What was the percent active ingredient of \_\_\_\_\_\_ *[pesticide x]*? *[fill in Table 10]*
4. Who did you purchase \_\_\_\_\_\_ *[pesticide x]* from, and where are they located? *[fill in Table 10]*
5. How was \_\_\_\_\_\_ *[pesticide x]* transported to your farm? *[fill in Table 10]*
6. How was \_\_\_\_\_\_ *[pesticide x]* applied? *[fill in Table 10]*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TABLE 10: Pesticides** | Amount | % active ingredient | Source *[name of business]* & location *[town/city]* | Transport type | Application method |
| 1:  |  |  |  |  |  |
| 2: |  |  |  |  |  |
| 3: |  |  |  |  |  |
| 4: |  |  |  |  |  |
| 5: |  |  |  |  |  |
| 6: |  |  |  |  |  |
| 7: |  |  |  |  |  |
| 8: |  |  |  |  |  |
| 9: |  |  |  |  |  |
| 10: |  |  |  |  |  |

# X. Cleaning and packaging of produce

1. During 2009, what kinds of produce and wash bin cleaners (like Simple Green, vinegar, bleach) did you use, if any? *[fill in first column of Table 11]*
2. What was the amount of \_\_\_\_\_\_ *[cleaner x]* you used? *[fill in Table 11]*
3. Who did you purchase \_\_\_\_\_\_ *[cleaner x]* from, and where are they located? *[fill in Table 11]*
4. How was \_\_\_\_\_\_ *[cleaner x]* transported to your farm? *[fill in Table 11]*

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 11: Produce cleaners** | Amount | Source *[name of business]* & location *[town/city]* | Transport type |
| 1:  |  |  |  |
| 2: |  |  |  |
| 3: |  |  |  |
| 4: |  |  |  |
| 5: |  |  |  |
| 6: |  |  |  |
| 7: |  |  |  |
| 8: |  |  |  |

1. During 2009, what kinds of packaging did you use for your CSA shares, if any? *[read entries in first column of Table 12 and check boxes]*
2. What was the amount of \_\_\_\_\_\_ *[packaging item x]* you used? *[fill in Table 12]*
3. Who did you purchase \_\_\_\_\_\_ *[packaging item x]* from, and where are they located? *[fill in Table 12]*
4. How was \_\_\_\_\_\_ *[packaging item x]* transported to your farm? *[fill in Table 12]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TABLE 12: Packaging** | Amount | Lifespan *[if reusable]* | Source *[name of business]* & location *[town/city]* | Transport type |
| Boxes 🞏 |  |  |  |  |
| Plastic bags 🞏 |  |  |  |  |
| Compostable (cellulose) bags 🞏 |  |  |  |  |
| Paper bags 🞏 |  |  |  |  |
| Twist ties 🞏 |  |  |  |  |
| Rubber bands 🞏 |  |  |  |  |
| Other:  |  |  |  |  |
| Other: |  |  |  |  |
| Other: |  |  |  |  |

# XI. Other inputs

1. Are there any other products your farm purchases that I haven't asked you about? *[fill in first column of Table 13]*
2. What was the amount of \_\_\_\_\_\_ *[other input x]* you used? *[fill in Table 13]*
3. Who did you purchase \_\_\_\_\_\_ *[other input x]* from, and where are they located? *[fill in Table 13]*
4. How was \_\_\_\_\_\_ *[other input x]* transported to your farm? *[fill in Table 13]*
5. How was \_\_\_\_\_\_ *[other input x]* applied? *[fill in Table 13]*

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 13: Other inputs** | Amount | Source *[name of business]* & location *[town/city]* | Transport type |
| 1:  |  |  |  |
| 2: |  |  |  |
| 3: |  |  |  |
| 4: |  |  |  |
| 5: |  |  |  |

**XII. Produce in your shares and other outputs**

1. *[Option 1, ideal]* Do you keep track of your harvests each week in terms of volume by crop? *[if yes, record volumes in Table 14 {separate table from Excel file}, if no, ask following questions]*
	1. For \_\_\_\_\_\_ *[crop x]*, what percentage of overall production goes to your CSA?
2. *[Option 2, less ideal]* Do you have a newsletter that tells the contents of your box each week?
3. *[If so]* May I please have access to these, either in paper form or electronically? I will fill in the weeks that have certain kinds of crops and then will follow up later to ask for an average amount that you give in each box.
4. *[Upon follow up]* For \_\_\_\_\_\_ *[crop x]*, what amount normally goes in a share?
5. *[Upon follow up]* For \_\_\_\_\_\_ *[crop x]*, what percentage of overall production goes to your CSA?
6. *[Option 3, least ideal]* Can you describe your average box in each of the four seasons? *[Fill in Table 15]*
7. In other words, what are the common items that you provide in spring?
	* 1. How much of \_\_\_\_\_\_ *[item x]* do you give in a box?
8. What are the common items that you provide in summer?
9. How much of \_\_\_\_\_\_ *[item x]* do you give in a box?
10. What are the common items that you provide in fall?
11. How much of \_\_\_\_\_\_ *[item x]* do you give in a box?
12. What are the common items that you provide in winter?
13. How much of \_\_\_\_\_\_ *[item x]* do you give in a box?

|  |
| --- |
| **TABLE 15: Boxes by season** |
| SpringItem & Amount | SummerItem & Amount | FallItem & Amount | WinterItem & Amount |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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1. Approximately what proportion of your produce is lost in the field? \_\_\_\_\_\_
	1. What percentage of this is plowed under? \_\_\_\_\_\_
	2. What percentage is composted? \_\_\_\_\_\_
2. Are there any other products your farm sells (outputs) that I haven't asked you about? *[fill in first column of Table 16]*
	1. What was the amount of \_\_\_\_\_\_ *[other output x]* you sold or that left your farm in 2009? *[fill in Table 16]*
	2. What proportion of \_\_\_\_\_\_ *[other output x]* went into your CSA shares? *[fill in Table 16]*

|  |  |  |
| --- | --- | --- |
| **TABLE 16: Other outputs** | Amount sold or left farm in 2009 [weight or volume preferred, price less ideal] | % to CSA share |
| 1: |  |  |
| 2: |  |  |
| 3: |  |  |
| 4: |  |  |
| 5: |  |  |
| 6: |  |  |
| 7: |  |  |
| 8: |  |  |
| 9: |  |  |

1. Do you use produce in your shares from any source other than your farm? Y N

**XII. Distribution system**

1. When we talked to you before, you described your delivery system as:
	1. Multiple drop-off locations that where your members pick up their shares
	2. Members pick up their shares on the farm
	3. Delivery to every member
	4. Other
2. *[For type a]* What are the addresses of your drop-off location? *[fill in first column of Table 17]*
3. *[For type a]* How many shares do you leave at each location? *[fill in Table 17]*
4. Which truck(s) do you use for your deliveries?
5. How often, if at all, do you combine trips on each route?

|  |  |  |  |
| --- | --- | --- | --- |
| **TABLE 17: Delivery**Address [#, street, city] | Number of shares | Truck(s) used | Combined trips |
| 1:  |  |  |  |
| 2: |  |  |  |
| 3: |  |  |  |
| 4: |  |  |  |
| 5: |  |  |  |
| 6: |  |  |  |
| 7: |  |  |  |
| 8: |  |  |  |
| 9: |  |  |  |
| 10: |  |  |  |
| 11: |  |  |  |
| 12: |  |  |  |
| 13: |  |  |  |
| 14: |  |  |  |
| 15: |  |  |  |
| 16: |  |  |  |
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| 19: |  |  |  |
| 20: |  |  |  |
| 21: |  |  |  |
| 22: |  |  |  |
| 23: |  |  |  |
| 24: |  |  |  |
| 25: |  |  |  |
| 26: |  |  |  |
| 27: |  |  |  |
| 28: |  |  |  |
| 29: |  |  |  |
| 30: |  |  |  |

1. Can we leave a very short questionnaire for your members to respond to anonymously about how they got to the drop-off site?

**XIV. Final questions**

1. Is there anything else I should have asked you?
2. May we contact you by phone if we have any follow up questions?

Appendix B. Detailed list of quantity and sources of farm inputs used in 2010.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | Farm 1 | Farm 2 | Farm 3 | Farm 4 | Farm 5 | LCI Data Source for GHG Emissions |
| Hectares | 8.09 | 2.23 | 4.86 | 4.86 | 4.05 |   |
| Energy use |   |
| Diesel (L) | 87.7 | 227 | 653 | 97.1 | 344 | Production/transport: ecoinvent. In-field: 2010 California Air Resource Board Off-Road Model |
| Gasoline (L) | 128 | 249 | 318 | 359 | 322 | Production/transport: ecoinvent. In field: 2010 California Air Resource Board Off-Road Model |
| Electricity (kWh) | 3,760 | - | 7,660 | 2,250 | 2,930 | Production: Western Grid Mix Source: Murtishaw, S., L. Price, S. de la Rue du Can Eric Masanet, E. Worrell and J. Sathaye, Lawrence Berkeley National Laboratory. Development of Energy Balances for the State of California. Report CEC-500-2005-068. Public Interest Energy Research Program, California Energy Commission, Sacramento, California, 2005. |
| Soil Amendments |   |
| Gypsum (kg) | - | 2,240 | 18.7 | 579 | - | ecoinvent gypsum mineral at mine CH, IPCC Transoceanic Transportation, ecoinvent Diesel Truck |
| Lime (kg) | - |   | - | - | 673 | ecoinvent limestone flour US, ecoinvent Diesel Truck |
| Peat (kg) | 80.7 | - | 88.5 | 29.9 | 53.1 | ecoinvent open cast mined peat NORDE, IPCC Transoceanic Transportation, ecoinvent Diesel Truck |
| Perlite (kg) | 7.94 | - | 27.3 | 6.15 | - | ecoinvent expanded perlite at mine DE, IPCC Transoceanic Transportation, ecoinvent Diesel Truck |
| Phosphate (kg) | - | - | - | - | 448 | ecoinvent triple superphosphate at US, ecoinvent Train Transport Freight, ecoinvent Diesel Truck |
| Potash (kg) | - | - | - | 56.0 | 112 | ecoinvent potassium sulfate at storehouse RER |
| Vermiculite (kg) | 1.78 | - | - | - | 9.19 | ecoinvent expanded vermiculite at mine ZA, IPCC Transoceanic Transportation, ecoinvent Diesel Truck |
| Fertilizer\* |   |
| Feather meal (kg) | 6.23 | - | 93.4 | 93.4 | 1,120 | ecoinvent Train Transport Freight, ecoinvent Diesel Truck |
| Fish emulsion (kg) | 16.7 | 159 | 1.46 | - | 11.7 | ecoinvent Train Transport Freight, ecoinvent Diesel Truck |
| Kelp (kg) | 13.1 | - | - | - | - |   |
| Off-farm compost (kg) | 5,600 | 382 | - | 3,500 | - | ecoinvent Diesel Truck |
| On-farm compost (kg) | 2,800 | 44,500 | 11,900 | 5.47 | - | ecoinvent Diesel Truck |
| Pesticides |   |
| Neem pil (kg) |   |   | - | 0.19 | - | ecoinvent fatty acids from vegetarian oil at plant RER  |
| Sulfur (kg) | 5.38 | - | 0.20 | 8.41 | - | ecoinvent sulfuric acid, liquid at plant RER |
| Irrigation, mulch and packing material |   |
| Cardboard (kg) | 0.86 | - | - | 1.10 | 3.25 | ecoinvent cardboard |
| Galvanized steel (kg) | 0.01 | - | 0.64 | - | - | ecoinvent galvanized steel sheet at plant RNA 1mm sheet |
| LDPE (kg) | 0.08 | - | 13.6 | - | 42.0 | ecoinvent polyethylene film (PE-LD) RER |
| Polyethylene (PE) (kg) | 2.20 | 14.8 | 11.5 | 3.94 | - | ecoinvent polyethylene pipe (PE-HD) RER |
| Polypropylene (PP) (kg) | 2.14 | 2.45 | 2.18 | 1.12 | - | ecoinvent polypropylene injection molding part (PP) RER |
| Polystyrene (PS) (kg) | 2.69 | 24.5 | 4.67 | 1.87 | 22.4 | ecoinvent polystyrene Granulate (PS) RER |
| PVC (kg) | 4.71 | - | 0.22 | 0.52 | - | ecoinvent polyvinylchloride pipe (PVC) RER |
| Rubber bands (kg) |   | 1.15 | - | - | 1.14 | ecoinvent styrene-butadiene rubber (SBR) US |
| Wheat straw | - | - | 106 | - | - | ecoinvent straw IP at farm CH |
| Cover crops | Bell beans, buckwheat, clover, Sudan grass, oat, and vetch | Bell Bean, oat, pea, and vetch | Bell beans and vetch | Bell beans, cereals, peas, and vetch | Rye and vetch | Nova, R. and H. Tejeda. (2006) Evaluation of N2O emissions from N in plant residues as affected by environmental management factors. Nutrient Cycling in Agroecosystems. 75(1-3): 29-46. |
| \* In field emissions calculated using IPCC Direct Emissions using nitrogen content of different fertilizers Card, Adrian, David Whiting, and Carl Wilson. 2009. Organic Fertilizers. Colorado Master Gardener Notes #234. http://www.ext.colostate.edu/mg/gardennotes/234.pdf |