Organic Strawberry Project Growers Assessment
Facilitator's Guide

Introduce yourself and the recorders:
Thanks for agreeing to participate in this assessment of our research today. I'm Mickie Swisher, the project investigator for this grant. I will be one of your facilitator for this session. We have other facilitators here: [Introduce those present]. Two recorders will be taking notes during the session.

Purpose of the Assessment:
We need your recommendations about our current research, its promise, its limitations, and what we should do in the future. Your input will help us reach our goals for this project and may aid in the development of other organic strawberry research.

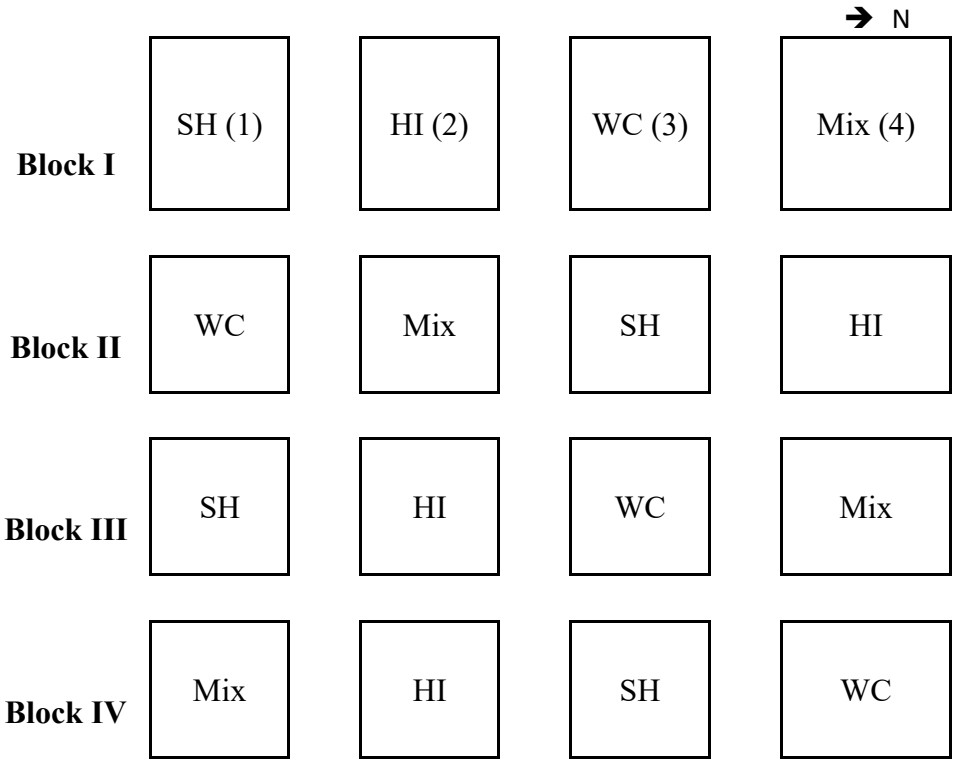
Informed Consent:
Facilitator distributes informed consent. Collect the signed copy. Make sure the participant retains a copy for his/her records.

Preparation for Field Observations:
Facilitator divides participants into four groups and assigns them to one of four of the repetitions (blocks) where they will make their observations. Make sure one person from each of the two groups is assigned to each block.

Observation in the Open Field Experiment

Instructions to Participants: We planted three cover crops and left one set of plots with no cover crop. All cover crops and the plants that grew up in the control plots were flail mowed and incorporated into the soil in October. We then transplanted four strawberry cultivars into each plot, using bare root transplants. You may be familiar with some of these cultivars and your prior familiarity with them could affect your assessment of how they have performed in our research plots. We have therefore labeled these four strawberry cultivars from A to D to make sure that your later discussion will be based on what you observed today. If you have any questions during your observation, please don't hesitate to ask the researchers who are here with us.

Hand out cover crop observation form.



Cover Crop Observation Form

Instructions: The three cover crops and the plot with no cover crop are labeled. Please make the following observations for each cover crop and the control with no cover crop.

WEED COVERAGE: Please rate the **coverage by weeds** for each plot on a scale of 1 to 5 where 1 is very little weed coverage and 5 is very great weed coverage.

	1 very little	2	3	4	5 very great
Sunn hemp (1)					
Hairy indigo (2)					
No cover crop (3)					
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)					

WEED VIGOR: Please rate **weed vigor** (the overall growth and development of the weeds) in each plot on a scale of 1 to 5 where 1 is very low vigor and 5 is very high vigor.

	1 very low	2	3	4	5 very high
Sunn hemp (1)					
Hairy indigo (2)					
No cover crop (3)					
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)					

ADDITIONAL WEED OBSERVATIONS. Do you see any **especially obnoxious weeds** or weeds that would be **very harmful** to a strawberry crop in the plot? If so, please indicate the weed of concern and make some comments about its prevalence and apparent vigor in each cover crop and the control.

Sunn hemp (1)	
Hairy indigo (2)	
No cover crop (3)	
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)	

Overall assessment

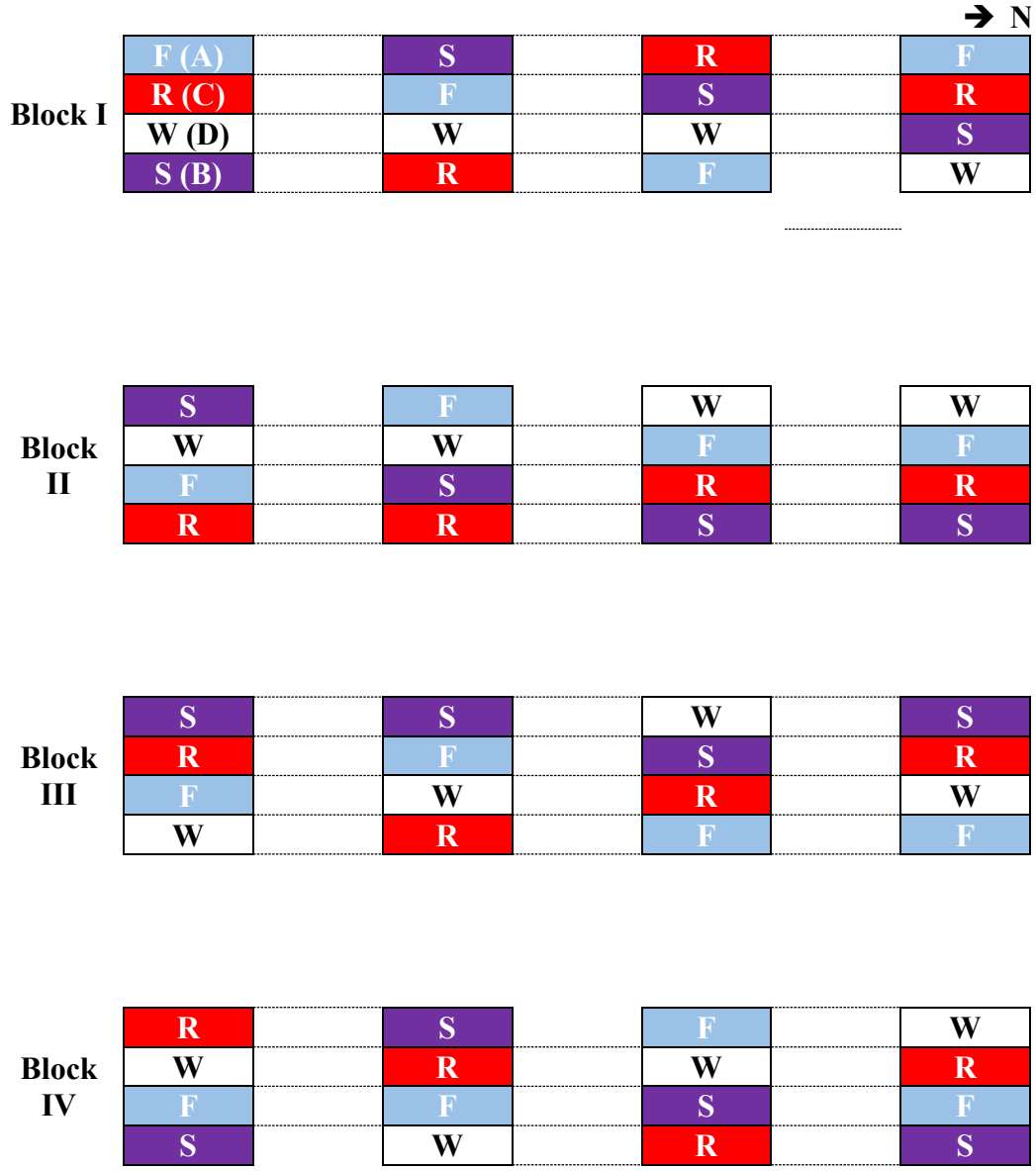
Do you see any differences in the overall performance of the strawberry plants in the different cover crops, not taking into account the different cultivars, just as a whole? That is, does it appear that any of the cover crops seem to either inhibit or accelerate strawberry plant growth and development?

	Indications that the cover crop may be **inhibiting** strawberry plant growth and development	Indications that the cover crop may be **accelerating** strawberry plant growth and development
Sunn hemp (1)		
Hairy indigo (2)		
No cover crop (3)		
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)		

Do you have any other general observations about the cover crops?

Sunn hemp (1)	
Hairy indigo (2)	
No cover crop (3)	
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)	

Main Plots for Cover Crop and Strawberry Cultivars in Open Field Experiment



Strawberry Cultivar Observation Form

Instructions: There are four strawberry cultivars (labelled A through D) in the open field experiment. Each cultivar has been planted into four plots: one of each of the three cover crops and one into the plot with no cover crop. Please make the following observations for us.

Vigor of Strawberry Plant

1. Please rate three aspects of the vigor for each strawberry cultivar. Please circle the score that best describes your assessment of each cultivar with regard to number of leaves, crown size, and total leaf area as described below. Please make brief comments in the spaces provided if you have any additional observations.

Score	Vigor of Strawberry Plants		
	Number of leaves	**Crown size**	**Total leaf area**
1	Few	Small	Small
2	Average	Average	Average
3	Abundant	Large	Large

Cultivar	Number of Leaves	Crown Size	Total Leaf Area	Comments
Festival (A)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Sensation (B)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Radiance (C)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Winter star (D)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	

Pest Injury and Disease Damage

2. Your comments about the nature and extent of pest and disease damage are of great interest to us. Please use the spaces provided to note any aspects of pest or disease damage that attract your attention. Please rate the **pest injury and disease damage** for each cultivar using a score of 1 to 4 where:

    1 None Observable
    2 Limited Injury/Damage
    3 Significant Injury/Damage
    4 Serious Injury/Damage

Cultivar	Pest Injury	Disease Damage	Comments
Festival (A)	**1** **2** **3** **4**	**1** **2** **3** **4**	
Sensation (B)	**1** **2** **3** **4**	**1** **2** **3** **4**	
Radiance (C)	**1** **2** **3** **4**	**1** **2** **3** **4**	
Winter star (D)	**1** **2** **3** **4**	**1** **2** **3** **4**	

Fruit Characteristics

How would you rate **the fruit color, size and shape** of each strawberry cultivar? Please rank on a scale of 1 to 3 as indicated below. If there are fruit characteristics that you think we should be aware of, please make a comment.

Score	**Fruit Characteristics**		
	Color	**Shape**	**Size**
1	Poor	Poor	Too small
2	Acceptable	Acceptable	Good
3	excellent	excellent	Too large

Cultivar	Color	Shape	Size	Comments
Festival (A)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Sensation (B)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Radiance (C)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	
Winter star (D)	**1** **2** **3**	**1** **2** **3**	**1** **2** **3**	

Overall Assessment of Cultivars

Based on your observation today, please CIRCLE the letter that identifies the three cultivars that seem most promising or interesting to you – cultivars that we should definitely include in any future cultivar trials.

Most Promising/Interesting	Second Most Promising	Third Most Promising
A	A	A
B	B	B
C	C	C
D	D	D

Block I

1	2	3	4
A	B	C	A
C	A	B	C
D	D	D	B
B	C	A	D

Block II

3	4	1	2
B	A	D	D
D	D	A	A
A	B	C	C
C	C	B	B

Block III

1	2	3	4
B	B	D	B
C	A	B	C
A	D	C	D
D	C	A	A

Block IV

4	2	1	3
C	B	A	D
D	C	D	C
A	A	B	A
B	D	C	B

Now we want you to examine how different cultivars and cover crops interact. We are interested in your observations for the **three most promising cultivars** that you listed above. Do you see interactions between the various cover crops or control and the performance of these three strawberry cultivars? Please use the following tables to make your comments about the performance of these strawberry cultivars in each cover crop plot.

Most Promising/Interesting Cultivar **LETTER _____**

Cover Crop	Comments
Sunn hemp (1)	
Hairy indigo (2)	
No cover crop (3)	
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)	

SECOND Most Promising/Interesting Cultivar LETTER _____

Cover Crop	Comments
Sunn hemp (1)	
Hairy indigo (2)	
No cover crop (3)	
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)	

THIRD Most Promising/Interesting Cultivar **LETTER _____**

Cover Crop	Comments
Sunn hemp (1)	
Hairy indigo (2)	
No cover crop (3)	
Mix [sunn hemp, hairy indigo, slenderleaf rattlebox & American jointvetch] (4)	

Pest & Beneficial Prevalence

Facilitator: We are monitoring the presence of two strawberry pests. One is relatively new to Florida – the spotted wing drosophila – that infested a large proportion of berry fiends in a similar experiment we conducted in 2014. We are currently developing pest management practices for the spotted wing drosophila. The other is a pest that is already common to the SE United States, the two spotted spider mite. Dr. Liburd will explain a little more about these pests and their significance and explain how we may be able to use biological control agents to reduce their damage. (Liburd makes comments.)

Distribute the flyers with the pictures of the spotted wing drosophila and the two spotted spider mite and distribute hand lens. Assign at least two participants to a plot planted in each cover crop. You may assign participants to the same or different strawberry cultivars. Have the participant write the name of the cover crop or control at the top of the Pest & Beneficial Observation Form. Ask each participant to select an area in the assigned plot and examine 10 strawberry plants, looking for the two pest species. The participant should record the number of each species observed in the Pest & Beneficial Observation Form. Also ask participants to note the presence (number and name) of any other pest species or beneficial species that they observe as they are examining the plants.

Pest and Beneficial Observation Form

Cover Crop #: Cultivar Letter: Block #:				
Plant	**Two Spotted Spider Mite**	**Spotted Wing Drosophila**	**Other Pests**	**Other Beneficials**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Growers' Assessment Discussion

Please keep your assessment forms in front of you for this discussion. We are hoping that you can reach some agreement about the more promising – and less promising – aspects of our research about organic strawberry production systems and give us some recommendations about what we need to do in any future research we conduct. We are going to ask you a few questions to guide your discussion, but we really want you to discuss what you observed today and what you think we should do among yourselves. We will collect the individual observation sheets from you at the end of the session. So we will not lose your individual ideas.

Facilitator Preparation. Facilitator must have flip charts, medium to large size green and red "dots" that participants can stick to the flip charts, and colored magic markers for writing on the flip charts for this discussion. Write the name of each of the four cover crops on a single sheet of flip-cart paper. You will use this paper first. Then write the name of each cover crop on a separate sheet of flip chart paper. Divide the paper into two sections – advantages and disadvantages. The chart should look like this:

Name of Cover Crop	
Advantages	**Disadvantages**

Topic 1. **Cover Crop Performance and Effects**

Q1. Potential value of further research with cover crops

Facilitator needs to hand out red and green 3x5 cards. Must have flip chart available.

Cover crops have many potential advantages and disadvantages for growers. For example, cover crops can suppress weeds, which is major focus of this research. They can also add organic matter to the soil. Some of them can supply nitrogen and other nutrients. They may attract beneficial insects. There are also some potential disadvantages. For example, they might encourage some pests or prevent good establishment of transplants.

Let's start with weed suppression. There was a control plot with no cover crop in addition to the three cover crop plots in the field experiment. Take a quick look at the observations you made in the field about weed suppression. I'm giving you a green and a red card. If you think ANY of the cover crop plots provided better weed suppression than the control plot, hold up a green card. If you think there was NO advantage to ANY of the cover crops, hold up a red card.

Facilitator instructions based on response.

1. If there is a clear preponderance of red cards (no advantage), move to next question. Facilitator: Let's move on to considering other potential advantages and disadvantages.

2. If there is a clear preponderance green cards (advantage) or a "pretty equal" number of red and green cards, ask ***each*** participant who voted "green" to list which cover crops out-performed the control plot on their green card and hand it to the facilitator. Facilitator: I'm going to make a list of the cover crops that some of you thought out-performed the control. But while I do that, let's move on to considering all of the potential effects of using cover crops, but keeping weed suppression in mind. I'll put a list of the cover crops that you named on a sheet of paper, along with how many of you named each one, where we can see it. ***Facilitator posts chart in visible space as participants complete tasks for Q2.***

Q2. Advantages and disadvantages of cover crops based on observations

Facilitator puts up flip chart with names of all three cover crops on it and hands out red and green sticky dots.

Now let's consider the overall performance and effects of the three cover crops in the open field experiment. Keep in mind your observations about how well the cover crops suppressed weeds. That is really important. But also think about any other effects you may have noticed –good or bad. For example, you may have observations about whether they seemed to affect strawberry plant growth or you may have noticed differences in disease and pest damage in the plots where different cover crops were planted. Take a couple of minutes to review your observations in the field about the cover crops. After you have reviewed your notes, place either a green or a red "sticky dot" by the name of each cover crop. Green means the cover crop has potential for organic strawberry production, particularly in terms of weed suppression. Red means the cover crop does not seem to have much potential. ***Give participants no more than 5 minutes to review their observations and put the red/green dots on the chart. This needs to move quickly.***

Facilitator selects sheet with cover crop that received the most green dots and puts it in a

place where all participants can see it – preferably on a table where they can write on it. I see that XXX cover crop got quite a few green dots. Please share your ideas – and what you observed in the field – that seemed to make this a "pretty good" cover crop, even if you didn't put a green dot by it. Could one of you who put a green dot by this cover crop please raise your hand? Thank you …. I would like for you to get your colleagues three main reasons for liking this cover crop down on this flip chart. Focus on the three to five most important advantages of this cover crop. ***Give 5 minutes for discussion.***

Now, please discuss the ***disadvantages*** of this cover crop among yourselves. Could (writer) please write down the main disadvantages on the sheet. If you can't think of any you can just write none. Thank you. ***Facilitator give 2-3 minutes for this exercise.***

Now let's look at one of the cover crops that got several red dots – like XXX. Please share your ideas – and what you observed in the field – that seemed to make this a "pretty bad" cover crop, even if you didn't put a red dot by it. Could one of you who put a red dot by this cover crop please raise your hand. Thank you ... I would like for you to get your colleagues three to five main reasons for not liking this cover crop down on this flip chart. Focus on the three to five most important disadvantages of this cover crop. ***Give 5 minutes for discussion.***

Now, please discuss the ***advantages*** of this cover crop among yourselves. Could (writer) please write down the main disadvantages on the sheet. If you can't think of any you can just write none. Thank you. ***Facilitator give 2-3 minutes for this exercise.***

Facilitator follow-up probes:

1. **If participants only indicated advantages and disadvantages regarding weed suppression, ask if they have additional advantages or disadvantages they would to see on the charts in terms of effects on strawberry plant development OR pest and disease damage.**

Facilitator repeat exercise if there is another cover crop with several green or several red dots. If remaining cover crops are about even with regard to number of dots, move to next question.

Closure for facilitator.

Looking at what you have produced both when you focused just on weed suppression (point to chart where the cover crops that did "well" on weed suppression are listed), we see that XX, XX (list them) seem promising. When you looked at more general factors, the cover crop(s) that seemed to be most promising at this time is XXX (list two if needed). The main advantages are: read them aloud to make sure they are clear to you and everyone.

Now that you have thought about all this, we need some advice from you about our on-going research. We need to start to develop proposals for future research. So we're asking you some questions that would help us decide what to emphasize in those proposals.

We'll start with weed suppression. While it's true that our research focuses on organic strawberry production, we know that weed suppression is a major, if not the major, cost of production for both conventional and organic producers. So the reasons do not have to be limited to organic production systems. If you, as a group, were writing a proposal, what two or three main points would you make about what we still need to know about using cover crops to

suppress weeds based on what we have learned so far in this research project. As you discuss what to put on your list of two or three main points, think about both the positive effects of using cover crops to suppress weeds that you observed and discussed in with each other ***and*** things that we still just do not know.

Facilitator asks for one person to write down points and gives group a flip chart with heading "Need to Learn about Weed Suppression by Cover Crops." Divide into two small groups if there are more than 8 participants. Give 5 minutes.

Now let's discuss other potential advantages and potential disadvantages of using cover crops in strawberry production in general – not specifically for weed suppression. You've already listed some things you observed, positive or negative, on your observation sheets and listed some advantages and disadvantages of cover crops in our earlier exercise. Based on all of these observations and discussions, what would you as a group stress to a donor about what else (besides weed suppression) should be emphasized in future research about cover crops for strawberry production? List the three or four main areas for research that you would emphasize with one or two brief phrases explaining why. Like before, your ideas may reflect both potential advantages and potential problems.

Facilitator asks for one person to write down points and gives group a flip chart with heading "Need to Learn about Using Cover Crops in Strawberry Production." Divide into two small groups if there are more than 8 participants. Give 5 minutes.

Topic 3: Off-season crops

Facilitator instructions: The facilitator should place a prepared chart paper on the wall with the title "Alternative off-season crops."

Facilitator: As you know, the cover crops we used were legumes. Based on your observations thus far, do you believe we could improve this research by exploring alternative off-season crops? What crops do you use? What are the pros and cons of the crops you use?

The facilitator should note the crops plus their pros and cons on the prepared chart paper.

Closure: Facilitator summarizes key ideas very briefly and puts charts on wall.

Topic 2: Performance of Strawberry Cultivars

Q1. Performance of Strawberry Cultivars

Facilitator Instructions: Put up a flip chart with the letters of the four cultivars. As you read *each cultivar by letter* ask the people who listed each the cultivar as most promising during their observations in the field to raise their hands. Repeat for rank 2 and rank 3. Count the number and enter it by the letter for the cultivar.

Divide participants into three groups of three or four (maximum). Assign each group to cultivar A, B and C. Then ask the participants in each group to review all of their field notes about their assigned cultivar. Give each group a flip chart for each cultivar.

Tell the participants to review their field notes – especially the traits that they thought were important in defining the cultivar. Ask the group to identify the desirable (promising,

worthy, interesting) traits of high performers. Also ask them to identify any possible concerns or undesirable traits. Give participants no more than 15 minutes to complete this task.

CULTIVAR IDENTIFYING NUMBER HERE:	
Desirable Characteristics/Performance Indicators	**Concerns or Undesirable Characteristics/Performance Indicators**

After each group completes the task, post the completed flip charts on a wall. Give participants 3 red sticky dots. Ask each participant to review all of the charts and vote for those characteristics that should have the highest priority in future research for cultivar selection for organic strawberry production systems. Participants can vote for positive traits OR for negative traits – e.g., vote that researchers should focus on ELIMINATING that trait. Explain that participants can divide their votes any way they want. One could use one vote for each of three different traits or give all three votes to a single trait if s/he thinks it is really critical. Limit time to 5 minutes.

Closure for facilitator.
Summarize the key recommendations based on the number of sticky circles assigned to the various traits.

Final Discussion

Facilitator: During your observations and discussions, we have covered three topics – the value and performance of cover crops, the performance of strawberry cultivars, and pest and disease damage and incidence. You gave us some advice in each area. Now, we would like to ask you to think about our research as a whole.

Please take a few minutes to think about your observations and what you have said and heard. We will pass around some green and red 3 x 5 cards. Please complete two to four cards in each color. On the **green cards**, write down your personal highest priorities for those aspects of our current research that we should ***continue*** in any research we might conduct in the future – one idea per card please because we are going to sort these later. On the **red cards** please write down what we ***should drop from future research,*** again, one idea per card.

Facilitator – collect all cards. Closure: We would like to thank you for participating in this process. Your suggestions and advice are valuable to us. We will use the information you have provided to build a sound foundation for building on this project in the future, after this project is complete. We therefore really appreciate your participation. If you have any suggestions or comments you want to share with us after this meeting, please feel free to contact us. The contact information is listed in the informed consent. Again, thank you for joining our research assessment.