

Workshop evaluation

Pre-and post-event surveys were designed and given to the participants to evaluate the information gained during the workshops. Eighteen attendees turned in the survey. The collected surveys were analyzed to evaluate the workshop and the activities presented during the event.

Tables 2 and 3 show the result of the survey. As can be seen there was a pronounced improvement in the attendees understanding of the presented topics. The percent change in understanding ranged from 22% to 32%. Most of the attendees were satisfied with strongly agree or agree on the workshop topics and the overall performance of the speakers. Most of the attendees stated that they will use the knowledge gained in educational programming/work with farmers.

Table (2). Improvement in the attendees' knowledge of the topics before and after the training

Topic	Before - level of understanding	After – level of understanding	Percent change in understanding
Principles of biogas production	2.33	3.78	29
Designing an anaerobic digester	2.17	3.33	24
Status and potential of biogas industry	2.06	3.5	29
Biogas purification and utilization	2.06	3.33	27
Feedstocks for bioenergy production	2.5	3.72	24
Production and anaerobic digestion of microalgal biomass	2.22	3.44	29
Anaerobic digestion and mitigation of greenhouse gases	2.11	3.28	24
Cow power: animal waste to electricity	2.22	3.61	25
Biogas project permitting issues	1.89	3.17	22
Anaerobic co-digestion of organic substrates	2.11	3.22	30
Solar energy fundamentals	2.28	3.78	26
Basics of photovoltaic systems	2.22	3.5	28
Photovoltaic and concentrating solar power	2.22	3.61	32
Sizing a solar heating system	2.0	3.17	27
Small wind systems	1.94	3.56	27
Safety of anaerobic digestion and solar energy systems	1.94	3.28	28
Applications of solar energy on farms	2.17	3.56	28
Economics of anaerobic digestion systems	1.89	3.22	26
Economics of solar energy systems	2.06	3.28	25
Average level of understanding all topics	2.24	3.63	

Table (3). Satisfaction of the attendees about the topics presented

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Topics addressed my needs in addressing alternative energy with clients	3	12	1	2	
Workshop increased my overall knowledge	5	11	2		
Overall the performance of presenters was good	7	9	2		
Method of presentations was adequate	7	9	2		
Field trip was useful and insightful	6	8	4		
Hands-on training and demonstration of anaerobic systems was useful and informative	6	7	5		
Facilities, arrangements and food were adequate	11	5	1	1	
Training was a worthwhile use of my time	13	3	1	1	
There was enough time for discussion	9	9			
Instructors answered questions adequately	10	8			
This type of training should be offered each year	5	8	4	1	
I will use information presented in educational programming/work with farmers	7	9	2		

In addition to the data presented in Tables 2 and 3, attendees were asked several questions. Below are the questions and the answers of each individual who turned the survey after the event. Based on the data shows in Table 3 and 4 and the answers of the questions given to the attendees, it can be concluded that we have a successful workshop that achieved the intended objective.

Did workshop meet your expectations?

1. Yes, more than I expected, Updated information, Broad spectrum of topics covering economics, design, waste management
2. yes
3. yes
4. yes
5. yes
6. yes
7. yes language skills were limiting
8. yes very good program
9. yes
10. yes
11. yes learned a lot
12. yes, was good basic information
13. yes good information
14. yes, we hoped to engage in education and discussion
15. anaerobic digesters are important and have a useable scale can scale up or down as needed
16. mostly would have liked to learn more about small farm under 40 acres or \$50,000 application
17. yes, just hard enough I could follow and had to think to understand it.
18. I liked the overview of the different options. It would have been helpful if more of the info had been distilled down to real world examples of how to size an economical system

To what extent is the workshop subject important to farmers?

1. Important and timely need at this time of fuel crisis
2. believe the solar systems have potential but feel less optimistic about application of digesters on small farms
3. most components are too expensive for small farmers
4. some for larger producers
5. very
6. very
8. I now received question on this subject
9. Thursday was more practical Tuesday and Wednesday had too much theory to large scale
10. very important
11. could become more important as prices change
12. very important might be ahead of most farmers
13. provide facts about costs and hear from other producers
14. very important and can help develop planning
15. they could save money and resources in this area of energy
16. they need to know alternative energy solutions
17. very important in navigating the future of energy
18. they are looking for energy alternatives that save them money and time. We need to identify and explain the options that do that.

Have you had any questions from farmers about alternative energy?

1. Yes farmers are interested
2. no
3. yes, on solar water pumps
4. yes
5. some
6. on anaerobic digester
7. a few
8. yes
9. yes
10. yes
11. yes
12. yes
13. some
15. not yet
16. yes
17. one
18. yes

If this workshop is offered in the future, how could we improve it?

1. A farm tour to show the application sides, solar energy strengthen the design uses for on farm applications to real farm needs
2. concentrate on smaller scale applications
3. shorten to 2 days
4. more practical info on cost
5. more small scale application

6. cooler month
- 7.more literature
- 8.more information on photovoltaic design
- 9.a more clear step by step explanation of each technology
- 10.more technical data and resources
- 11.plans and cost figures for top 5-8 alternative energy items
- 12.more in-depth, thumb rules or rules of thumb
- 13.condense and shorten
- 16.small farm application and pictures
- 17examples of application
- 18.more information at a lower level for small farm application

What did you like the most about this workshop?

- 1.Dr Cheng presentations
- 2.field trips and technical information
- 3.biochar info
4. seeing the examples
- 5.all
6. field trip and panel discussion
- 7.discussion time
- 8.knowledge of presenters
9. Thursday farmer explanations
- 10.solar info – this technology is changing fast
- 11.field trip
- 12.not working
13. wind and solar and farmer talks field trip
14. speakers
15. biochar, anaerobic digester
16. solar wind and biochar
- 17.speakers from academia
18. field trip and opportunity to visit with those who are implementing the energy technologies

What did you like the least about this workshop?

- 1.None
- 2.Breakfast options
3. length
5. none
6. nothing
- 8.food no dietary restrictions were asked about
- 9.lab science
- 10.travel
- 11.too much time sitting the first 2 days
- 13.too long
16. no breakfast
17. donuts
- 18 several of the speakers were hard to understand

Would you recommend this training workshop to others?

1. Yes – workshop presented very useful information integrated idea about solar, photovoltaic and livestock waste digestion
2. only to those working with large and medium scale farmers
4. yes
5. yes
6. yes
7. yes
8. yes
9. yes
10. yes maybe more technical for this audience and less for producers
11. yes could be very useful
12. yes
13. maybe after it is condensed – too long for most people
14. yes
15. yes
16. yes
17. yes good introduction and overview
18. yes but include more examples of how to size the systems for typical Missouri situations.

How do you plan to use the information obtained at this workshop?

1. News articles and one-on-one
2. Im not sure yet
3. newsletter
5. not sure yet
6. program, personal knowledge
7. newsletter
8. energy programs in southern Missouri
9. work up funding proposal for on-farm implementation
10. promoting alternative energy
11. newsletter, build into program for on-farm energy
12. development and Extension educational program
13. one on one with producers
15. maybe newsletter and one on one to farmers
16. disseminate to farmers
17. discuss at farm visits
18. share info as appropriate in news articles, programs and individual consultations.