

Title: What Can Legumes do for *YOU*? Understanding Biological Nitrogen Fixation from the Ground Up.

Time: 1:30-5:30 PM Friday

This workshop will have two major goals:

1. Learn the most recent information about the ecology and biology of BNF and apply these to your own farming systems
2. Share information with other growers about the practicalities of managing legume cover crops in organic vegetable and grain systems

1:30-1:45 Introductions and Participant Survey

- Hand out small card on which participants will respond to five questions and hand back to facilitators. This will be used to organize small groups.
 1. Name
 2. Level of experience using legumes in rotation (<1 year, 2-5 years; >5 years)
 3. If you have experience using legumes in rotation, can you list 2-3 legumes you use most frequently and give an example of a common rotation sequence that includes leguminous green manures?
 4. What do you expect to learn at this workshop?
 5. What is the one question you would like to answer today?
- Identify someone to organize cards so that small groups are mixed by experience level. Not more than 5 people in each group. This will happen while Laurie/Julie are presenting.

1:45-2:30 Introduction to the biology and ecology of Biological Nitrogen Fixation; Julie and Laurie (Cornell)

- The Basics (Julie). Factors affecting BNF in the field:
 - What exactly is nitrogen fixation? How do the nodules form?
 - Who ends up in the nodule if I inoculate my seed?
 - What ecological and environmental conditions effect rhizobia ecology and the amount of N fixed?
- Ecology of nitrogen fixation (Laurie)
 - How does the soil environment affect nitrogen fixation?
 - How do legumes interact with non-legume species?

2:30-3:45 Starting Points for using Legumes in your systems (Eero, Tony, Dakota)

2:30-3:00 Tony and Dakota Potenza, Potenza Organic Farms
3:00 – 3:15 COFFEE BREAK
3:15-3:45 Eero Ruuttila, Nesenkeag Farm, Litchfield, NH

3:45-4:45 Small Group Learning and Sharing

3:45-4:00 Part I: Applying the information you learned today

Form 4-5 groups using notecard information. Hand out 'warm up' worksheets with the following questions on them for participants to fill out individually:

- Given the information presented by Laurie and Julie, how might you change the management of legumes in your system (if at all!)?
- What are the most significant challenges you are facing when using legumes in your rotations?

4:00-4:45 Part II: Group Problem Solving

We will post 5 relevant questions from farmer notecards on large flip chart paper on wall around room. Groups rotate around room and write their collective answers to the questions on each sheet. At the same time, they read what others have written and respond in writing on flipchart. Have each group choose the one question that is most important, critical, interesting, etc to report on in end of workshop in discussion. This will serve as a basis for the final discussion.

Julie calls time and gives group 5 minutes to walk around room and absorb and reflect on written responses. After 5 minutes participants return to their seats. Julie Are there things that came out of the group work that were surprising? Something that solved a problem you were facing?

4:45-5:15 Where do we go from here? (Cornell, Eero, Tony and Dakota)

- Are there niches where you would like to have a legume and you don't?
- Are there species that we should be looking more closely at?
- Discussion: What should be the scientific community's future research directions? In particular, we are particularly interested in hearing feedback on which species of cover crops we should be looking at. Which ones have you heard about, and would like to know more?

5:15-5:30 Evaluations