Empowering young farmers for sustainable agriculture

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Abstract

Present study was taken up to address the Farmer problems in the adopted villages of Moinabad mandal, RR district, Hyderabad. 70 young Farmers formed the sample for the present study. Checklists developed by the unit (AICRP-Child Development) were used to find out the problems & training needs of the Farmers. Based on the training needs, on campus & off campus training programmes were organized involving experts. Besides this Life skill index was also developed to trace the life skills for Sustainable Agricultural practices. Success stories were documented and based on the field experience a Conceptual model was developed for Retaining youth in Agriculture.

Keywords: sustainable agriculture; retaining youth in agriculture

Introduction

Research facts

- India is losing more than 2,000 farmers every single day and since 1991, the overall number of farmers has dropped by 15 million (Sainath, 2013) [6]. This has several implications for the future of Indian agriculture and India’s food security.

- Attracting and Retaining Youth in Agriculture (ARYA) is critical for Indian Agriculture as most of the new innovations require a skilled Agricultural work force. For instance, promotion of high value agriculture, precision farming, organic cultivation, Hi-Tech horticulture, micro-propagation, Integrated Pest Disease & Nutrients Management, Post-Harvest Management, development of backward and forward linkages etc. require well trained young farmers with enthusiasm and passion for farming and ability to take risks.

- The rural youth could be the ideal target for skill training in these new areas of agricultural growth and to do this effectively there is a need to mobilize young farmers.

Hence the project has been taken up, because a well-trained, well informed & educated Youth will be in a better position to assess the changing conditions, can also be change agents for Sustainable Agricultural practices and models for other farmers to follow.

Note: The present study was supported by ICAR under XII plan period

Introduction & Background

- Nearly three-quarters of India’s families depend on rural income.

- Majority of India’s poor (some 770 million people or about 70 percent) are found in rural areas. India’s food security depends on producing cereal crops, as well as increasing its production of fruits, vegetables and milk to meet the demands of a growing population with rising incomes.

- To do so, a productive, competitive, diversified and sustainable agricultural sector will need to emerge at an accelerated pace.

Operational definition

Youth: The current generation of youth, defined by the United Nations as those aged between 15 to 24 years, is the largest in history. As of 2012, the youth make up for 1.8 billion or 18% of total world population. Ninety percent (90%) of these young people live in developing countries, comprising as much as 20% of their countries’ total population.

Life skills have been defined by WHO (1993) as “the abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life”. ‘Adaptive’ means that a person is flexible in approach and is able to adjust in different circumstances. ‘Positive behaviour’ implies that a person is forward looking even in difficult situations.
Life skills Index: It is the basic skills required for sustainable agricultural practices as ranked by the experts (from Agriculture, Horticulture, extension, govt dept & NGOs working for farming community). It includes 3 major skills: Cognitive skills, Management skills and Interpersonal skills. Cognitive skill were given rank I, followed by Management skills (Rank II) and Interpersonal skills (III), by the experts (36).

Cognitive skills include: Critical thinking, Creative thinking, Decision making and Problem solving

Inter personal relationship skills include: Communication skills, Empathy, Coping & Management skills refers to the ability to recognize, understand and manage one’s own emotions as well as others; ability recognize the source of stress and manage it in a constructive way and ability to manage resources and cope with difficult situations.

Research methodology
Sample was identified from the adopted villages (5) of Moinabad mandal, RR District, Hyderabad (AP), through field survey and focused group interviews with the Youth leaders, Adarsharytu, Book keeper, Ration card dealer, karobar, Village Sarpanch & other active farmers in the village. There were 1255 youth in the age group of 16-25yrs in the selected villages (5) of Moinabad mandal, RR District.

General objective: Empowering Young Farmers for Sustainable agriculture

Specific objectives
- To find out the attitude of youth towards Agriculture
- To find out the reasons/problems faced by the farmers
- To find out their training needs with regard to sustainable agriculture
- To conduct on campus and off campus capacity building programmes
- To generate success stories to be a model for other young farmers to follow
- To develop life skills Index for Sustainable agricultural practices
- To develop a Conceptual model for retaining youth in Agriculture
- To develop & disseminate IEC material to empower young farmers towards sustainable agricultural practices

Research strategy adopted: In order to achieve the above objectives Capacity building programmes were organized for the farmers involving stakeholders; experts; successful agriculturists; entrepreneurs & NGOs. Besides this the project also focused on developing Life skills Index required for sustainable agricultural practices.

Research tool details

1. SES scale developed by Aggrawal, et al (2005) was used to find out the SES of the rural families. Scoring was given as per the norms provided in the manual.
2. Life Skill Index developed by AICRP-CD unit, Hyderabad, was used to find out the Life skills levels of the selected sample.
3. Open ended checklist developed by AICRP-CD, Hyd unit, to find out the Perceptions of young farmers towards Agriculture
4. Open ended checklist developed by AICRP-CD, Hyd unit, was to find out the Training needs of the youth in Agriculture

Characterization of youth involved in Agriculture
Out of 1255 sample, 1012 (81%) were engaged in Agriculture. Out of 1012, 739 (59%) were fully engaged in Agriculture work and 273 (22%) were partially engaged in Agriculture work. Out of 1255 sample, 70 were selected for research purpose. Youth who were willing to be a part of the project formed the sample.

Out of 1255 sample
- 728 (58%) were boys & 527 (42%) were girls.
- 467 (37%) were in the age group of 16-19 yrs; 400 (32%) were in the age group of 19-22 yrs; and 388 (31%) were in the age group of 22-25 yrs;
- 462 (37%) completed SSC; and 208 (16%) discontinued studies after 10th class
- 264 (21%) passed Inter and 200 (16%) failed Inter/discontinued
- 121 (10%) studying degree college
- 1012 (81%) were engaged in Agriculture
- 28 (2%) were engaged in Sheep rearing
- 93 (7%) were involved in non-farm activities
- 122 (10%) were engaged in domestic work.

Gender & Occupation wise distribution (N=1255)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm</td>
<td>593</td>
<td>294</td>
<td>299</td>
</tr>
<tr>
<td>Non farm</td>
<td>662</td>
<td>318</td>
<td>344</td>
</tr>
<tr>
<td>Sheep-rearing</td>
<td>98</td>
<td>45</td>
<td>53</td>
</tr>
<tr>
<td>Household work</td>
<td>220</td>
<td>132</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>1255</td>
<td>642</td>
<td>613</td>
</tr>
</tbody>
</table>
The Socio-Economic Status was found based on the method prescribed by Aggrawal, et al. (2005). Out of 70 rural families, 43% (30) belonged to lower middle class families, 26% (18) were poor, 17% (12) belonged to upper middle class and 14% (10) were very poor.

Income particulars of the youth: Out of 70 families selected for the study, 46% (32) of the youth had income of Rs.3403/- per month; 24% (17) of the youth had income of Rs.1597/- per month; 19% (13) of the youth had income of Rs.645/- per month; and 11% (8) of the youth had average of Rs.6772/- per month.

Perceptions of young farmers (N=70) towards Agriculture: Youth in rural areas do not find Agriculture beneficial. Some of the reasons attributed were: Poor returns to investment (55%); Not perceived as a viable business (58%); Not an attractive career path (50%); No ready market (55%); It is energy-sapping (55%); Farmers are not respected (50%); Inadequate credit facility (43%) and Insufficient land (38%).

Training needs of farmers
Training plays an important role in the advancement of human performance in a given situation. Training provides a systematic improvement of knowledge and skills which in turn helps the trainees to function effectively and efficiently in their given task on completion of the training. Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into a vocation or improving ones productivity in an organization or enterprise. Effective training requires a clear picture of how the trainees will need to use information after training in place of local practices what they have adopted before in their situation. Lynton and Pareek (1990) stated that training consists largely of well-organized opportunities for participants to acquire necessary understanding and skill. Farmer training is directed towards improving their job efficiency in farming.

### Table 1: Training needs of the farmers (youth) (N=70)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Training area</th>
<th>Specific area</th>
<th>%</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crop Production &amp; Plant Protection</td>
<td>1. Weed management</td>
<td>55%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Cropping systems</td>
<td>53%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Crop diversification</td>
<td>41%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Integrated farming</td>
<td>49%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Integrated pests and disease management</td>
<td>60%</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Soil Health &amp; Fertility Management</td>
<td>1. Soil fertility management</td>
<td>60%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Soil and water conservation</td>
<td>62%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Management of problematic soils</td>
<td>47%</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Vegetable Crops</td>
<td>1. Production of low volume and high value crops</td>
<td>50%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Off-season vegetables</td>
<td>56%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Protective cultivation</td>
<td>47%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Post-harvest technology</td>
<td>54%</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Fruits</td>
<td>1. Cultivation of Export potential fruits</td>
<td>40%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Commercial fruit production</td>
<td>47%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Seed production</td>
<td>40%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Bio-fertilizer &amp;Bio-pesticides</td>
<td>26%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Vermi-compost production</td>
<td>47%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Organic manures production</td>
<td>50%</td>
<td>1</td>
</tr>
</tbody>
</table>

The above table presents the Training needs of the farmers (youth) from the adopted village of Moinabad Mandal. The list includes different areas: Crop Production & Plant Protection; Soil Health & Fertility Management; Vegetable Crops; Fruits; Farm based vocations and Non-Farm based vocations.

**Crop Production & Plant Protection:** In this area, in the order of ranking, youth (who were involved in Agriculture) showed first preference (62%) for Soil and water conservation; 2nd preference (60%) for Soil fertility management and 3rd preference (47%) for Management of problematic soils.

**Soil Health & Fertility Management:** In this area, in the order of ranking, youth (who were involved in Agriculture) showed first preference (62%) for Soil and water conservation; 2nd preference (60%) for Soil fertility management and 3rd preference (47%) for Management of problematic soils.

**Vegetable Crops:** In this area, in the order of ranking, youth (who were involved in Agriculture) showed first preference (56%) for Off-season vegetables; 2nd preference (54%) for Post-harvest technology; 3rd preference (54%) for Production of low volume and high value crops and 4th preference (47%) for Protective cultivation (green houses, shade net).

**Fruits:** In this area, in the order of ranking, youth (who were involved in Agriculture) showed first preference (47%) for Commercial fruit production and 2nd preference (40%) for Cultivation of Export potential fruits.

**Farm based vocations:** In this area, in the order of ranking, youth (who were involved in Agriculture) showed first preference (50%) for Organic manures production; 2nd preference (47%) for Vermi-compost production; 3rd preference (40%) for Seed production and 4th preference (26%) for Bio-fertilizer &Bio-pesticides.
Based on the awareness levels & Training needs of the youth, capacity building programmes (17) were organized for youth for Sustainable livelihoods in Agriculture using Networking approach.

Capacity building programmes

- Crop production Technologies
- Integrated Pests and Disease Management
- Integrated farming
- Soil Health & Fertility Management
- Off Season Vegetables
- Plant Protection Measures
- Protective Cultivation
- Weed management
- Bio – fertilizer & Bio – pesticides
- Vermi Compost Production
- Management of Animal husbandry

Effective cultivation of Vegetable crops for Sustainability was conducted for the youth (Nagireddyguda village) involved in Agriculture, involving expert from the Dept of Entomology, College of Agriculture, PJTSAU, Hyd on 28th July 2015.
Networking approach for retaining youth in Agriculture:
Networking approach is about
- Gaining information about Agriculture
- Narrowing down our choices for creating sustainable livelihoods for Farmers
- Connecting with stakeholders who can assist and support the Farmers
- Building interface between the Farmers & the Stakeholders
Building required knowledge & skill among Farmers through supportive programmes

Methodology followed for Net-working approach

- First found the specific training needs of the Farmers
- Traced and short listed Stakeholders who were willing to assist & support in creating sustainable livelihoods for farmers
- Conducted awareness programmes to appraise the rural youth about the kind of services being offered by the Stakeholders for Sustainable Livelihoods
- Created common plate form (through stakeholder meet) for the farmers to discuss issues with the Stakeholders regarding sustainable agriculture practices

Conducted village level meetings with village officials & farmers for generating action plans

Strategies adopted for achieving the above set procedure:

- Awareness programmes on Govt subsidies, Farm implements & 14 TV channels relating to Agriculture;
- Problem specific Field level & on campus Training programmes; Frontline demonstrations; Exposure visits; Interaction with successful farmers;
- Consultations/Interactive sessions with the Stakeholders;
- Video clipping on successful case studies on sustainable Agricultural practices

Networking with the stakeholders for sustainable livelihoods in agriculture

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Line dept stakeholders</th>
<th>Outcome of the programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crop Production Technologies</td>
<td>Horticulture Department</td>
<td>Young people empowered with adequate Knowledge and skill required for sustainability in Farm based enterprise</td>
</tr>
<tr>
<td>2</td>
<td>Cropping systems</td>
<td>Agriculture Department</td>
<td>Increased crop production &amp; profits over long-term</td>
</tr>
<tr>
<td>3</td>
<td>Crop diversification</td>
<td>Mandal level officials</td>
<td>Maximizes farmers control over crops and prices</td>
</tr>
<tr>
<td>4</td>
<td>Integrated farming</td>
<td>Farmers Training centre</td>
<td>Supports a family at a standard of living that includes health care and education</td>
</tr>
<tr>
<td>5</td>
<td>Plant Protection Measures</td>
<td>Centre for sustainable agriculture</td>
<td>Minimizes reliance on government subsidies</td>
</tr>
<tr>
<td>6</td>
<td>Post Harvest Technology</td>
<td>Sampada farms &amp;Consultancy</td>
<td>Empowered youth who can respond to the real life situations in positive and responsible ways</td>
</tr>
<tr>
<td>7</td>
<td>Fruit and Vegetable Preservation</td>
<td>Center for Agriculture Development &amp; Entrepreneurship</td>
<td>Youth equipped with coping skills, personal and social competencies will be able to manage challenging situations and utilize existing opportunities optimally</td>
</tr>
<tr>
<td>8</td>
<td>Soil fertility management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Soil and water conservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Weed management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Procuring quality seeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Higher productivity &amp; agricultural sustainability on the farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Appropriate technologies for marginal farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Production of low volume and high value crops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Off-season vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Commercial fruit production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Vermi-compost production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Protective cultivation (green houses, shade net)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Farm based enterprises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Life skills for sustainability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Based on the pretest scores, on campus and off campus (knowledge & skill based) training programs (17) were organized for the youth. Significant improvement was observed in the post test scores.

Based on the results following Conceptual model was developed on networking approach for retaining youth in Agriculture

**Personal level**
- Awareness level
- Competency
- Confidence
- Strategic thinking
- Management skills
- Change in attitude
- Decision making
- Problem solving

**Long term impact:**
- Increased crop production & profits over long-term
- Control over crops and prices
- Better standard of living that includes health care and education
- Minimized reliance on government subsidies
- Improved Agricultural practices
- Improved Agricultural productivity
- Improved resource mobilization
- Professional networking
- Accessing resources
- Sharing the knowledge & skills with others

**Personal variables**
- Age
- Gender
- Education
- Family size
- Family income
- Land holding

**Exiting Situation of Farmers (Youth)**
- Awareness programmes
- Filed level training
- Focus group discussions with the experts
- Interactive sessions with the Stakeholders
- Interactive discussions with the Successful Agriculturists
- Slide shows on different crop production system
- Video clippings on Sustainable Agricultural practices
- Information material
- Video clippings of BhumiPutra
- Agriculture magazines
- Farmer portal Web links
- Sharing & presenting Success stories by the Experts
- Information on Farmers call centers
- TV Channels for Farmers
- Updating on Govt subsidies

**Networking Conceptual Model**
- Awareness level
- Competency
- Confidence
- Strategic thinking
- Management skills
- Change in attitude
- Decision making
- Problem solving

**Inputs**
- Awareness programmes
- Filed level training
- Focus group discussions with the experts
- Interactive sessions with the Stakeholders
- Interactive discussions with the Successful Agriculturists
- Slide shows on different crop production system
- Video clippings on Sustainable Agricultural practices
- Information material
- Video clippings of BhumiPutra
- Agriculture magazines
- Farmer portal Web links
- Sharing & presenting Success stories by the Experts
- Information on Farmers call centers
- TV Channels for Farmers
- Updating on Govt subsidies

**Expected Outcome / Impact**
- Increased crop production & profits over long-term
- Control over crops and prices
- Better standard of living that includes health care and education
- Minimized reliance on government subsidies
- Improved Agricultural practices
- Improved Agricultural productivity
- Improved resource mobilization
- Professional networking
- Accessing resources
- Sharing the knowledge & skills with others
Life skill index: Prioritizing life skills needed for youth involved in farm activities for sustainability

<table>
<thead>
<tr>
<th>Life skill</th>
<th>Ranking given by experts for</th>
<th>No of experts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Cognitive/Thinking Skills</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Interpersonal Skills</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>Management Skills</td>
<td>1</td>
<td>19</td>
</tr>
</tbody>
</table>

**Impact of life skill training on farmers (Youth) N=70**

<table>
<thead>
<tr>
<th>Skills</th>
<th>Weightage given by Experts</th>
<th>Categories</th>
<th>Pre scores</th>
<th>Post scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No &amp; %</td>
<td>No &amp; %</td>
</tr>
<tr>
<td>1. Cognitive skills</td>
<td>I</td>
<td>Low</td>
<td>53 (77%)</td>
<td>33 (47%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>17 (23%)</td>
<td>25 (36%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>---</td>
<td>12 (17%)</td>
</tr>
<tr>
<td>II. Inter personal relationship skills</td>
<td>III</td>
<td>Low</td>
<td>24 (34%)</td>
<td>20 (29%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>28 (40%)</td>
<td>28 (40%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>18 (26%)</td>
<td>22 (31%)</td>
</tr>
<tr>
<td>III. Management skills</td>
<td>II</td>
<td>Low</td>
<td>29 (41%)</td>
<td>21 (30%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>30 (43%)</td>
<td>27 (39%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>11 (16%)</td>
<td>22 (31%)</td>
</tr>
</tbody>
</table>

Based on the pretest scores, Life skill education programmes (10) were organized for the youth. Life skills were demonstrated through group exercises, role plays, open ended stories, Brain storming, Group activities, Games & simulations, Situation analysis, Case studies, responding to real life situations and Group discussions etc. Significant improvement was observed in the post test scores.
Following package of material was developed in support of the framed objectives

- Life skill educational Training modules (10) in regional language
- Success stories were documented from the study and
- DVDs were developed for Empowering young farmers with relevant information & skill for Sustainable Agricultural practices & livelihoods

Developed DVDs with video clippings for Empowering Young farmers with information & skill for Sustainable Agricultural practices & livelihoods
Based on Research results following Recommendations were framed

- Agriculture students need to be involved in motivating young farmers in rural areas to adopt integrated & innovative farming practices for sustainable livelihoods.
- Concerned stakeholders need to develop skill based e-modules (in regional language) for empowering youth with adequate information & skills.
- Farmer friendly portals need to be created & young farmers need to be trained in ICT to access information on innovative & alternative farming system in view of climate change.
- Capacity Building of youth - There is an urgent need for training and skill-building opportunities for young people that can mould them for active participation in decision-making processes.
- Engage youth actively - Youth must be recognised as major stakeholders and need a platform where their voices will be heard on issues that directly concern them.
- Facilitation - Youth Communication, Advocacy and Networking. There is a need to guide youth in terms of how to communicate their challenges, ideas and experiences.
- Distance or short term skill based learning programmes need to be offered by the SAUs (State Agricultural Universities) for the semi-literate & literate young farmers in rural areas.

Conclusion

- Youth constitute the most important sector in our society and they are one of the greatest assets that any country can have. For the country to be economically stable the agricultural sector must be strong and youth have to be encouraged to participate in agricultural activities.
- However the constraints which youth face needs to be addressed i.e. Youth face many push back factors such as inadequate rural credit facilities, low returns to agricultural investments, lack of modern farming technics and lack of access to farming inputs.
- Youth can be attracted to agriculture if they see meaning, income opportunities as well as feel a sense of pride in farming. Youth need training, effective mentors, coaches, motivators.
- To harness the potential and energy of the youth for agriculture, a comprehensive and integrated policy and program on agrarian reform, rural development, sustainable, agro-ecological production and farmer-managed agro-based enterprises as well as on markets and trade should be put in place, with special incentives and provisions for young farmers.
- The community and the larger public must be sensitized to the importance of the role of agriculture in the economy and in ensuring food security. Respect for farming should be built and more awareness should be created in recognizing the role of farmers in agriculture.

References

10. Sustainable Agriculture Research and Education (SARE): http://www.sare.org/