TOWARDS MORE FRUITFUL AGRICULTURAL EXPERIMENTATION

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For many of us the idea of "research" is scary. We are not trained in it. We picture rigorous statistical analyses that we are unfamiliar with. We have seen glossy scientific journals with technical words that we do not understand. Besides, isn't our goal to directly help smallholder farmers? Why should we now do research? Who has time anyway?

Chances are that most of us are already involved in doing experiments at some level, but we just don't call it "research." We wish we had more information about some crop or agricultural technique, so we do a small variety trial or set up a demonstration to see if the idea works in our climate. How will this information be generated and distributed if not by those of us in the field? And how will we know that we can safely implement or recommend some new method or plant unless we have done adequate experimentation?

Each of us has limited time and resources, but with a little thought, most of us can make the trials we are already doing more useful. Anyone who has ever placed a seed in the soil and watched it grow can participate, at some level, in experimentation that is useful to everyone.

Imagine a missionary or extension agent who thinks that a certain plant might be useful in his area. He plants a small plot, though he does not record how much seed was used, the date it was planted, what the site conditions were or what method was used to plant it. After some time he finds that the plants ***did*** grow, and he ate the harvest. He can only guess how much was produced. All he learned was that the crop seemed to do well and that he liked the food it produced.

Is that kind of experimentation useful? Yes. He learned what he wanted to know. Gardeners around the world do this kind of trial all the time and accept the results of their trials as valid. But the usefulness of his trial could easily have been increased. Chances are he will not keep the information to himself. At the very least, he will show it to the people around him (farmers and development workers alike). He may even send an email to ECHO, where the information will be tucked away in a plant file, to be discovered at a later date by an intern preparing a research note. And that very anecdotal information will have enriched in a small way the knowledge base of the ECHO network.

There is a temptation to avoid doing experiments because we are not trained researchers or we lack resources. But instead of giving up completely, we should do experimentation using the resources we do have. We may not have the skills for statistical analysis, but we can take an average of a group of numbers.

In planning any experiment, we should consider the target group. If our target group is university professors, we had better toe the line with our statistics. If our target group is uneducated farmers, we need to figure out what criteria they will accept to validate our trials, since statistics are probably useless to them. I call this "resource-appropriate experimentation."

There are many simple ways to make agricultural trials more useful. The first step is to gather information. This is often referred to as conducting a literature review. For resource-appropriate experimentation, valuable information can be gathered locally. For example, it may be obvious to a local farmer why your trial will not work, because he or she has been around longer and has connections that you may not. You may learn that another missionary or development worker was in the area ten years ago and experimented with many things. See if you can locate him or her. You may not have access to a university library, but the Internet is a very useful tool. Consult ECHO's book Amaranth to Zai Holes [Additionally, there are numerous publications on ECHO's website], if you have the book or can access

ECHO's web site. You can also write to the ECHO staff to see if they have any information related to the trial you are considering.

Another step is to keep written records. Merely measuring the amount of seed planted, recording the length of time until germination, and recording the amount of harvest is valuable and gives more information than nothing at all. Ask at the start of your trial, "What information can I collect that will increase the value of this trial to me and to others?" These records (measured values) can then be used to calculate averages. You may decide later that more elaborate statistics are appropriate. But remember your target group. Will the statistics help convince the people who most need to be convinced about the value of a method or plant?

The next step is to document and share results. University research results are usually published in journals. For resource-appropriate experimentation, there are other, simpler ways to get information into broader circles. You might write letters to others who are interested, send information to ECHO, include results in newsletters, or post findings on your own or another's web site. The feedback can be encouraging. Our experience in Ethiopia has shown that appropriate experimentation is contagious. One of the joys in our work is the number of people who have come to us with new ideas they want to try. They saw that our research about local trees was done simply but effectively, and they were encouraged to do the same.

Our results will be more convincing if we show similar results from more than one trial. The academic community calls this replication. A method may work or a plant may grow well this year, but what about next year? It worked on the east side of the farm, but what about the west side? It was fine on this end of the row, but what about the other end? When results are shared, others can duplicate what we have done, perhaps on a wider scale. This can help reveal limitations of a particular method or plant.

Do not let the rigors of formal publication scare you away from documenting and sharing the good information you have found. On the other hand, if you have the knowledge and experience to publish formally, go for it!

Another way to improve our experiments is to find someone to review the research and give suggestions. The academic community refers to this as peer review. The purpose is to make our trials more accurate, and the information more usable. Who should be the experts who review our trials? Maybe this could be done by the farm families that we hope will utilize the results. Certainly other missionaries and development agents doing similar work should be consulted. A professional researcher could give good suggestions if we intend to do more formal research. But the important thing is to get outside input from somebody, preferably on an ongoing basis.

Most of us have a vision that exceeds our present circumstances. Experimentation is a way to reach beyond our immediate situation. Research catches the eye of government officials. Experimental results, when shared, can be useful in places where the missionary or development worker would otherwise not have influence.

I tended to think I was not doing real research because I was not participating in the "formal research" community. But when I looked at what we were doing, and evaluated it from the standpoint of different criteria, I found that my experimentation was a lot more advanced than I had thought. I also saw ways to improve it.

Experimentation can be a bridge between highly educated people and target groups in poverty. Anytime we can get a government official to see things from a farmer's perspective, we are doing the farmer a favor; and sharing findings, based on an experiment that is done well, can accomplish just that.

For the educated, our experimentation serves as a model and may lead to better ways of working with farmers and their families. For the farmers, our experimentation can provide them with opportunities to share their expertise. For those of us who are foreigners in the areas where we work, research is an opportunity to be in a community as a learner, and the learning role is much more acceptable to most communities than a "know-it-all" attitude. A properly conducted experiment can also serve to make our presence more valuable to the government of the countries in which we work.

Can we do experiments to glorify God? Is research a valid path to bring Him glory? I believe so. God put Adam in the garden to work it and take care of it (Genesis 2:15). The “garden” still needs careful attention. Who is closer to working and caring for the garden than the farm families of the developing world? When we stand with them (through development work that is founded on experimentation) we care for the garden with them, and act in obedience to God. When we obey, He is glorified. If we encourage farmers to make changes based on shoddy methods (based on poorly-conducted, insufficient or no research), we can expect that our care of His garden will be less than the best.