**SARE Research Project Presentation**

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I'm here to talk with you about a research project we recently completed for SARE.

We wanted to research Traditional Pest Control Methods because we felt that we live in a great region for such a study. Agriculture has been practiced in New Mexico for centuries, and we hoped that by researching traditional pest control methods we could both preserve traditional knowledge and find organic answers that we could apply to our farms.

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We approached this problem in four phases. In the First Phase we would determine which pests presented us with the greatest challenges on our farms. We did this for two reasons. First, we wanted to study pests that we were fairly certain would be present on our farms. Second, we thought that the pests that gave us the most problems would provide answers with the greatest usefulness for ourselves and other farmers.

In the Second Phase we would identify traditional methods that might provide the answers we were looking for. We did this by conducting video interviews with six practitioners of traditional agriculture.

In the third phase we created test plots, applied the methods, and collected data.

Lastly, we wanted to develop methods that were economically viable. We are working farmers and need any pest control methods we use to be cost effective.

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The six people we interviewed were:

Estevan Arellano, a poet and Scholar from Dixon, New Mexico

Clayton Brascoupe, the director of the Traditional native American Farmer's Association in Pojoaque

Bob Pederson, who farms Thanksgiving Farms in Taos and gives away most of his produced to a local food bank in Taos

 Scott Pittman, who founded The Permacultue Institute in Pojouque and teaches worldwide

 Roy Rivera, a farmer and teacher from Sile who's family has been farming the same land for generations

 and Bernadette Torres, a Curandera and herbalist from Albuquerque

These interviews are available on the website we created about the project at: www.acnresearch.com The people we interviewed also have a wealth of knowledge to share about pest control and farming in general so I’d highly recommend taking a look.

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To choose what pests to study we conducted an informal survey of our farmers and came up with these pests.

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Of those we focused on squash bugs. Squash bugs are the toughest of the listed insects to control and do the most damage, also, the only way we've found that's partially effective is to use sprays that also kill beneficial insects. We also have bee hives, so the only time we can spray safely is just before sundown once the bees have gone home, which is quite a chore for farmers who need to rise early to beat the heat. In the past, we've usually planted squash in the Spring and harvested as much as we could before the squash bugs destroyed the plants midsummer. Then we'd plant a second crop for Fall harvest.

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Here's a picture of Adam and a pile of destroyed squash plants in July 2012

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And here's Adam pulling out the destroyed plants

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So we thought, can we devise a method to control the bugs and keep the plants going all summer? This would have several advantages, it would eliminate the need to replant, would allow continuous production without waiting for the second crop to come in, and would prevent the bugs that infested the squash from infesting other crops, as they'll also attack cucumbers and other cucubits.

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These are the traditional methods we tested that we had learned about from our interviews.

We had heard from a number of people that ashes would keep the bugs off the squash plants. This has been done for generations in New Mexico farming communities and also on the Pueblos.

We also heard that if you put boards around the plant the squash bugs will crawl under them and you can then squash the squash bugs.

We also wanted to work on some bugs other than squash bugs so we tried another traditional method, garlic and chili oil, on cucumbers for flea beetles.

We tested all the methods and they weren’t as effective as we’d hoped. If you read our report you can dig into the science in detail, but the bottom line was that we still had work to do.

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So, we hadn't found a method that would keep our plants going all summer. We had to look for other answers. So we kept asking ourselves, where are they vulnerable? Now, a squash bug is a unique beast, birds won't eat them, they taste horrible. If you've ever tried to catch one you know they're very good at running away and hiding. But there's one phase of their life cycle during which they ARE vulnerable.

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Here's where they're vulnerable. The eggs. The eggs take 7-10 days to hatch and they're east to find. They lay them on the undersides of the leaves and sometimes along the stems.

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So here's how to control squash bugs without chemicals. Since it takes the eggs 7-10 days to hatch, if we can remove them on a six day cycle none will ever get a chance to hatch. If we keep them from hatching then we can control the exponential growth of their population. As commercial farmers we also need our method to be cost effective. Obviously we can't remove them individually.

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This works. You take a small piece of duct tape, rub it against the eggs, and gently peel them off the plant. It takes some practice, but if you're careful you won't tear the leaves. It takes about an hour once every six days for one person to go through a 100 ft long row of squash.

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You need to be gentle, you need to be consistent, and you can't use cheap tape (we tried). The worst thing is to miss for a couple weeks, they have enormous reproductive capacity in mid Summer and will get out of control. But if you’re consistent and don’t miss days on your schedule you can control Squash Bugs.

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We ran the numbers on this and I can share the calculation with you if you like. It's too long to go into here but we calculate $2311.00 extra revenue per 100 foot row every season. That’s a significant amount of extra revenue every season when you extrapolate that over a number of rows.

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So here's the future. We’d like to do another test plot to verify the numbers. We’d also like to put the method into practice on out farms and track the economics over several seasons. But one thing we’ve learned that we can speak confidently about, we can now control Squash Bugs on our farms without chemicals, and do it in a way that’s economically viable and increases both our production and profits.

Thank You.