

Agricultural Crime, Technology, Information, and Operations Network (ACTION)

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Grantee: County of Tulare (California)

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Project Summary. The ACTION project attacks commercial agricultural crime, particularly theft of equipment and products, which is an often neglected area of crime. Agricultural producers operate in large areas that cannot be easily secured or observed. Equipment can be marked, but there have been problems with this in the past. However, agricultural produce is not normally subject to marking or serializing. Produce taken directly from the fields generally cannot be identified as having come from a particular farm; this also is true of livestock in many cases. Finally, the agricultural industry may be particularly subject to biological or ecological terrorism. Lack of security and control is of major importance at this time. The ACTION project focuses on building an infrastructure to address all levels of agricultural crime and vulnerability in eight counties in the San Joaquin Valley. The long-term goal is to reduce agricultural crime by increasing solvability and hardening agricultural business locations. Objectives are to (1) develop a database on agricultural crime (currently indistinguishable from other property crime) in the eight-county region; (2) develop a database for and obtain compliance with the use of owner-applied numbers (OANs) for agricultural equipment and develop parallel programs marking the roots of small fruit trees with water-based paint; (3) test and employ a system of mobile security, observation, and alarm systems to detect and solve agricultural crime; and (4) train personnel to use the database (via Internet access) of agricultural crime and OANs.

Scope of Evaluation. Three basic areas may be evaluated: whether multi-county criminal reporting can be done on a voluntary basis, a pre-post test of the use of OANs, and the effectiveness of the mobile security systems. The overall impact assessment should rest on a cost-benefit analysis of the new infrastructure and the reduction of crime.

Summary of Evaluability Assessment Activity. A researcher from the Institute for Law and Justice (ILJ) reviewed the ACTION grant proposals, examined the ACTION public Web site, interviewed the project coordinator (Mary Beth Hash) by telephone, and reviewed an initial process evaluation conducted by Dr. Harrald Otto Schweizer. The ILJ researcher, accompanied by an NIJ representative, also conducted a 2-day site visit that included examining the database in operation; observing training in process and demonstrations of some of the technology; and conducting interviews with project staff, several county participants, and a local farmer.

Finding. Agricultural crime is a high-dollar part of commercial crime affecting the costs of food to the entire Nation; however, there has been very little prior development of an infrastructure for combating this crime. Evaluation of the project will be difficult. The difficulty is that, as with any infrastructure,

long-range success often takes many years. However, the individual components of the infrastructure can be evaluated now. The ACTION project should be evaluated because the project innovations are in areas of vital national interest, and because the innovations are central to the food supply of the Nation.

Analysis

Program Design. The ACTION project is a joint effort of eight counties in the San Joaquin Valley of central California. The valley is one of the largest food producing areas of the United States. The products are diverse. The valley produces fruits, vegetables, milk products, and non-food products such as cotton.

The program was developed by a coalition formed around the efforts of the District Attorney's Office in Tulare County. The goal sought by the project is to reduce agricultural crime. Agricultural crime, while it does not necessarily represent a high volume of cases, represents very high dollar costs that affect both the national and local economies via pass-through costs.

Three problems, and hence three identifiable populations, are targeted. First, there is no clear record keeping on agricultural crime as distinct from other property crime. Consequently, it is difficult for the various county law enforcement agencies to track agricultural crime problems. Thus, the first target population is the law enforcement agencies themselves. The related project activity is to develop and maintain a central database of agricultural crime.

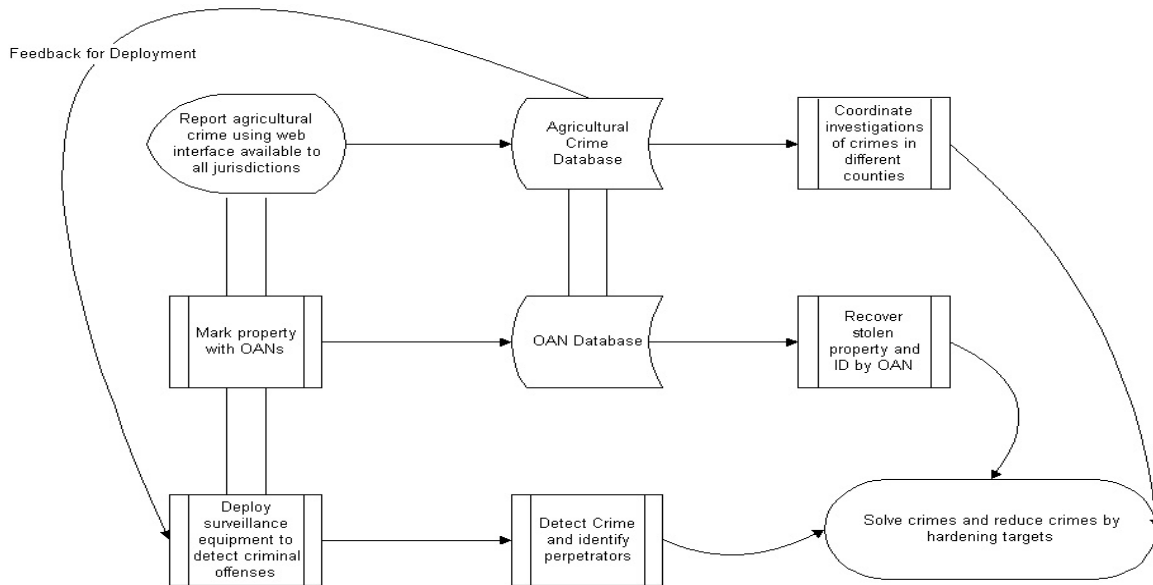
Second and closely related to the first problem, mechanisms for managing the identification and recovery of stolen farm equipment are lacking. Unless the equipment is very high value, there is a reluctance among farmers to report the crimes, because the cost in terms of higher insurance premiums may exceed the cost of simply replacing the stolen equipment. Added to this is a lack of confidence in the likelihood that the stolen equipment will be returned. The ACTION project attempts to resolve these problems by using very high impact marking of equipment with Owner Applied Numbers (OANs) and developing a database of these registrations. The marking is free to the owners. Thus, the second major target population is the farm community itself.

Third, the project uses new mobile, high-tech monitoring and alarm systems to catch criminals in the act of theft. Since the target areas for these techniques are so widely dispersed in a low-density population area, mobility and stealth are very important to success. Ultimately, crime patterns determined from the first action (central database of agricultural crime) may be essential in effective deployment of mobile security devices.

ACTION is operated by mostly part-time staff from several county agencies. A small core staff includes the project coordinator, a tech sergeant, two crime technicians, five investigator aides, two clerical staff, an accountant, and a graphics specialist. In addition, the project director splits time between the Tulare County District Attorney’s Office and the ACTION project.

Program Logic Model. Ultimately, the ACTION project is designed to reduce agricultural crime by hardening targets using OANs and mobile surveillance and improving crime analysis by building a database of agricultural crime. The crime analysis supports decisions about deployment of mobile surveillance, and improved crime solving by pulling together like crimes across the multiple counties affected by agricultural crime. Exhibit 1 shows the logic model.

Exhibit 1: Program Logic Model



Evaluation Design. Because the project addresses the need for a basic infrastructure, it is difficult to design a comprehensive evaluation. Much of the long-range impact of the project will not be seen for some years. At the same time, some evaluation components can be conducted, and these would indicate whether the infrastructure is being built satisfactorily. First, a set of internal analyses can be done based solely on pre-post behaviors in the set of counties participating in the ACTION program.

- Test of whether multi-county criminal reporting can be done. This can be managed with an internal validity check. Are reporting rates of agricultural crime statistically different across counties? Measures can be taken both by crime rate and property value.
- Test of pre-post use of OANs. A number of the jurisdictions used OANs before the ACTION

project. However, the technology was not believed to be adequate. The pre-post may determine whether new technology and the public information campaign have been adequate to make a difference. (This may be supported with data from interviews with participating farmers.)

- Effectiveness of electronic alarm and security systems in identifying perpetrators of crime. This is essentially a recording of successes over the period of time that they have been used. The effectiveness of the use of high-tech electronic surveillance is unknown at this time. Consequently, documentation of results, even if not statistically significant, would be of importance to the criminal justice community in agricultural areas.

Other documenting techniques would be of great interest to the agricultural community because data on the specifics of agricultural crime are not maintained in the rest of the country.

The impact of the infrastructure on crime will require immediate development of agricultural theft statistics from a comparison region. Comparisons can be made between operational costs and results in two agricultural valleys in California: counties of the San Joaquin Valley and agricultural counties in the Sacramento Valley (Northern California). In this case, an evaluation can take the form of a cost-benefit analysis. The counties would be asked to keep the same agricultural crime statistics. A comparison of results of crime activity and solutions can be made between the two sets of counties. Then, the additional operational costs of the San Joaquin Valley project can be matched up against the additional benefits provided in the ACTION project.

The database has just recently become operational (late fall of 2002). The problems and details are worked out. It is feasible that a group of counties in the Sacramento Valley could be used as the control group. Their tasks would be limited to using the database system developed by the San Joaquin project for their own purposes. This would permit direct comparisons of the impact of the OANs and the mobile surveillance units on crime detection and crime solving. It is possible that some impact of target hardening may also be detected, although this would require longer than an 18-month test period.

In addition to determinations related to crime detection and crime solving, a critical element in the case of agricultural crime may well be a cost-benefit analysis of maintaining the OANs, the database, and the mobile surveillance equipment. For these purposes, development costs would need to be amortized. The principal costs of the operations would be estimated to be those directly associated with managing and operating the ACTION components. The benefits would be the enhanced recovery of stolen items and increases in solved crimes. Because the time for evaluation is likely to be limited to 18 months, it will not be possible to directly calculate the benefits of crime deterred by hardening targets. However, sensitivity analysis based on typical losses in commercial agriculture crime may be used to show what ranges of crime deterrence would effectively offset costs.

The weakness of the evaluation is found simply in time. Although the project has existed for 3 years, the system could not be evaluated until the database and all associated procedures were worked out. That has only occurred during the past several months. Nevertheless, to see real impact on crime reduction, the program has to show enough repeated success that the offenders change their behaviors. That is unlikely to occur in major ways during the first 18 months of real implementation. On the other hand, the dollar value of much of the agricultural crime is very high. Consequently, minor impacts may make major differences in dollar amounts, and cost-benefit analysis is feasible.

Some attributions may be taken directly. For example, every crime detected with the mobile surveillance techniques represents a real “impact.” It is an impact that in the overwhelming majority cases would not otherwise occur. The direct impact of OANs is less clear, because vehicles have other identifiers that would allow for proof of ownership. Nevertheless, some attribution could be made directly (no serial number or other official marker).

There are many other before and after analyses that can be made of the project that will contribute to an evaluation, although they cannot be determined to be direct “impacts” on crime as described. For example, the OANs can be shown to have a direct impact in some cases, as discussed above. However, before and after analyses can show the degree to which the project has had an impact on the use of OANs. Several counties had OAN programs of some sort before ACTION. They did not use the quality of product that ACTION uses (they simply used paint or other removable markings), but the success in the public awareness campaign and the impact of the higher technology impact tool used for OANs can be measured.

Similarly, the actual measurement of agricultural crime and estimates of dollar amounts will be new information in the field, because it does not exist outside of special studies and special estimates. Hence, this “post” analysis, which will be ready within a year, will provide valuable new information to the field.

The impact evaluation would have to be conducted for at least 18 months because the impact is expected to be gradual. Even with the control group, the demonstration of changes in the occurrence (or dollar value) of agricultural crime will take some time. The smaller component analyses, such as the direct impact of surveillance measures, can be done easily within the time frame.

Measurement Model. There are two dominant outcome measures to be used in an evaluation of the project:

1. Number of agricultural crimes by type (produce, intermediate produce, and equipment).
2. Dollar value of loss in agricultural crimes.

Again, the dominant intervention measures are the numbers of entries in the databases (OAN and crime), the presence or absence of surveillance components, the presence or absence of crime analysis techniques for deployment, and costs. Costs might be distributed as follows:

- Development costs, which should be amortized over an appropriate number of years.
- Capital costs for equipment, which should be amortized over the effective life of the products.
- General administration and public relations costs of the project, distributed over the OAN project, the database project, and the surveillance deployment.
- Database operations costs (with distributed costs).
- OAN operations costs (with distributed costs).
- Surveillance costs per surveillance (direct costs and distributed costs).

In addition, some basic costs of the law enforcement agencies in the counties and the control counties will have to be calculated in order to show the additional impact of the ACTION project.

The ACTION project has been keeping detailed data on its OAN program and its surveillance program since its initiation. Cost data is available, although not necessarily in distributed manner. The weak link in the data will be any of the data on previous OAN programs. These appear to be scattered and inconsistent.

Summary Remarks. While this project represents significant challenges for an evaluator, it should be evaluated if at all possible. The losses due to crimes against agribusiness affect the entire Nation. These costs, per force of normal economics, are passed on to virtually all consumers. Historically, the infrastructures developed to address crime issues center on violent crimes in densely populated urban areas. While this is clearly understandable, it has led us to ignore the infrastructure needed for dealing with crime in an area that affects everyone. While the number of agricultural crimes may not necessarily be high compared to thefts in other contexts, the cost of agricultural crime is very high in dollar impact and in national impact.

Moreover, agribusiness may consume even more of our attention in the post-September 11 era. One of the greatest terrorist threats to the United States right now is a biological attack on the food supply. Yet this is the area of American enterprise that has the least in terms of security and anti-crime infrastructure. Consequently, while an evaluation of this project must handle all of the problems that one sees in any evaluation of infrastructure development, it has a national importance that makes it worth the effort.