

An Evaluation of the Kauai Agricultural Good Neighbor Program

Environmental Mediation Center

Executive Summary

The Kauai Agricultural Good Neighbor Program (GNP) was developed in the fall of 2013 during the emotional and divisive debate over genetically modified organisms and pesticides. During this period the Hawaii Department of Agriculture (HDOA) developed the voluntary GNP to encourage greater communication regarding the use of agricultural pesticides. The GNP contains four main components: public outreach, advanced notification of pesticide application, buffers between areas in which pesticides are applied and schools, residences, and medical facilities; and post-application reporting of types of pesticides used. Five companies ---Dow AgroSciences, Pioneer, Syngenta, BASF and Syngenta, and Kauai Coffee Company---agreed to participate in the program.

This reports summarizes findings of a formative evaluation of the GNP conducted by the Environmental Mediation Center in the fall of 2015. The GNP has been well received by both the participating companies and the surrounding communities. The GNP served as a catalyst for the participating companies to conduct a comprehensive outreach campaign and meet with the surrounding communities. The GNP did not pose an undue administrative problem and all the companies are willing to continue participating in the program.

While many members of the surrounding communities are appreciative of the GNP and view it as a step in the right direction, some assert additional measures are necessary to make it more effective. Based on interviews, focus group meetings, and comparisons to programs in other states, the evaluators recommended several specific steps to improve the GNP.

- ☐ Opening up and simplifying registration for pre-application notification:
- ☐ Providing more detailed and timely pre-application notification:
- ☐ Replacing the one size fits all buffer with a buffer program based on technical analysis of drift patterns;
- ☐ Make the reporting database user friendly by including background information on RUPs, monthly reporting by plots, and utilize compliance checks to ensure accuracy

A more robust and transparent GNP could increase trust both in the GNP and in the participating companies' farming operations. The feasible steps to improve the effectiveness of the GNP outlined in this evaluation could lead to improving neighborly relations between the participating companies and the surrounding communities.

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December 2015
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Agricultural fields in Waimea near residences.

The Good Neighbor Program

In November 2013, the HDOA announced the establishment of the Kauai Agriculture Good Neighbor Program (GNP) to take effect December 1, 2013. The GNP was developed as a program in which the five companies that had been the object of Kauai County regulatory efforts—Dow AgroSciences, Pioneer, BASF and Syngenta---along with the Kauai Coffee Company would voluntarily work with surrounding communities to make their uses of Restricted Use Pesticides (RUP) more transparent. Specifically, the program called for:

Notification of Planned Pesticide Use. The companies are expected to inform “schools, hospitals and medical clinics” about the opportunity to register for notifications of planned pesticide use activities. Notification will be made to “those registered entities when the application of an RUP will be made along the entity’s property line abutting a 1000 foot notification zone as measured from the outside of the proposed treated area.”¹ According to the guidelines, notification will also include which RUP is to be used. Any change in the schedule is to be communicated to “registered entities” 24 hours prior to the RUP application.

¹ Hawaii Department of Agriculture, *Kauai Agricultural Good Neighbor Program: Voluntary Standard and Guidelines for RUP Use Reporting and Buffer Zones*, November 12, 2013.

Post Application Reporting of RUP Use. The five participating companies are expected to submit a monthly summary of their RUP applications to the HDOA Pesticide Branch within 15 days after the end of the calendar month. RUP records “may contain the following information: operator entity; total volume amount of RUP used (product and active ingredient equivalent); EPA registration number of product; total area covered (acres); and report date.”² The RUP reports submitted by the companies are summarized on the State’s Open Portal at <https://data.hawaii.gov>.

Buffer Zones. The guidelines specify that when “applications are made near schools, medical facilities, and residential properties, a minimum 100 foot buffer zone as measured from the outside perimeter of the proposed treated area up to the property line of the abutting school, medical facility, and residential property is to be implemented.”³ Mature orchards are exempted from the buffer zone. The guidelines indicate that “if there is a conflict between the minimum 100 foot buffer zone and the pesticide labeling, the stricter of the two must be followed.”⁴

The guidelines also call for the program to be implemented for a one-year period “after which time it will be assessed as to its efficacy in attaining its stated goals.”⁵

A Framework for Assessing the GNP

The usual purpose of an evaluation is to render a judgment on the overall worth, significance or value of a program or project. In these situations, an evaluation is designed and conducted to assess a project or program in terms of a criterion identified by the client such as the effectiveness of the project in achieving intended outcomes. Project regulatory or administrative costs and efficiency, particularly as compared to other means to achieve the same or similar outcomes, are also frequently used evaluative criteria. However, when a project or program is relatively new a *formative* evaluation may be more relevant.⁶ A formative evaluation is usually conducted to identify the strengths and weaknesses of a new program, identify implementation issues, assess participant satisfaction and to find out if there are ways to “fine tune” the program in ways that would strengthen it. Given the intense political debates from which the GNP emerged we thought it also important to ask whether that context shaped the ways in which the participating companies implemented the program.

To organize the assessment of the GNP, we first immersed ourselves in the context out of which the program was developed, read background reports, reviewed maps, draft laws and media reports. We then asked what questions we should try to answer in the study. The assessment

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

⁵ *Ibid.*

⁶ M.Q. Patton, *Utilization Focused Evaluation*, Thousand Oaks: Sage, 2008.

questions are summarized below along with the types of data we sought to gather and the possible data sources.

1. What community outreach activities were undertaken to educate the community about the GNP? How effective are they?

Indicators	Data Sources
Lists of activities such as community meetings, letters, etc.	Interviews with HDOA staff; seed company staff; coffee companies outreach materials
Perceptions of effectiveness	Interviews with HDOA staff; seed company staff, coffee company; school and medical facility staff, neighbors, other observers.

2. How effective are participating company processes for notification of eligible neighbors of scheduled application of RUPs?

Indicators	Data Sources
<ul style="list-style-type: none"> Means used to notify neighbors of spraying # and % who registered Perceived effectiveness of means used for notifying of RUP application 	<p>Surveys, interviews</p> <p>Surveys, interviews with neighbors, others</p> <p>Maps</p>

3. How effective are the buffer zones? How effective are Kauai's GNP buffer zones compared with buffer zone requirement in other states?

Indicators	Data Sources
<ul style="list-style-type: none"> Resident awareness of buffer zones Perceived effectiveness with buffer zones Problems/issues with existing buffer zones Comparison with requirements in other states 	<p>Surveys, interviews with neighbors</p> <p>Surveys, interviews</p> <p>Surveys, interviews</p> <p>Comparison with data in published articles and reports</p>

4. How effective are RUP application disclosure activities perceived to be?

Indicators	Data Sources
<ul style="list-style-type: none">▪ Number of unique visitors to website▪ Reported problems, issues associated with interpretation of reported data▪ Perceptions of adequacy of data disclosed about spraying activities	Surveys, interviews with neighbors, school administrators, medical facility administrators, etc. Comparisons with other states

5. How satisfied are participating companies' neighbors with the GNP program?

Indicators	Data Sources
Overall satisfaction of respondents with GNP	Interviews, surveys

6. How satisfied are participating companies with the GNP program?

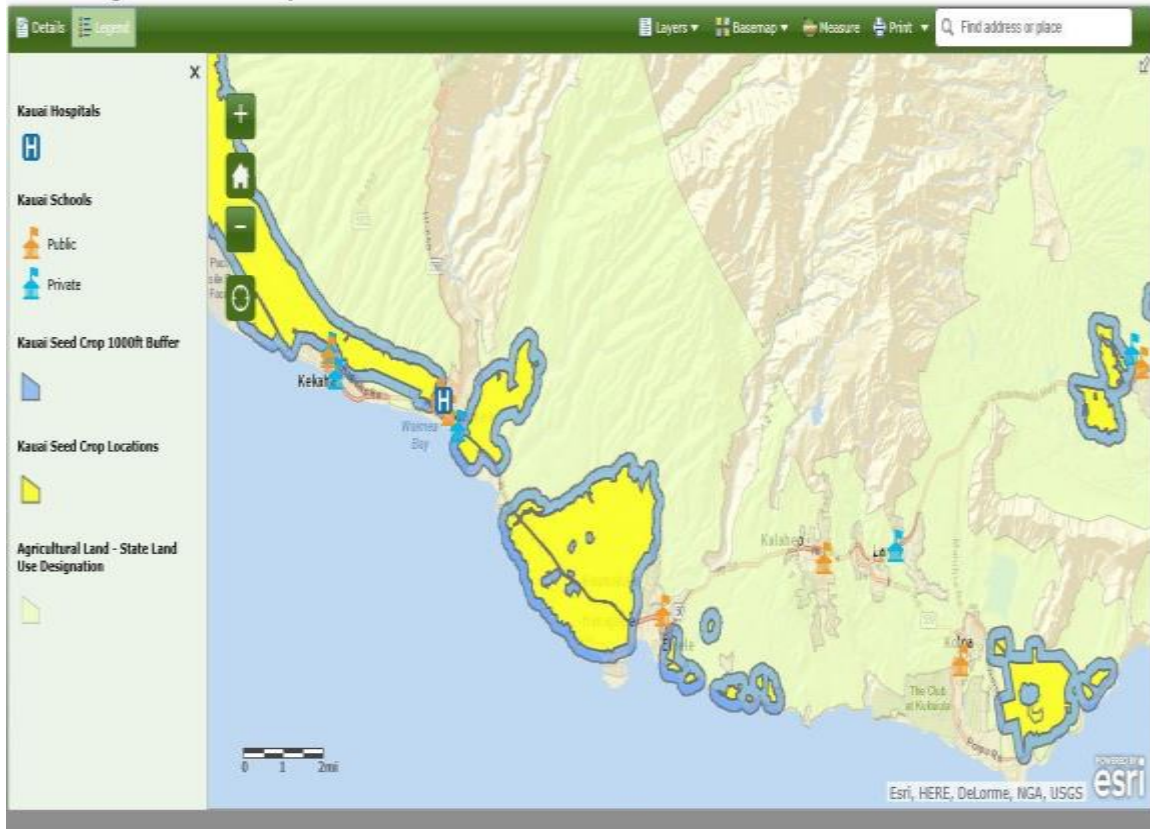
Indicators	Data Sources
Overall satisfaction of respondents with GNP	Interviews

To answer these questions, we interviewed elected officials on Kauai, state and county administrators, representatives of the seed companies, coffee company, school administrators in Waimea, a hospital official, anti-pesticide advocates and other informed observers. We asked a Waimea resident to organize a focus group of local residents who felt that they or their families had been affected by pesticide use in the area. We posted a short survey on the EMC website and encouraged people we met to spread the word about the survey. We also asked the participating companies to circulate the link to our survey to people who had registered with them. Finally, we researched what other states require in terms of agricultural pesticide disclosure, use of buffer zones and other regulatory requirements. The results of our research efforts are presented in the sections that follow.

An Overview of the Agricultural Operations

The four participating seed companies lease a total of 13,492 acres for their operations on Kauai. Of the total seed cropland, 6,199 acres or 46% is state owned land and 7,303 is leased from private owners. Estimates are that 10%-20% of this land is in cultivation at any one time. Map 1 shows the land used for seed production on the southwest side of the island:

Kauai Agriculture Footprint



The second map shows the agricultural operations closest to Waimea and Kekaha:



Agricultural Lands Closest to Waimea and Kekaha

Much of the land nearest Waimea and Kekaha is leased from the state Agricultural Development Corporation. (The area demarcated in light blue represents the 1,000 foot area designated for identifying schools and medical facilities to be notified by the companies about the GNP). A marker (H) indicates the location of Kauai Veteran's Memorial Hospital located just outside the "notification zone." Just to the left of the hospital is the marker for Waimea Canyon School. The Kauai Coffee company grows coffee trees on about 3,100 acres of former McBryde Sugar Company lands on the southwest side of Kauai.

Results of the Assessment

General Findings

The GNP makes current information about the application of agricultural pesticides more easily accessible than we can find available in any other state. Focus group members from the community regard it as a step in the right direction, but they asserted that it needs to be improved significantly to be fully effective. Several focus group members commented that a mandatory program is necessary, or at a minimum if the program remains voluntary, there should be a mechanism to monitor compliance more closely.

Staff of the participating companies recognized the importance of building trust and maintaining good relationships with residents in the surrounding communities. Although some companies have occasionally met with community members prior to the initiation of the GNP, the program served as a catalyst to undertake a more comprehensive outreach program with the

surrounding communities. All the company representatives with whom we met agreed that the GNP is a useful tool to provide accurate data and dispel myths about RUP usage. A few companies question why the focus is only on agricultural users of RUPS that they assert only accounts for approximately 13% of RUP usage on Kauai.

1. What community outreach activities were undertaken to educate the community about the GNP? How effective were they?

The foundation of a successful public notification program is a comprehensive outreach program. Without adequate outreach, the potential benefits of the GNP would not be realized. The initial notification about the development of the GNP came from the HDOA. HDOA issued a press release that was picked up by several local newspapers. Although the articles that were generated from HDOA's press release may have created some general awareness about the program on Kauai, ultimately the critical outreach was the responsibility of the participating companies in their respective surrounding communities.

According to the GNP guidelines, the companies were expected to conduct outreach to the surrounding communities to provide information about their farming operations and answer questions. In particular, participating companies were to inform schools, hospitals and medical facilities within 1,000 yards of their fields about the opportunity to register for pre-application notification.

Kauai Coffee was notable for having conducted a comprehensive outreach campaign intended to reach every household, school and medical facility throughout the surrounding neighborhoods. Multiple employees went door to door to explain the GNP and to encourage registration for the pre-application notification. Other companies held community meetings at which they distributed information about registration procedures. One company limited its outreach to contacting a few schools and medical facilities in the area. Community members spoke positively about companies that conducted a comprehensive outreach campaign. These campaigns led to engagement with the community and the development of large pre-application notification lists. Companies that conducted minimal outreach had less engagement with the communities and fewer registrations for the pre-application notification.

Some respondents thought it could be simpler to register. The number of registrants for the participating companies varied from a few to 172. According to the HDOA website, only schools, medical facilities, and hospitals can register for pre-application notification. Several participating companies encouraged residents to register, even though that is not required. Some community members who were not invited to register reported that they found it difficult to contact the participating companies to register.



Options for Improving the GNP Registration Process

Consistent with our “formative” evaluation emphasis, we offer two options that could improve the local outreach process:

- A. **Open the Notification Registration Process:** Make the registration process easy and open to anyone who lives or works in the area. For example, if you work near a field where RUPs are applied you should be able to register even if you do not reside in the area.
- B. **Make Registration Easier:** Ideally, each participating company should have an easy process to register, whether online, by phone, or mail. The company website could provide information about how to register and what to expect from the notification process. Increasing inclusiveness is a low cost and easily implementable way to build transparency and trust.

2. How effective are the participating companies’ processes for notification of eligible neighbors of scheduled application of RUPs?

Under the GNP guidelines, participating companies’ operators are expected to notify schools, hospitals, and medical facilities that register to receive the pre-application notification. The companies send weekly e-mails or “robo call” registrants informing them of the RUP that will be applied to their fields. If the participating company changes the timing of the application, the pesticide used or the area to be sprayed, that information is supposed to be communicated to the registrants at least 24 hours prior to the application.

Although the companies recognize that pre-application notification does not generally impose any problems on their operations, a few company representatives noted that communicating changes in the spraying schedule within 24 hours in response to identification of pests can be a challenge if the companies want to apply a RUP in a timely manner.

The GNP's pre-application notification procedure for commercial agricultural applications is innovative. Most pesticide notification programs in other states apply to uses on school sites or to lawn applications in more suburban settings. These programs do not attempt to address the challenging interactions between commercial agriculture and their surrounding neighbors.

The usefulness of the GNP's pre-application notification was acknowledged by virtually everyone we interviewed. Community members thought more detailed geographic information about the RUP application is necessary. Some also expressed the view that the information provided was often similar week to week and did not provide adequate time-specific and place-specific information. Some participating company representatives state that the level of geographic detail some residents seek regarding spraying activities may put them at a competitive disadvantage with other companies.

Other State Pesticide Application Notification Programs

We reviewed pesticide regulations in several states to assess what pre-notification requirements they imposed for the application of pesticides to agricultural operations. We could find no examples of mandatory pre-application notification requirements or voluntary guidelines that are as comprehensive as those in the GNP.

For the protection of Ag workers and handlers, the federal Worker Protection Standard requires posting of spray application information 24 hours prior to a pesticide application. This information is posted at a central notification site located on the farm or Ag operation⁷

Some states require notification of farm employees and property owners, but no programs are as far reaching as the GNP guidelines to include notification of neighbors. For example, in California, pesticide regulations require "each person performing pest control shall assure that the operator of the property to be treated receives notice of the scheduled application" in a manner that includes the date of scheduled application, location and description of field to be treated, pesticide product name and California registration number among other details.⁸ The same section requires notification be given to farmworkers on this site. Washington state regulations also require "agricultural employers to provide adequate notification of applications

⁷ <http://www.epa.gov/pesticide-worker-safety/coverage-and-duties-under-worker-protection-standard>

⁸ cdpr.ca.gov 6618.

to their employees. Except for greenhouse applications which require posting at a minimum, these may be oral or posted unless the pesticide label requires both”.⁹

Options for Improving the GNP Pre-Application Notification Process

- A. **Providing Timely Information:** To improve communication with the community, participating companies could establish a phone number with a recorded message that they update each morning with information about RUP application for that day. Ideally, there should be an option to speak to a live person for more information.
- B. **Providing More Detailed Spraying Information:** In addition to the above, pre-application notification could provide more detailed information and include the field (general location), acreage, and quantity of RUP. For example, in order to provide meaningful notice, Kauai Coffee divided their 3,000 acres into zones. Each zone has its own list of registrants that receive pre-application notification. This approach could address the participating companies concerns about providing field specific information while still providing meaningful notification to neighbors.

3. How effective are the GNP’s buffer zones? How consistent are the GNP buffer zones with buffer zones in other states?

The potential health risks associated with possible pesticide drift has long been a source of tension among some west side Kauai residents. The GNP established guidelines for “buffer zones” around the participating companies’ fields. The buffer zones are intended to protect neighboring residents, schools, and medical facilities from the potential risks associated with possible “drift” or wind-borne pesticides occurring during or after the application of pesticides to a field. Under the GNP’s buffer requirement, participating companies agree not to apply RUPs within a 100-foot buffer zone as measured from the outside perimeter of the application area to the nearest property line abutting a school, medical facility, or residential property. Any stricter buffer zone requirement on the pesticide label is still applicable.

There is an exemption for RUPs applied at less than two feet above the ground to mature orchards grown in hedge-like rows. Kauai Coffee is exempted from the buffer requirements.

The voluntary buffer is applicable to the four participating seed companies. These companies have demarcated buffer zones consistent with the guidelines although some company representatives stated that the RUPs they use do not usually have an EPA mandated buffer. Because the companies all lease large areas the buffer zones do not impose a significant impediment to their agricultural operations. However, some company

⁹ Agricultural Applications. agr.wa.gov

representative noted that if these types of buffer zones were required for all farm operations it would pose a substantial hardship on some smaller farming operations that cannot afford to keep valuable land out of production.

Based on the reactions of participants of the focus group meeting, it is evident that buffer zones are perceived to be an important component of being a “good neighbor” to surrounding communities. At least one company has gone beyond the existing buffer guidelines by planting cover crops on a field close to a school and residences even though the field is beyond the designated buffer boundary. Even if the seed company representatives don’t regard their existing agricultural operations as unsafe, they seem to recognize that for those living in close proximity to test fields, distance matters either in terms of public health or public trust---or both.

The existing 100’ buffer zone represents a “one size fits all” approach to buffer zones that seems to raise few concerns in rural areas, but is more suspect in some urbanized areas such as Waimea and Kekaha where claims of exposure to pesticide drift are more common and intense. More restrictive fixed distance buffer zones are possible, but the ideal would be to develop a buffer zone that can be justified on a technical basis. To design a variable buffer zone that has a more rigorous technical basis would require, at a minimum, detailed knowledge of the toxicity of specific pesticides, seasonal wind patterns in the area, the technology for applying the pesticide and local topography.

Buffer Zones in Other Jurisdictions

For a comparative perspective, we examined the agricultural buffer zones in several other jurisdictions. At least 31 states have laws or regulations restricting aspects of the use of pesticides *at* schools, but very few have restrictions regarding the use pesticides on agricultural operations *near* schools. The nine states that regulate uses of pesticides near schools focus primarily on the designation of buffer zones for aerial application of pesticides.¹⁰

California law designates the Department of Pesticide Regulation [DPR] as the agency responsible for regulating pesticides statewide. State law also designates the county agricultural commissioners (CAC) as responsible for local administration of pesticide use enforcement. In several California counties in which agriculture is prominent, CACs have established pesticide buffer zones for aerial spraying for schools and for some crops. Additional restrictions govern the type of pesticide, the timing of the application (whether school is in session), and the type of application (smaller buffer zones for ground applications and larger for aerial applications). Some counties have established buffer zones of 1 mile or more that restrict the use of specific pesticides when bees are pollinating.

¹⁰ Kagen Owens, “Schooling of State Pesticide Laws 2010 Update, *Pesticides and You*, Vol.29, No. 3, Fall 2009.

As of August 15, 2014, the EPA reinstated no-spray buffer zones to protect endangered or threatened Pacific salmon and steelhead in California, Oregon and Washington State. No spray zones will be imposed for the pesticides carbaryl, chlorpyrifos, diazinon, malathion and methomyl in waters that support salmon. The no-spray buffer zones are 20 yards for ground pesticides applications and 100 yards for aerial applications.¹¹ Most of the RUPs used on Kauai have labels that require greater distances than these for aquatic habitats.

4. How Effective Are RUP Application Disclosure Activities Perceived to Be?

The GNP mandates the participating companies to file monthly reports on their use of RUPs. The monthly reports, due to be e-mailed within 15 days after the end of the month, include the following data for each company:

Some Options for Improving the Buffer Zone Guideline

- A. **Smart Buffer Zones:** Develop “smart buffer zones” tailored to environmental factors including prevailing wind direction, elevation changes, closeness of the surrounding community to the property line, etc. The smart buffer zone would create greater buffer zones where the risk is higher and smaller buffer zones where the risk is lower. This approach is similar to the one used in the Kauai and Maui Shoreline Setback ordinances. A state mandated minimum 40-foot fixed setback was replaced with a variable shoreline setback based on technical analysis that considered the rate of shoreline erosion, sea level rise, and coastal geomorphology. Ideally, the surrounding community would be involved in developing the smart buffers tailored to the specific risks.

In addition, for exposed urban areas, the smart buffers could take into consideration toxicity of the specific RUP and the risk of drift based on method of application. Different RUPs and different methods of application may have different risks and warrant different buffer zones. Conducting the analysis required for such buffer zones would require substantial outside expertise and expense.

- B. **Low Risk Exemptions:** In addition to the above, create guidelines that exempt certain RUP applications based on application methods that have low risk of pesticide drift.
- C. Periodic monitoring for drift may be appropriate in exceptional situations where proximity of schools and residential areas to fields and method of pesticide application and wind conditions warrant extra levels of risk management.

¹¹ www.epa.gov/espp/litstatus/wtc/maps.htm#wtc1.

- ✓ Day/month of application
- ✓ Operator (company)
- ✓ Pesticide product name
- ✓ EPA registration #
- ✓ Total gallons used
- ✓ Total pounds used
- ✓ Active ingredient
- ✓ Pounds
- ✓ Total Area to which pesticides were applied
- ✓ Field Area to which pesticides were applied

The data are posted by the HDOA at <https://data.hawaii.gov>.



Agricultural fields in Waimea Valley near residences.

It is apparent that there is significant interest in the GNP and the data on the website. The database on the website has been visited over 25,000 times since January 1, 2014. We obtained user data on approximately 25% of the visits to the database, but it was not possible to determine how many unique visitors viewed the website.

Many of the community residents we interviewed had viewed the database but found it lacking useful information and difficult to understand. One Westside resident created graphs to visualize changes in RUP usage over time, but found it difficult to interpret the data. It was evident from the focus group meetings that one of the primary intended audiences does not find the database as useful as hoped.

The participating companies also recognize that the database is difficult to interpret by non-specialists. Both the participating companies and West Side residents agree that providing background and contextual information about the RUPs would make it more useful and understandable to the general public.

None of the company representatives we interviewed claimed that submitting the monthly statements to HDOA was an administrative burden. In fact, apart from concerns about releasing proprietary information, the participating company staff were willing to explore ways to make data reported on the website more informative.

Other State Post-Application Reporting Programs

We examined pesticide regulation in several states known for aggressive pesticide management. California first began requiring reporting of pesticide application for agricultural purposes in 1950. It now has the most comprehensive pesticide management program in the country and is administered by DPR. DPR is funded by regulatory fees and has about 350 employees, including 120 toxicologists. California's program is also broader in scope than most states because it includes not just federal RUPs, but also additional pesticides designated as "restricted use" by the State.

DPR's program requires the following information be reported monthly to the CAC:

- ✓ Date and time of application;
- ✓ Geographic location including the section, township, range, and base line/meridian;
- ✓ Operator name and address;
- ✓ Operator identification number;
- ✓ Field location and site identification number;
Commodity, crop or site treated;
- ✓ Acres or units planted and treated;
- ✓ Whether the application was by air, ground or other means;
- ✓ Amount of product applied with its name and EPA registration number or, if the product was an adjuvant, its California registration number.¹²

¹² California Department of Pesticide Regulation. 2011. *A Guide to Pesticide Regulation in California*, p. 91. (www.cdpr.ca.gov)

The database is comprehensive and allows users to search by year, county, crop, pesticide, and many other criteria. However, the database is built on information submitted by the Counties and current information is not available. The last year that could be searched is 2013. Current information is available from the CACs but must be requested through a Freedom of Information Act request.

The CACs and DPR conduct numerous compliance checks to ensure accuracy of the data. For example, RUP numbers are compared to the grower's restricted use permit to ensure the information is consistent. DPR claims to utilize more than 50 checks on the data to ensure accuracy in reporting.

The states of Washington and Pennsylvania have pesticide reporting requirements that are similar in scope and depth to what California requires. While each state requires the compilation of detailed data about what pesticides are applied where and by whom, much of the data that are collected is gathered and maintained by the landowner for a specified period of time (often as much as 7 years) or submitted to state or other government offices. We did not find a state that offered as much current public reporting of agricultural pesticide use as the GNP offers.

Some Options for Improving the GNP's Post-Application Reporting

- A. **Background Information on the Database:** HDOA's GNP website could be made more "user-friendly" by providing more contextual information about pesticide management as an introduction to the database. The contextual information could facilitate interpretation of the reported data. HDOA could include information on basic concepts of pesticide management including, but not limited to: dosage, exposure, risk, drift, types of chemicals, labeling, applicator requirements, application technologies and HDOA inspection procedures. In addition, the introductory information could include information about each of the RUPs in common use for agricultural purposes on Kauai. That information would include: the name, amount of active ingredient, primary crop use, maximum annual dosage as indicated on the label and recommended buffer zone as indicated by the label.
- B. **Monthly Reporting by Plot.** Rather than daily pesticide use, report pesticide for each plot by the month. Monthly reporting for each plot would include pesticide(s) used, total product used, product used per acre, active ingredient and number of applications.
- C. **Inspection History:** In addition to the above, provide information about HDOA's inspection history of the facility and include the outcome of the inspection.
- D. **Compliance Checks:** HDOA could spot check the information reported to the GNP database with the information from inspections and other reporting requirements. To the extent necessary, the GNP's reporting requirements should include measurement units to facilitate the compliance checks.

1. How satisfied are participating companies' neighbors with the GNP program?

“The neighbors” are not a homogeneous group. Opinions varied among those we interviewed. Some spoke enthusiastically about the program. Most of those we interviewed said the GNP represents progress, but needs various minor (or major) improvements to meet community needs. A few were dismissive.

Some of the suggested improvements have been noted in the sections above. Others are noted below.

2. How satisfied are participating companies with the GNP program?

As the title of the program suggests, the essence of the GNP is about being a good neighbor. All of the participating companies were satisfied with the GNP. Some commented that the GNP had helped them become better neighbors by seeking alternatives to RUPs when possible.

All participating companies recognize the value of building and maintaining relationships and trust as part of the being a good neighbor. The participating companies recognize that participating in the GNP by providing comprehensive monthly reporting to the database, complying with buffer zones, and providing meaningful pre-application notification can help build trust over time.

Staff in participating companies also recognize that participation in the GNP is just one component of being a good neighbor. The companies emphasize the importance of their economic impact on surrounding communities. Employment by the participating companies is significant even though fewer residents of the surrounding communities have the sort of direct connection to agriculture that was common in the plantation era. Several of the companies are active in the schools, serving as judges in science fairs, offering internships for students interested in science and providing lab equipment. Company staff are also active in civic affairs and community activities.

The participating companies also acknowledge that they can do a better job explaining the nature of their business and how they help farmers farm more efficiently. Some companies offer farm tours but there has not been significant interest to date. Some of the companies also recognize that they need to be more accountable to the communities. If a neighbor raises an issue, the companies need to follow-up and address it in a timely manner.

Beyond these small steps, there are other initiatives that could help build more positive relationships. The participating companies lease vast acreage and have many fields out of production because of buffer zones, sensitivity to neighbors and schools about drift, or other reasons. Ideally, some of this land could be made available at little to no cost to young and beginning farmers and schools wishing to develop a more practical agricultural program. These farmers would also benefit from a mentor who could provide guidance as they grow their farming operations.

Additional GNP Modifications to Consider

Working Group for Pesticide Management: Given the nature of the relationships, there will be continue to be issues that need to be addressed from time to time. In order to confront those issues before they develop into larger problems, we recommend creation of a Kauai RUP Working Group. The working group would consist of a representative from each participating company, approximately 5 or 6 members of the surrounding community (schools, medical facilities, and residences) and a representative from HDOA. This working group could meet every few months and as needed to address compliance with GNP guidelines and other issues. A facilitator would be helpful to keep the conversation constructive and on task.

Scaling Up the GNP: The public's concern about pesticides is broader than the major agricultural users of RUPs. They are concerned about other non-agricultural users of RUPs. HDOA already has education and training programs, but scaling up the GNP might require additional efforts to reach smaller agricultural operations using RUPs. Should the GNP be expanded to a statewide program, a tiered approach with lower reporting requirements for small users and more detailed requirements for large users may be warranted.

Measures for Minimizing Drift. HDOA could also explore providing incentives for farm operators to develop and utilize pesticide application methods that minimize drift. The farm operators have an interest in using only as much pesticide as absolutely necessary and in minimizing drift. Pilot and incentive programs could facilitate the tests of modifications of application technologies and/or more use of natural wind buffers such as trees and other herbaceous wind barriers.

ADC Imposed Buffer Requirements. Since some of the land leased by participating companies is leased by the state's Agricultural Development Corporation, the State has greater ability to impose restrictions on future leases to minimize drift. For example, state agricultural leases could include requirements or incentives for natural wind buffers such as certain species of plants or other drift reduction technologies.

Conclusion

The GNP was designed and implemented during heated community debates over the use and regulation of RUPs. In the initial 18 months of implementation, it has proved to be an innovative and useful program that addresses community desires for greater transparency and awareness about patterns of RUP use.

Consistent with the purposes of a formative evaluation, we have noted some changes that could improve the program. The program modifications outlined above could result in more inclusive registration for notification of impending RUP application, increase the effectiveness of buffer zones and make the database more comprehensive and useful. Many of these modifications could be adopted with modest additional resources.

The GNP has also provided benefits in less apparent ways such as reducing the amount of RUPs used and letting fields closest to residential areas lie fallow. Through improved notification and reporting requirements and the less apparent benefits, the GNP has laid the foundation for improving relations between the participating companies and the surrounding communities.

A more robust GNP that provides more detailed pre-application notification, tailored buffers that provide increased protection where needed most, and comprehensive and verified post application reporting could increase trust both in the GNP and in the participating companies' farming operations. Additional measures by the participating companies such as mentoring local farmers and providing land not in production for use by schools or beginning famers would be significant initiatives that could foster positive long-term relationships between the companies and surrounding communities.