

## **CALIFORNIA PEST CONTROL DISTRICTS –**

### **A “How To” Manual: Location of Host Plants**

Addendum to the June 30, 2005 Publication

#### Introduction

Pest Control District (PCD) formation and operation relies upon special tax assessments placed on the commodity for which the PCD is being formed. When establishing the PCD, it is important to define what unit an assessment will be based upon, as this will ultimately determine the amount of time and resources necessary for establishing an accurate number of units owned by each grower. A unit can be individual trees, land acres, or 100 trees per acre. This definition is typically written into the commodity’s PCD legislation. For example, citrus is assessed on 100-trees per acre, whereas olives are assessed on a per tree basis for 10 or more trees per parcel.

The purpose of this section is to provide newly formed pest control districts with pertinent information to enable the location of targeted host plants and the identification of correct ownership. Each commodity will have unique challenges, but this manual is intended to serve as a useful starting ground. This section covers three major topics, how to acquire acreage and ownership information, how to develop a database to manage this information, and mapping the location of host plants. It also includes an appendix containing specific examples that one can follow.

#### How to acquire acreage and ownership information – the start

Especially for commodities grown by many small growers, acreage and ownership information can be obtained from existing sources. In Tulare County, the County Tax Assessor maintains a list containing useful information such as the Assessor’s Parcel Number (APN), primary and secondary land use codes, landowner information and acreage. However, be cautioned that the information from this source may not be complete and that it is typically updated only once each year. Be sure to check the use codes. Although grown on that particular parcel of land, a host plant may not be listed due to its coding as a tertiary or other use. Also, if exact acreage or actual number of

trees or vines is significant to your district, the Tax Assessor's List may not reflect the actual amount of your target host. Some counties maintain an Agricultural Preserve list, also referred to as the Williamson Act, which may be more accurate concerning crop information and acreage. The California Department of Water Resources (DWR) has surveyed land use and water resources for several counties. The DWR data can be very accurate, however many of these surveys were done several years ago and do not represent the current land use for many commodities. It is suggested that one gather acreage information from all sources, compile and sort the data, and if necessary, ground-truth the actual planting. Maintaining an accurate acreage and ownership database is crucial for both legal and financial purposes. Legally, the vote taken to impose an assessment for the operation of a district is weighted on the number of units owned by an individual or company. There can be financial ramifications to the district if a grower is assessed for a commodity and/or property that he/she does not have. It could mean decreased revenues or even more significantly, retribution. In a case involving the Kern County Citrus Pest Control District, an almond grower had been wrongly assessed as citrus use over a period of years. The almond grower sought reimbursement from the District.

For purposes of the case study conducted using the Tulare County Olive Pest Control District as its subject, cooperation with the Tulare County Assessor's office was crucial. The District's Board chairman generated a written request to the Assessor for the county's primary and secondary use code lists as well as the Agricultural Preserve list. These were received as Excel spreadsheets. The first step taken was to format all fields from the various spreadsheets to match one another (i.e., some APN's came as 215-030-015, using hyphens while others did not hyphenate between number groups). Use of the same format is necessary in order to sort and combine all spreadsheets into one master list. Each list was exported to Microsoft Access to run comparisons. Two lists resulted: one showing the use code parcels which had no matching Ag Preserve parcel, and the other showing the Ag Preserve parcels which had no matching use code parcel. These lists were exported back to Excel and e-mailed to the Assessor's office for research and resolution. It is of utmost importance to maintain constant communication with the Assessor's Office in rectifying this information. Both parties shared the

responsibility of ground-truthing, researching county records, and updating use and ownership information. As a result, both the County Assessor's office and the District benefited from having updated and accurate information. Although in this case study, MicroSoft Excel and Access software were used, one can use any comparable software packages to render the same results.

### What do I do with my parcel list?

There are two crucial items associated with each area of land, the Assessor's Parcel Number (APN) and the Township, Range, and Section (TRS). The APN is the primary means of identifying property ownership through county records. The APN is associated with owner information, the number of taxable units owned by the grower, use codes, and other pertinent information concerning a particular piece of property. However, the lists provided by the County Assessor's Office typically do not include the TRS location of the parcel.

Many parts of the United States are divided into square-mile sections. This was done over one hundred years ago by the US Geological Survey with the passage of the Homestead Act. These are identified by a series of 3 numbers, each representing the Township, Range, and Section (example: 22/18/06). The *township* refers to a north/south meridian, whereas the *range* refers to an east/west meridian. A particular Township and Range is a square comprised of 6 by 6 square-mile *sections*, hence there are 36 sections in each Township/Range. Maps that depict the TRS are available through several title companies such as Chicago Title Company and the United States Geological Survey (USGS). Knowing the Township, Range, and Section of an area allows easy access to satellite and aerial images.

Technology is constantly improving. At the time this case study was conducted, the following steps had to be taken to associate an APN with the correct TRS location.

1. Start with the master list generated as described above.

2. Generate an APN map using *parcelquest.com* - available by subscription (1-888-217-8999). (The citrus districts used *MetroScan* for several years but this study found *parcelquest.com* to be superior.)
3. The APN map usually has the TRS included, if not, then one must go back to the index map.

Sometimes you will find that an APN is obsolete or the Assessor's map is inaccurate. If this occurs you will have to use footwork to research the problem using one or more of the following methods:

- ◆ Contact the County Assessor's Office
- ◆ Research County records
- ◆ Manually examine each APN map to locate the particular parcel
- ◆ Contact Chicago Title Company
- ◆ Research old maps
- ◆ Contact the actual grower.

When creating your database, you will need to manually enter each APN and associated TRS. Refer to the appendix *Olive Mapping Database* for an example of how to set up a database for your district.

### Mapping On-Line

Now it is time to check the master list either in-house by going on-line or actual ground-truthing by visiting each location.

There are several sites that allow access to satellite images and aerial photographs. We evaluated several. *Google Keyhole* did not cover much of the area targeted (Tulare County, California) and focused more on urban areas rather than agricultural. The two found to be most useful were *TerraServer.com* and *AirPhoto USA*. Both of these are subscription services. Recently, these two sites have teamed up and one has access to *AirPhoto USA* through a subscription to *TerraServer*.

*TerraServer.com* operates as an imagery portal; that is, it provides an extensive array of images from many different sources. One can choose from images that include black and white, color, aerial photographs, and satellite images. Through the TerraServer site one has access to images from numerous sources such as USGS Maps, Globe Explorer, and blue sky. It is compatible with Global Information Systems (GIS). When conducting an “Image Search” the menu provides choices such as TRS and USGS quads. For example, if you select to enter the TRS for a particular location, a list appears telling what maps are available for that location and the image source. The list is sorted by the most recent image. Once you make a selection and place the image in view, the cursor can be placed on a particular location, say the first tree in the first row, and the Global Positioning System (GPS) unit is given. See the example of the screen in the appendix.

It is possible using geocoded digital imagery in conjunction with Assessor’s Parcel Map overlays to obtain tree count and acreage verification, provided the resolution of the image is high. It is also possible using this method to verify if a parcel of trees has been removed. However, digital imagery can be weeks or years old. Sometimes shadows or canopy overlap can obscure individual trees in digital imagery of even high resolution. Additionally, if digital images are obtained during winter months it can be difficult to distinguish individual deciduous trees. Ground survey is the only means for verifying the accuracy of information.

### Creating a Database

Establishing a database of growers within the jurisdiction of the PCD is critical for proceeding with PCD formation and ultimately PCD operations. The database should include: APN, owner information, number of taxable units, caretaker or ranch manager contacts, global position coordinates, Federal Township/Range/Section, all information associated with monitoring or mitigation of the specific pest, etc. The database should be searchable, compatible in some form with other software systems, interactive with other databases, and capable of report production. Currently, Microsoft Access suits this role

well, but there are other viable database software systems available. Once a database has been established for a district, this information can be used to generate a mailing list, voting roll, and to maintain accurate map-related information on the particular host plants or commodity.

### Map Verification or Ground-truthing

Once a database has been established for the location of host plants, then the parcels identified by APN on the Assessor's Parcel Maps are highlighted for the commodity of interest in preparation for map verification using ground survey. Map verification begins with one of these highlighted Assessor's Parcel Maps, which is scaled to fit over a geocoded digital image (AirPhotoUSA) typically of a one square mile Section (as defined by the Federal Township and Range system). This allows the mapping technician a starting reference for ground survey and confirmation of the parcels highlighted for the commodity of interest on the Assessor's Parcel Map. Ground survey includes traveling to the Assessor's Parcel Map site and recording the geographic location of each parcel using a global positioning unit. The global positioning unit can be used as a reference point when researching host plantings via the internet (see above paragraph on mapping on-line). Additionally, ground survey includes verifying acreage or tree count of the commodity of interest in each parcel, recording parcels that are newly planted with the commodity of interest and recording parcels where the commodity of interest no longer exists. Global positioning is increasingly important not only as a means to find locations, since landscapes are dynamic, but also because counties may convert from Assessor's Parcels identified using the Federal Township and Range system to Assessor's Parcels identified by global position. Kern County currently has converted all of its pesticide use records to identification by global positioning.

Depending on the specific needs and operational plan of a district, the map images obtained on-line may be sufficient to conduct operations. The various citrus pest control districts in the San Joaquin Valley choose to draw customized maps to satisfy their survey and tree removal operations. These include directions to a particular citrus grove, access roads and/or gates, geographical and structural reference points, assigning

unique block numbers, the exact row and tree to initiate sample collection, whether to contact the grower before entering, and to warn of snakes. If the operational plan of a district includes trapping for an insect pest, maps must be interactive so that trap locations can be recorded and changed as necessary. The best system for this purpose is *ArcView* and *ArcInfo* systems. See the following section.

One note of caution when accessing data on-line, pay close attention to which projection is used. The *projection* is the mathematical correction for the curvature of the earth. Examples include Mercator and Mollweide. The Mercator projection accurately preserves the shape of fairly small features but distorts area. Despite its drawback, it is the projection typically used for creating ArcView maps. Depending upon the projection used, the global positioning units can vary and your exact location can be thrown off by miles.

#### Access and Maintenance of Host Plant Information

It is recommended that all districts submit their host plant information to a centralized location at the University of California Kearney Agricultural Center. Ms. Kris Lynn-Patterson is the Academic Coordinator for Geographical Information Systems. She can be contacted at [krislynn@uckac.edu](mailto:krislynn@uckac.edu). Her goal is to create a map of ALL agricultural commodities produced in California and associate as much information as is known about those commodities. This is done using both ArcView (actual map) and ArcInfo (information associated with a particular map). All citrus and olive host plant information has been submitted to this location.

Ms. Kris Lynn-Patterson periodically conducts training classes in the use of ArcView and ArcInfo software. She is also an excellent resource for obtaining land use information and has authorized access to numerous mapping sites.