# Adjuvants and Active Ingredient Residue Data

## Overview

In mid 2008, EPA became concerned about setting tolerances that might not represent the expected active ingredient residue levels in plants grown under actual agricultural practices. This concern was based on a limited set of data for grapes and fruit tree crops. CPDA's AIC Committee formed the Adjuvants & Residues Working Group to manage this issue, and CPDA staff met with EPA staff several times and organized an adjuvant-training seminar to educate Agency staff about the nature and uses of adjuvants. Between September 2009 and March 2010, CPDA and CLA jointly compiled existing data from 437 studies that compare active ingredient residue levels in plants grown with and without adjuvants present under the same growing conditions ("side-by-side" studies). This effort was initiated because EPA would accept only this type of data as a basis for finding that adjuvants generally do not increase active ingredient residues to levels of concern. The compiled studies include data for multiple crops, active ingredients, and geographical areas, as well as insecticides, herbicides, and fungicides, and adjuvants representing oils, surfactants, and a few stickers.

## Update

CPDA and CLA presented a PowerPoint summary of the data to EPA staff on April 5, 2010, and certain EPA staff also received a redacted electronic copy of the underlying raw data. Linear regression analysis shows that the overall average ratio of residue levels when adjuvants are used to residue levels when not used is 0.90, indicating that across all variables (e.g., crop, adjuvant types, etc.) residues actually *decrease* slightly with adjuvant use. Although the data indicate that oils increase residues (1.5 ratio compared to 1.0 based on 168 studies) and surfactants decrease residues (0.89 compared to 1.0 based on 244 studies), this difference appears to be due primarily to elevated ratios in a single forage crop (rapeseed/canola). For all 437 studies, 75% of the ratios were less than 1.4 and 87% were less than 2.0. These results demonstrate that the increasing residue trend EPA observed for its limited data set (overall average with:without ratio of 2.0 for 4 studies) is not supported by the results of the 437 studies (which includes the 4 studies). Thus, the compiled side-by-side data demonstrate that adjuvants generally do not increase active ingredient residues above levels that would be of concern to EPA (ratios between 1 and 2).