

Herbicide Carryover in Vegetables

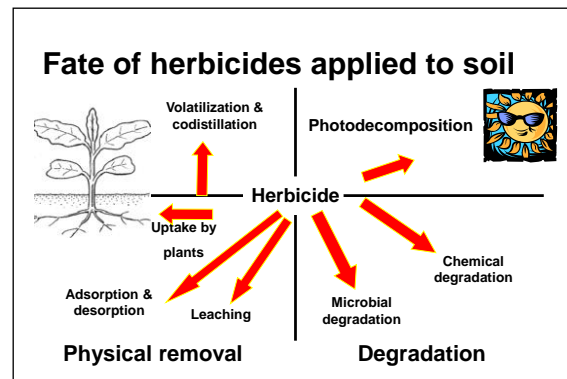
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Summary. Vegetable crops are often sensitive to the presence of herbicide residues in the soil. Because of the intensive cropping system here in California, two or more vegetable crops can be grown on the same field in a given 12 month period. Some herbicides are more likely to persist than others and injure a rotational crop. Similarly, some crops are more sensitive to herbicide residues in the soil than other crops. Many of the California direct-seeded vegetable crops such as lettuce and spinach are among the most sensitive of any crops, and so special care must be taken with these and other crops. In this presentation we will examine the potential for several common vegetable herbicides to carryover, and steps that can be taken to minimize herbicide persistence such as applying herbicides in band applications.

Principal vegetable herbicides and crops. The most common vegetable herbicides used in California are Balan, Caparol, Dacthal, Devrinol, GoalTender, Kerb, Lorox, metam sodium, Poast, Prefar, Roundup, Ro-Neet, Sandea, Select Max and Treflan. Vegetable crops considered here are beans (snap), carrot, celery, cole crops, cucurbits, lettuce, onion, pepper, spinach, and tomato (fresh and processing).

Herbicide carryover and loss of herbicides.

Ideally we apply an herbicide at the time of vegetable planting, and by the time of harvest the herbicide residues in the soil are gone so that we can rotate to any crop we chose. Unfortunately, not all herbicides degrade this rapidly and many rotational crops are very sensitive to the persistence of some herbicides. There are many means by which herbicides degrade in the soil, and degradation varies by herbicide chemistry. Principle means of herbicide loss are: volatilization, photodecomposition, adsorption to the soil, leaching, microbial and chemical decomposition.



Methods to minimize herbicide carryover.

1. Apply less herbicide by applying band applications over the crop seedline;
2. Apply herbicides accurately to avoid overdosing;
3. Till the field after harvest to dilute the herbicide treated soil profile;
4. After harvest keep the field moist to enhance soil degradation by soil microbes and water;
5. Maintain the soil pH near optimum levels for the crop;
6. Select herbicides that are less persistent – if a choice is available;
7. Soil additives such as activated charcoal can help adsorb excess herbicide.

Literature citations

California Department of Pesticide Regulation. 2008. Summary of Pesticide Use Report Data 2008. Department of Pesticide Regulation, Sacramento, CA. <http://www.cdpr.ca.gov/docs/pur/pur08rep/comrpt08.pdf>.
Crop Data Mgmt System. 2011. Herbicide specimen labels <http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=>