

ADVISOR ANNUAL EVALUATION

January 1 – September 30, 2008

Due: November 17, 2008

**SECTION A & B. Advisor Review: Annual Evaluation**

**Save Sections A and B (below) as one document and separately from other sections and upload as Annual Evaluation A and B**

Name:

Steven Koike

Title:

Plant Pathology Farm Advisor

County or Unit:

Monterey County

**POSITION DESCRIPTION** *If needed, upload your current position description(s).*

**SECTION A: NARRATIVE (Limit 5- 8 pages, 11-12 pt. font)**

**General Performance and Accomplishments:**

**I. STATEMENT OF ASSIGNMENT** *(You can retrieve this information from DANRIS-X)*

No changes.

**II. RESEARCH, EXTENSION AND CREATIVE ACTIVITY**

My research and extension program is based on the major theme of interactions between plants and microorganisms. Because of my interest, training and experience with plant pathology and microbial ecology, I focused my activities on three areas of plant-microbe interactions.

1. Pathogens of plants

Rationale: Coastal California agriculture and horticulture are high value, high volume, intensive industries that consist of dozens of crops, extensive acreage, and extremely high quality standards. Plant pathogens are significant limiting factors for most of these crops. Farmers, pest control advisors, and other clientele need information on the various problems they face and how to manage them. Therefore, to help ensure that our California industries remain productive and competitive, I conduct a research and education program dealing with new and existing plant diseases. This focus is consistent with the ANR high priority core issues of pest management, sustainability, and invasive species.

Accomplishments: Our team was the first group in the world to document the new race of spinach downy mildew found in 2008; we are now assisting industry in developing resistant cultivars and testing fungicide treatments. We have successfully identified new virus pathogens infecting celery (*Apium virus Y*) and lettuce (*Impatiens necrotic spot virus [INSV]*); field studies to understand disease epidemiology are now in progress. To best study the INSV problem, I took the initiative to learn how to identify the thrips insect vectors that spread the virus. I am now conducting thrips surveys and can identify these insects to the species level. In collaboration with

PI Tjsovoid, we have successfully identified fungicide controls for sudden oak death (SOD) in nurseries and documented an expanded host range of the pathogen on species grown in the eastern USA.

Extension: I made timely efforts to alert industry regarding these developments. I issued a number of extension bulletins and publications so that industry could be informed about the problems and our research findings. I presented numerous talks on the symptoms, pathogens, and potential controls for these new emerging problems.

Impact: My county-based diagnostic lab in Salinas is the centerpiece of my extension pathology program, and we offer accurate and timely diagnoses for growers. Because of our reputation for providing this service, growers who observed these new disease problems submitted samples to us for confirmation. I was therefore the first researcher to alert industries of the new spinach, celery, and lettuce problems. Because of our downy mildew findings, the spinach industry is planting other cultivars. Nurseries facing possible SOD concerns on trees and shrubs now have fungicide options that can be used. Our SOD host range information has nationwide impact in that nursery personnel, foresters, and researchers in the eastern part of the country have early indication of which eastern species might be susceptible to the SOD pathogen.

## 2. Soil microbial ecology in strawberry

Rationale: Agriculture's use of soil applied fumigants has been shifting because of concerns about safety, health, and the environment. The strawberry industry is concerned about managing soilborne problems in relation to the pending loss of methyl bromide registration. Therefore, I am involved in research and education projects that seek to understand the soil microbial ecology in strawberry production systems. This focus is consistent with the ANR high priority core issues of pest management and sustainability.

Accomplishments: My lab detected a new disease development in fields where methyl bromide was not recently applied. This soilborne pathogen (*Macrophomina*) has caused plant decline in fields in Santa Maria, Irvine, and Ventura. In my experiments I have confirmed that *Macrophomina* is a primary pathogen of strawberry, and that strawberry cultivars vary in their susceptibility. This soilborne problem, associated with changes in fumigation practices, is now being studied by a team that I recruited (Koike, Gordon, Ajwa, Daugovish, and Bolda).

Extension: Through publications and presentations I alerted the strawberry industry to the new *Macrophomina* problem. I also focused an extension education effort for Spanish speaking, limited resource growers by printing a diagnostic guide in Spanish and presenting my research information in Spanish.

Impact: I have been able to furnish an early alert to strawberry growers that soil fumigation practices may result in new challenges. Through my diagnostic services I helped growers avoid mistaking the new *Macrophomina* disease for other problems.

## 3. Foodborne pathogens and ecology of *E. coli*

Rationale: While food safety has always been a concern for industry and consumers, there is an immense increase in food safety issues due to the 2006 *E. coli* contaminated spinach outbreak. Unfortunately, there is a decided lack of information on the ecology of foodborne pathogens in

commercial field settings. Therefore, I am involved in research and education efforts to understand the dynamics of E. coli under field conditions and to work towards improving food safety practices and policies. This focus is consistent with the ANR high priority core issue of food safety.

Accomplishments: This is a new facet of my program. I prepared myself for field studies in this area. I consulted with campus-based researchers, attended training opportunities, and conducted an extensive review of pertinent literature. I obtained funding to convert one of my lab spaces to a food safety research facility. Thus prepared, I was the PI on a new, multi-year industry grant to study the ecology and survival of E. coli under field conditions. I have recruited a research team to work on this project (Koike, Cahn, Smith, Suslow). We found that generic E. coli strains applied in water to agricultural fields (simulating the use of tainted irrigation water) survived in field soil for only a short period (ranging from 3 to 12 days). Greater moisture favored longer E. coli survival. Bacteria applied to bed tops percolated or splashed down into furrow water and was detected in surface runoff waters. However, E. coli applied to the soil did not appear to spread to the lettuce that was subsequently germinated and grown in the treated beds.

Extension: I extended research information, raised pertinent scientific issues, and engaged clientele and other audiences regarding foodborne pathogens. I wrote articles that presented our research information and also summarized published information from other sources. I presented a number of talks on the subject, including one presentation for Spanish speaking clientele.

Impact: I took the initiative to expand my research capabilities to include practical field studies of E. coli. As a result, UC Cooperative Extension is now considered a part of the food safety research effort. Because of my involvement in these issues, I am a member of the Hartnell College Food Safety Advisory Committee that is creating training classes for harvest supervisors, industry food safety officers, and others.

### **III. AFFIRMATIVE ACTION**

Intended audience: The audience of my Affirmative Action efforts includes ethnic and gender minority growers and pest control advisors in the central coast. In particular, I focused on minority growers who produce specialty minor crops (for example: tomatillo, chile peppers, herbs, Asian vegetables) and Hispanic farmers who grow strawberries.

Methods: My main method of outreach was personal contacts through farm calls and field visits. I provided services by visiting clientele, conducting field surveys, and analyzing plant samples from their fields. For persons of Hispanic background, I wrote articles in Spanish and spoke in Spanish to further establish working relationships.

Overcoming language barriers: To better serve our Hispanic clientele, I communicated with such persons in Spanish. I used lab report forms in Spanish to accommodate Spanish-speaking clientele who brought samples to our office. I participated in bilingual educational meetings that served the Hispanic clientele (4/9/08, 4/15/08, 4/16/08).

Research and extension: The University's Affirmative Action program is well integrated into my research and education program. During this period under review, my research findings were extended to growers and pest control advisors who belong to the identified under-served groups. I interacted with growers of specialty minor crops and increased their understanding of the disease problems of their crops. My research and education achievements regarding such

minor crops highlight my commitment to a broad range of growers, including those who do not participate in the large, established commodity groups.

**SECTION B-TABLES AND APPENDICES (no page limit, 11-12 pt. font)**  
*(You can retrieve this information from DANRIS-X)*

**I. PROFESSIONAL COMPETENCE AND ACTIVITY**

- *List activities you have undertaken to improve your professional competence*
- *List disciplinary societies/professional associations (organization name, your role)*
- *List awards, honors or recognition*

**a. Professional Development**

<b>Begin Date-End Date</b>	<b>Location</b>	<b>Duration (hours)</b>	<b>Name and/or Description of Activity</b>
9/8/2008-9/11/2008	Riverside	32	Thrips identification workshop
7/25/2008-7/30/2008	Minneapolis	32	American Phytopathological Society annual meeting. Minneapolis, MN.
1/1/2008-on-going	California	NA	Member of UC workgroups: strawberry, pepper, floriculture & nursery.

**b. Disciplinary Society / Prof. Association**

<b>Disciplinary Society / Prof. Association Name and Your Role</b>
American Phytopathological Society. Member, APS Press committee member (for book publishing division).

**c. Evidence of Professional Competence**

<b>Begin Date-End Date</b>	<b>Location</b>	<b>Category</b>	<b>Name and/or Description of Award, Recognition, Office or Activity</b>
7/27/2008-on-going	Salinas		I was re-appointed, for a second term, as a Senior Editor for the APS Press Editorial Board. APS Press publishes technical books, visual media, and other educational works. My appointment involves reviewing book and other publication proposals, reviewing and editing manuscripts, recruiting reviewers for projects, overseeing book writing and production procedures for APS Press, attending APS Press meetings, and taking charge of assigned book projects.
1/1/2008-on-going	Salinas		Appointed as associate editor for the international organization that publishes scientific publications Journal of Asian Plant Pathology and International Journal of Botany.
1/1/2008-on-going	Salinas		Appointed to Advisory Board for national industry journal and organization American Vegetable Grower.

**II. UNIVERSITY AND PUBLIC SERVICE (county, regional, state, national)**

- *List university service activities*
- *List public service activities*

**a. University Service**

<b>Begin Date-End Date</b>	<b>Activity</b>	<b>Level of Significance</b>	<b>Your Contribution and Leadership Role</b>
1/1/2008-6/1/2008	UC merit and promotion review committee	State	Committee member
4/4/2008-4/11/2008	Acting County Director	County	Acting County Director
3/1/2008-9/22/2008	Search Comm., Imperial Co.	Regional	Committee member
6/1/2008-12/30/2008	Mentor for new advisor	Regional	Mentor for new advisor

**b. Public Service**

<b>Begin Date-End Date</b>	<b>Activity</b>	<b>Level of Significance</b>	<b>Your Contribution and Leadership Role</b>
1/1/2008-on-going	Hartnell College food safety education program	County	Committee member, curriculum developer, speaker, resource person
3/29/2008-3/29/2008	Monterey Peninsula Community College programs	County	Speaker at Monterey Peninsula Community College class: Introduction to insect and disease pest management. Topic: Introduction to plant diseases.
3/20/2008-3/20/2008	Hartnell College programs	County	Speaker at Hartnell Community College class: Pesticide applicator certification training (AGR-61). Topic: Introduction to plant diseases of vegetable crops.

**III. GRANT AND PROGRAM SUPPORT SUMMARY LIST (optional)**

<b>Project Title</b>	<b>Your Role</b>	<b>Funding Source</b>	<b>Duration</b>	<b>Amount</b>
Identification of spinach downy mildew races	P. I.	California Spinach Growers Fund	1/1/2008-12/30/2008	\$ 1500
Soil survival of E. coli	P. I.	California Lettuce Research Board	4/1/2008-3/30/2009	\$44,000
New virus of CA celery	P. I.	California Celery Res. Board	9/1/2007-8/29/2008	\$6,000
Strawberry statewide diagnostics	P. I.	California Strawberry Commission	10/1/2007-9/30/2008	\$14,450

**IV. EXTENSION ACTIVITIES**

**a. Meetings Organized (Classes/Short Courses/Demonstrations/Field Days/Other)**

Begin Date-End Date	Event	Presentation Topic/no. of repetition	Location(s)	Tot. No. Attendees

**b. Educational Presentations (including oral presentations and posters)**

Date	Event	Topics	Locations	Attendees
2/21/08	Monterey Bay CAPCA board	Outbreak of new celery virus	Salinas	10
3/26/08	Annual vegetable production meeting	2. Diseases of cool season vegetables	Camarillo	51
8/22/08	Spinach disease seminar	Downy mildew and Verticillium	S. J. Bautista	45
9/17/08	Celery board research meeting	New virus of celery in California	Guadalupe	23
2/5/08	2008 Central coast straw. meeting	Macrophomina and minor pathogens	Watsonville	165
4/9/08	Taller de fresa en Espa-ol	Enfermedades en fresa: Macrophomina	Santa Maria	32
4/15/08	ALBA strawberry prod. workshop	Soilborne diseases of strawberry	Soledad	18
4/16/08	Organic strawberry production	Managing strawberry diseases	Guadalupe	45
2/19/08	Irrigation & nutrient mgmt. meeting	Irrigation systems and E. coli	Salinas	65
3/26/08	Annual vegetable production meeting	1. Vegetable crops, food safety issues	Camarillo	51
4/17/08	Hartnell College food safety & GAPs	1. Survival of E. coli in the field	Salinas	84
4/17/08	Hartnell College food safety & GAPs	2. Supervivencia de E. coli en el campo	Salinas	22

Begin Date-End Date	Event	Presentation Topic/no. of repetitions	Location(s)	Tot. No. Attendees

**c. Other (including news media interviews- in DANRIS-X "Other")**

Begin Date-End Date	Description (include presentation topic and location)	Tot. No. Instances

**V. BIBLIOGRAPHY**

A Bolda, M., and Koike, S. T. 2008. Management of rust diseases in raspberries on the central coast of California. Monterey County Crop Notes. January February.

A Koike, S. T. 2008. Diseases of fennel. Monterey County Crop Notes. January February.

D Koike, S. T. 2008. Update on establishing a state-wide strawberry disease diagnostic center; Development of Macrophomina disease concerns. California Strawberry Commission Annual Production Research Report, 2006-2007. p. 161-164.

B Tjosvold, S. A., Koike, S. T., and Chambers, D. L. 2008. Evaluation of fungicides for the control of *Phytophthora ramorum* infecting *Rhododendron*, *Camellia*, *Pieris*, and *Viburnum*. Online. Plant Health Progress doi:10.1094/PHP-2008-0208-01-RS.

A Koike, S. T., Tian, T., and Liu, H.-Y. 2008. Possible new virus on celery. Monterey County Crop Notes. March April.

A Bolda, M., and Koike, S. T. 2008. The past, present & future of soil-applied fumigants. CAPCA Advisor 11:30-31.

A Salmon, T. Smith, R., and Koike, S. T. 2008. Food safety and Salinas Valley crops: 3. Rodent control in leafy green vegetable production. Crop Notes. May-June.

E Njoroge, S. M. C., Park, S., Kang, S., Koike, S. T., and Subbarao, K. V. 2008. Comparative analysis of infection of broccoli and cauliflower by a green fluorescent protein-tagged *Verticillium dahliae* isolate. Abstract and poster. *Phytopathology* 98:S114.

E Wu, B. M., Koike, S. T., Vallad, G. E., and Subbarao, K. V. 2008. Post-fumigation horizontal and vertical recolonization of soil by *Verticillium dahliae*. Abstract and poster. *Phytopathology* 98:S173.

C Szabo, L. J., Koike, S. T., and Hill, J. P. 2008. Rust. Pages 41-44. In: *Compendium of Onion and Garlic Diseases and Pests*. Edited by H. F. Schwartz and S. K. Mohan. American Phytopathological Society Press.

A Koike, S. T. 2008. *Macrophomina* crown rot: possible new production issue for strawberry in California. Crop Notes. July/August.

A Koike, S. T., and Suslow, T. 2008. Food safety and Salinas Valley Crops: 4. The question of seedborne *E. coli* O157:H7. Crop Notes. July/August.

B Koike, S. T., Kuo, Y.-W., Rojas, M. R., and Gilbertson, R. L. 2008. First report of *impatiens necrotic spot virus* infecting lettuce in California. *Plant Disease* 92:1248.

B Koike, S. T. 2008. Crown rot of strawberry caused by *Macrophomina phaseolina* in California. *Plant Disease* 92:1253.

B Tian, T., Liu, H.-Y., and Koike, S. T. 2008. First report of *Apium virus Y* on cilantro, celery, and parsley in California. *Plant Disease* 92:1254.

A Koike, S. T. 2008. New pathogen attacks Ventura County strawberries. Farm Bureau of Ventura County newsletter. Volume XL, No. 7. July.

B Smukler, S. M., Jackson, L. E., Murphee, L., Yokota, R., Koike, S. T., and Smith, R. F. 2008. Transition to large-scale organic vegetable production in the Salinas Valley, California. *Agriculture, Ecosystems and Environment* 126:168-188.

- B Koike, S. T. 2008. Black root rot caused by *Thielaviopsis basicola* on lettuce in California. *Plant Disease* 92:1368.
- B Mou, B., Koike, S. T., and du Toit, L. J. 2008. Screening for resistance to leaf spot diseases of spinach. *HortScience* 43:1706-1710.
- D Correll, J. C., and Koike, S. T. 2008. A novel downy mildew strain affects spinach in California. California Spinach Growers Research Fund Report. September 24.
- B Koike, S. T. 2008. Downy mildew caused by *Peronospora valerianellae* on corn-salad (*Valerianella locusta*) in California. *Plant Disease* 92:1470.
- A Koike, S. T. 2008. Downy mildew of corn-salad. *Crop Notes*. September/October.

**Bibliography summary for January through September, 2008:**

Categories	Number for review period
A. Popular articles, newsletters, UC Delivers	9
B. Peer review in journals	8
C. Peer review, other (section in book)	1
D. Technical reports	2
E. Abstracts, posters	2
Total publications for all categories	22