Award Category: Lifetime Achievement
Nominee Name: Walter J. Bentley
Nominee Title: IPM Entomologist
Nominee Affiliation: University of California
Nominee E-mail: walt@uckac.edu
Nominee Phone: 559.646.6527
Nominator Name: Curtis, Robert
Nominator Company: Almond Board of California
Nominator Title: Assoc. Dir. Ag Affairs
Nominator Phone: 209.604.0385
Nominator E-mail: rcurtis@almondboard.com
Supporting Document:
Vita: SUBMITTED
Improving economic benefits related to IPM adoption: Checked
Reducing potential human health risks: Checked
Minimizing adverse environmental effects: Checked

Brief Summary of Nominee's or Program's Accomplishments (500 words or less):
Mr. Walter J. Bentley started his career with University of California Cooperative Extension in 1977 and has been devoted to developing and delivering IPM for his entire 34 year career. Throughout his career, he has published and presented the results from science-based field trials while always ensuring the practical and pragmatic outcomes are widely distributed.

For 34 years, Mr. Bentley has made substantial contributions to the science and adoption of IPM in almonds, vineyards and stone fruit in CA through stakeholder linked programs. These programs have been instrumental in keeping farmers and pest control advisors (PCAs) productive and profitable while reducing external risks to the environment and health. Highlights of his career program include:

- Creation of stakeholder driven teams that improved IPM knowledge and increased adoption and wider use of IPM practices
- Extensive use of extension outreach (1100 presentations and 300 articles) resulting in improved IPM literacy among clientele
- Reduction of broad spectrum insecticides through adoption of alternative approaches and products,
- Increased adoption of reduced risk pesticides including mating disruption and insect growth regulators
- Development of more effective monitoring methods including attractant and pheromone traps
- Increasing the impact of biological control
- Maintaining foreign markets for fruit commodities while maintaining local IPM programs
- International consultations in IPM and extension outreach methodologies

. A hallmark of Mr. Bentley's extension career has been his ability to connect and empathize with his clientele. Over the years, he has addressed real problems of real people. He has preferred to engage the client in the design of the experiment and taught in a hands-on approach. This learning-by-doing approach has resulted in deeper understanding of the particular issue faced by the farmer (CV Publication 18).

A second hallmark of Mr. Bentley's career is his ability to be a team player as well as a leader. Mr. Bentley has provided invaluable service to larger teams which addressed IPM in the cropping system, especially through participatory activities. The best team examples include participatory, stakeholder driven projects including Almond Biologically Integrated Orchard Systems (BIOS) and the Pest Management Alliance (PMA) programs. Mr. Bentley provided indispensable service to almond, walnut, table grape and prune PMAs. These large teams of campus based academics, regulators, key industry representatives and driven by stakeholder issues.

A final hallmark of Mr. Bentley's program is the value he places on outputs and outcomes. He has been an active writer in diverse outlets with over 400 publications including local press, trade magazines, newsletters, UC publications and peer reviewed journal articles. His contributions to multiple UC IPM Pest Management Guidelines are crucial to maintaining their relevancy and currency. His projects have resulted in substantial improvement and predictability of pest management systems and resulted in substantial reduction of high risk insecticides in table grapes (90% reduction, CV publication 58) and almonds (80% reduction in organophosphates). His efforts in demonstrating IPM approaches in side-by-side comparisons have resulted in broad acceptance and adoption IPM (CV publication 25).

Describe the goals of the program being nominated; why was the program conducted? What condition does this activity address? (250 words or less):

Mr. Bentley has been dedicated to the mission of UC Statewide IPM Program (www.ipm.ucdavis.edu/IPMPROJECT/about.html). He has served the mission with great success around three major goals: 1) Coordinate with private and public agencies to leverage expertise and resources; 2) Conduct science-based research to improve predictability and effectiveness of pest management techniques; and 3) Develop relevant outreach through extension to the community of users.

His programs have specifically addressed surface water pollution as a result of organophosphate, carbamate and pyrethroid insecticides in runoff and drift from nut and fruit orchards. Mr. Bentley was part of a team that determined that practice of winter dormant sprays in almonds used to manage peach twig borer, San Jose scale and other pests were potential non-point sources of pollution. This team then developed a research and extension programs to develop IPM systems to manage these pests resulting in significant reduction insecticide runoff into local streams.

Mr. Bentley also addressed air quality issues as impacted by pests and pest management activities. In this case, the San Joaquin Valley air basin was out of attainment for daily ozone levels. Insecticides were identified as a critical contributor, especially those formulated as emulsifiable concentrates. Mr. Bentley worked with the industry to find alternatives, determine how to deploy those alternatives, and demonstrate the value of target sensing sprayers (e.g., "smart" sprayers).

As his career progressed, he was required to address an increasingly complex set of issues and balance these with sound IPM practices, including invasive species, export demands – both quality and maximum residue limits (MRLs), and sustainability measures.

Describe the level of integration across pests, systems and/or disciplines that was involved. (250 words or less):
Mr. Bentley works in a multi-disciplinary environment, focusing on the arthropod pests but working in a cropping system context. As such, he is relied upon to work with experts in water quality, toxicology, and air pollution. He often is called upon to help solve problems from local pomology or viticulture farm advisors (similar to county agents). He has multiplied his efforts by cooperating with existing UC work groups, which include Ag Experiment Station (AES) and Cooperative Extension (CE) experts organized around a crop or issue. Such groups often had horticulture, pest, soil, irrigation and agricultural economics expertise.

His close ties to California's commodity organizations has solidified his reputation with stakeholders. His standing among the farmer funded commodity boards is so great that he is successful in requesting funds outside of the normal proposal cycle to address newly discovered problems, and in others cases he was specifically approached by the same groups to submit a proposal on an issue they would like addressed. This level of trust is an indication of the high regard in which the industry holds Mr. Bentley.

An example of this trust is the example is transitioning from older "proven" insecticide regimes allow establishment of the parasitoid Macrocentrus ancylivorus in peach orchards for Oriental fruit moth (OFM) management. This parasitoid also impacts OFM in nearby almond orchards. The transition was fostered by developing reduced risk insecticides for almonds and peaches and by developing mating disruption for peaches. These developments allowed the integration and establishment of the parasitoid into the peach and almond system.

Describe the team building process; how did the program being nominated get partners involved? Education and awareness are essential in an IPM program. (250 words or less):
Mr. Bentley is at his best in a team. He has a long history of working in large, complicated teams which are approaching multi-problems at the cropping level. For example, in the case of BIOS and PMAs, the issues were stakeholder driven, but the team consisted of NGOs, state and federal agencies and UC and State University campuses, as well as farmers and PCAs. These participatory research and extension teams used side-by-side on-farm field demonstrations of conventional and IPM approaches to prove their value without additional risk. In the case of Almond BIOS and PMA, IPM practices included winter sanitation of nuts, improved monitoring and timing of control measures and implementation of reduced risk materials. These teams has been recognized locally and nationally for their accomplishments as IPM Innovators (2 awards) and by Entomology Society of America (Pacific Branch and National Award, IPM Extension Team).

Key elements of the team's success were the outputs they developed and continue in used. These include UC Pest Management Guidelines and Year Round IPM Programs for Almonds, Stone Fruit, Grapes and Prunes. These publications are the core of UC IPM education outreach and received many web-visits annually. For example in 2011, there were: 43,075; 62,829; 140,129; and 7,711 web visits respectively. In addition, Seasonal Guide to Responsible Pest Management publications were developed for almonds (CV publication 40), Peaches and Nectarines (CV publication 48).

What outcome describes the greatest success of the program?:
The greatest success of Mr. Bentleys' contributions in IPM is making a difference in people's lives.

Mr. Bentley has often said that close relationships with individual farmers and their families has been the most personally rewarding success of his career. Many testimonials have been provided in which farmers, PCAs and industry leaders have stated the difference Mr. Bentley and his Cooperative Extension teams have made in the success of their agricultural enterprises.

The success of his program, based on listening and applying demonstration research and extension outreach, has been recognized internationally. Mr. Bentley has been invited to work with several extension and farmer groups: Kosovo, Serbia in pome and stone fruits (2004 and 2005); Penticton, Canada for organic grape pest management (2005); New Zealand in grape pest management (2006); and in Chile with management of various mealybug species of grapes (2008).

Provide evidence of change in knowledge, behavior or condition as a result of the program/individual. (250 words or less):

The change in behavior, knowledge and condition over the course of Mr. Bentley's career is substantial. While change is a result of multiple factors (e.g., regulation, economics, advancements in insecticide and pheromone chemistry), the nominee has played a central role in adaptation, adoption and discovery. Based on published surveys, use of IPM practices implemented by Mr. Bentley has been adopted widely (70% see CV publication 45). In a recent audience response survey at the 2011 Annual Almond Industry Conference, 60-80% of farmers and PCAs responded that many key IPM practices are now "part of their current practice".

Another important change due to Mr. Bentley's program has been to increase the use of alternative control practices. For example, in stone fruit, an adoption rate in the industry of 75% was recorded for Oriental fruit moth mating disruption and a 70% increase in the use insect growth regulators over a 3 year period.

Of key importance is the change in use of organophosphate and carbamate insecticides as result of his efforts. In California, data exists to track pesticide use, especially restricted materials. The use of these materials has been reduced in almonds by 80%, in table grape by 90% (58) and in tree fruit by 90%.

Who or what should receive the most credit for the success of this program? (250 words or less):

People make programs and it is cooperators and collaborators over the course of 34 years that provided the key contributions to the success of Mr. Bentley's programs and his continual professional development. Playing a central role in his success were interaction and contributions of the UC IPM Program personnel with their diverse expertise and talents. Being able to observe, learn and receive support in developing outreach materials and extension techniques, have been critical for Mr. Bentley's continual professional. The close association with colleagues in UCCE have provided valuable guidance in the horticultural implications of pest management decisions and provided pragmatic advice to ensure IPM programs were compatible with production practices.

If selected, suggested Citation for Award Certificate (40 words or less):

In honor of your lifetime achievement and contributions to advancing integrated pest management programs in California cropping systems, including nuts, vineyards and stone fruits