From Citrus to Centennial
Celebrating one hundred years of Desert Agricultural Research at the University of California Division of Agriculture and Natural Resources Desert Research & Extension Center

Alan W. Robertson
THE UC DREC: WHAT IS PERFORMED HERE

Mowing on south end of first twenty acres at IVEF. "Gleason Switch" siding in background.

Could GPS do much better than that mule?
As President of the Imperial County Farm Bureau it is with great pleasure that I write the foreward for From Citrus to Centennial, Celebrating One-Hundred Years of Desert Agricultural Research in Imperial Valley at the University of California Desert Research & Extension Center. Recognizing the need to organize the agricultural community, Imperial County Farm Bureau was founded in 1918 by Walter E. Packard who at the same time served as the Desert Research Center’s first director.

The deep-rooted relationship between Imperial County Farm Bureau and the Desert Research Center is indispensable. Imperial Valley farmers and ranchers have benefitted greatly from the station’s research in water and soil science, agronomy, fruit and vegetable crop science, pest control and animal science just to name a few.

Throughout history, methods in agricultural practices have improved through trial, error, and research and the staff at the Desert Research Center have been an instrumental piece of this advancement. Two particular developments were the introduction of sprinkler irrigation techniques and date of planting vegetable crop research leading to precision harvesting. Results from both of these important studies produce consistently higher yields in commercial production.

Environmental studies in the 1940s proved significant in showing ranchers how to cope with the desert heat in their cattle operations. Nutrition research continues and the Feedlot operation at the Desert Research Center is the largest feedlot in the United States as it pertains to nutrition study replication.

Farmers and Ranchers of Imperial County feed the world with the food, fiber and feed produced on our bountiful desert. Without the research and development of the Desert Research Center, the oldest, continuously operating research facility in the University of California system, our production would not be possible.

After reading this book you will begin to understand the relationship we have enjoyed together for this last century. I sincerely hope you enjoy this walk through the history of Imperial Valley agricultural and the Desert Research Center.

Mark McBroom
President
Imperial County Farm Bureau
The centennial celebration of the University of California Desert Research and Extension Center is an exciting time. The name has changed more than once but those employed here have remained unchanged in their mission of research and outreach. Moving into the next century a commitment remains as well: to serve the public as a dedicated steward of the land in an attempt to ensure that local agricultural needs are recognized, research projects initiated, completed, documented and disseminated. The dedication of personnel here is easily overlooked, perhaps unknown, by many people. Indeed, the UC DREC Farm is not like "The Mall" or some other popular tourist attraction. Many local residents and neighbors have grown up and lived within the footprint of the UC DREC never knowing what occurs here. Nevertheless, dedication to research and extension continues in full force as employees here work at providing some measure of benefit to the Imperial Valley. At one hundred years of age, the UC DREC assumes a unique place in the history of the University of California; that of being the oldest continuously operating research farm in the UC System. This is a major accomplishment, considering that, excluding the original "Central Station" at Berkeley, the first seven research stations all closed within the first decade or so of their creation.

The author has come to proudly know the DREC since October 2001, serving as a volunteer for his wife, Nancy Caywood-Robertson, when she began her employment as an educational outreach coordinator. Her term was to have been for three years and has lasted now for over ten years. This Center has become a very special place and it is with great pleasure to present this document of historical research.

Additional information about the Desert Research and Extension center can be obtained at the address listed below.
A project such as this is never complete without acknowledgement of the many people who have assisted. First and foremost, thanks to Dr. Richard Zinn, interim director, who initiated this project. Thanks, also to the entire team at DREC who have enthusiastically answered my questions. Historical photos were received from Dr. Richard Zinn, Staff Research Associate Francisco Maciel, Cooperative Extension Office Supervisor Cecilia Olea and Cathy Denton. Her father, George Worker, was the Farm Director from 1953 through 1985, and Cathy lived on the farm from birth through college. Debra Driskill, Silvia Quintanna and Annette Tietz really came through with their never-ending technological help. They are without equal. Allison Gunderson has also provided much needed publication assistance. Allison's husband Jeff is the newest employee at the DREC and their newborn son Max is the official centennial baby with a birthday of January 6, 2012. Carl Adam, Doyle Freeman, Larry Gibbs, Kay Hamilton, Fernando "Fernie" Miramontes, Richard Tamayo and Dr. Richard Zinn have provided great historical recollections dating back to 1964. Combined, their service approaches 230 years. Thanks also, to all who have served here. Your efforts are why we are still in existence. A very thorough attempt has been made to document the names of anyone and everyone who has been employed at the DREC including Cooperative Extension Personnel since they located here in 1989. Mr. George Worker was the Superintendent from 1953 through 1985 and stayed on until 1987. He journalized each year of activity with unsurpassed attention to detail. We are so fortunate to have his documents in our DREC Library. George’s daughter, Cathy Denton and her husband Charles, reside in El Centro and we are also very grateful for their historical perspective, assistance and photos. The Honorable Bill Lehman and his wife Shannon, son and daughter-in-law of Dr. William Lehman, are neighbors to the UC DREC Farm and provided additional historical perspective. Roselynn Smith from the Yuma office, U.S. Bureau of Reclamation, provided maps and video information on the waterways and irrigation systems in the Yuma area. Mike and Laura Fox were tour guides for a trip to Algodones, Mexico to view the original locations of the Imperial Canal. From the Imperial Irrigation District, Steve Birch, Sharon Sparks and Bob Schettler provided a copy of the I.I.D. Centennial publication, "A Century Of Service". Candace Nelson at Imperial County Farm Bureau has also provided wonderful archived pictures, encouragement and references. Bob Douthitt, a fellow pilot friend, provided aerial services using his Piper Cub, model J-3 on October 21, 2011 and May 31, 2012, when this author took aerial photos of the DREC with a digital camera loaned to us by Paula Miramontes. To UC Davis Librarian, Axel Borg, thanks for tips on annotated bibliography. To UC Davis Librarian, John Skarstad and his staff in Special Collections, thank you for the information on Professor Ben Madson. UC Berkeley, Bancroft Librarian, Steve Knaff and all your staff were very gracious and professional assisting us with our wonderful discovery of the Walter Packard Papers and photos. Special thanks for encouragement and assistance from Mrs. Ann Foley Scheuring, author of a wonderful reference book entitled "Science & Service, A History of the Land-Grant University and Agriculture in California". Thanks to retired Agronomy Professor Dr. Jim Lyons and Dr. "Bill" Rains, Professor Emeritus, VII, UC Davis Agronomy, for his records and notes on research stations. Thanks to Pamela Kan-Rice and Cynthia Kintigh at UC ANR Communication Services. The Imperial County Offices of the Recorder, Assessor, and Department of Public Works provided assistance in locating all the land title and deed of sale information regarding the UC DREC. Thanks, also, to the Holtville Chamber of Commerce personnel, Dana Hawk, Mary Helen Dollente, and Kathi Larios for their historical assistance and for advertising our centennial celebration on the Chamber’s electronic marquis sign. Finally, it is probably most important to recognize the good fortune of us all here now for the decision of Irving Gleason and his wife, Fannie, to sell his grapefruit farmland to the University Of California Board Of Regents on November 11, 1911.

So, thank you for joining in this centennial celebration. We hope this copy of the University of California Desert Research and Extension Center's Centennial illustrates our dedication to research and educational extension in this wonderful community so aptly named "The Nations’ Salad Bowl".

Sincerely,

Al Robertson  January 2012
The above excerpt is a reprint from the first of thirty one annual reports produced by George F. Worker, Jr., Imperial Valley Field Station (I.V.F.S.) Superintendent from December 22, 1953 to March 1, 1985 (except for a one year sabbatical from Aug. 1969-Sep. 1970). Mr. Worker kept meticulous records which have become the body of the source data presented herein. Special recognition is also in order at this point of Mrs. JoAnn Taylor. Mrs. Taylor was employed here from 1966 through 1991 and she typed all of Mr. Worker's annual reports in addition to the myriad of assignments associated with her job position. Her legacy is very special.

Mr. Worker's reporting of experimental agriculture projects was extensive. He documented research projects, gave updates on their progress and compiled bibliographical information referred to as Technical Reports. Mr. Worker also documented Non-Technical Reports prepared by researchers stationed here. Such reports were also valuable although not necessarily the result of formal research projects. Rather, they were reports of a more general nature describing supplementary information and activity regarding the research farm. In his final annual report presented for 1983-1984, Mr. Worker indicated that during the 1957-1985 period the total number of people who visited the farm was 81,965. That included field days, meetings and research facility tours. Those visitors were categorized by In State, Out of State and Foreign Country. Mr. Worker also documented agricultural field days, presentations on and off the farm, news articles, improvements to the farm and the results of committee meetings for the operation of the farm via the Farm Advisory Committee (later called the Industrial Advisory Committee) and the Research Advisory Committee. He also reported the inventory of the equipment used here and other operational information and expense data. He even reported irrigation usage. Interestingly, in 1959, irrigation water cost $2.07 per acre foot. In 1984, it was $8.73 per acre foot. Today irrigation cost is about $22.00 per acre foot. Mr. Worker also maintained an annual listing of personnel employed here. He even recorded climactic data readings taken twice daily by station personnel for every day of the year during his entire time here. Mr. Worker also indicated that research results at the Imperial Valley Field Station were published in newspapers, magazines, technical and non-technical journals, presentations at meetings, field days, service clubs and church groups. During Mr. Worker's tenure here, the staff at I.V.F.S. made 1,749 presentations, had 557 news and magazine articles written about research at the farm, published 449 technical and 490 non-technical papers. We who follow in Mr. Worker's path owe him a tremendous amount of gratitude for his superb documentation of our heritage here at DREC. We can only strive to emulate his level of accomplishment.

Mr. George Worker pollinating Sorghum (milo maize) at Imperial Valley Agricultural Center, early 1980's. Photo courtesy Cathy Worker Denton.

SPECIAL ACKNOWLEDGEMENT REGARDING MR. GEORGE F. WORKER, Jr.
Originally, the title of Director was assigned to the Chairman of the Agronomy Department at UC Davis and the title of Superintendent was assigned to the person living here in charge of daily operations. From 1912-1948, general administration, financing and budgetary issues for experiment stations were under control of various departments at Davis. For example, Imperial Valley was run by the Agronomy Department, Professor Ben Madson - Chairman. Tule Lake was run by the Truck Crops Department and so on. In 1948, at the suggestion of Professor Madson, Claude B. Hutchison, the Dean of the UC College of Agriculture, reorganized field station administration under one director for all stations. Professor Madson served in that capacity until his retirement in 1954 (Source: Oral History of Ben Madson, UC Davis Oral History Program, Special Collections Library).

In 1952, the Division of Agricultural Sciences (now Division of Agriculture and Natural Resources) was created which assumed responsibility for all agricultural activities within the University including administrative control of experiment farms (Science & Service, Ann Foley Scheuring).

While the University of California is the land-grant college as created by the Morrill Act of 1862, the UC Division of Agriculture and Natural Resources (ANR) is the land-grant arm of the University and is headed by UC Vice President, Dr. Barbara Allen-Diaz. Reporting directly to Vice President Allen-Diaz is Dr. Bill Frost, UC ANR Director of the Research and Extension Center System and Associate Director of Cooperative Extension and the Agricultural Experiment Station. In August 2012, Ms. Lisa Fisher was selected as Associate Director of the Research and Extension Center System. Reporting directly to Dr. Bill Frost are the Research and Extension Center Directors. The title of Center Director came into use around 1987 and is still in use today.
PHYSICAL PLANT OPERATIONS

Gildardo “G.G.” Guzman
Farm Maintenance Worker
1993-June 2012(ret.)

David Preciado, Physical Plant Mechanic - 2005

BUILDING AND GROUNDS MAINTENANCE

VICTOR ARREDONDO
MAX MACHADO
WILLY ADAMS
SAM SALAZAR

EDUCATIONAL OUTREACH - FARM SMART PROGRAM

Program Representatives
Stephanie Collins
Alan and Nancy Robertson
2010
2001

Farm Smart Winter Visitor Volunteers
(From left to right)
Lyle & M’Lee McClay
Ken & Jackie Early
Larry & Shirley Kathy & Allan Durrans Sweet

All photos by Al Robertson except for Driskill & Quintanna: taken by Nancy Robertson
Kay Hamilton, Jr. Principal Agriculture Technician - 1974. Kay's 38 years of service is more than any other active employee in the one hundred year history of this Center. A proud accomplishment.

Francisco Maciel. Staff Research Associate - 2001

Fernando Ayala, Jr. Agriculture Technician - 2011

Top: (left to right) Juan Biscaino, Fernando Ayala, Sr., Gustavo Nuñez, Vidal Casteneda. These general assistance workers keep our farm looking well manicured, throughout. Their work is the best! Thanks so much.

Bottom: (left to right) Jorge Alonso and Juan Biscaino lighting up the carport for the DREC Centennial.

Jeff Gunderson, Staff Research Associate - 2011

Gilberto Magallon, Agriculture Technician - 2006

Cattle Feedlot for Nutrition & Environmental Research

Left: Armando Silva, Farm Maintenance Mechanic - 2011

Near Right: Sergio Martinez
Animal Technician - 2006

Far Right: David Zinn
General Assistance - 2011

All photos by Al Robertson
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<td>Adam, Carl</td>
<td>Staff Research Associate</td>
<td>1982-Present</td>
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<td>Adams, Willy</td>
<td>Senior Building Maint. Worker</td>
<td>October 2012- Present</td>
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<td>Arredondo, Victor</td>
<td>Senior Custodian</td>
<td>October 2012-Present</td>
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<td>Ayala, Fernando</td>
<td>Agriculture Technician</td>
<td>2010-Present</td>
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<td>Bali, Khaled, Ph.D.</td>
<td>Interim Center Director</td>
<td>July 1, 2012-Present</td>
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<td>Caywood-Robertson, Nancy</td>
<td>Education Outreach Coordinator</td>
<td>October 27, 2001</td>
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<td>Collins, Stephanie</td>
<td>Program Representative</td>
<td>2010-Present</td>
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<td>Driskill, Debra</td>
<td>Business Officer</td>
<td>1991-Present</td>
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<td>Gunderson, Jeff</td>
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<td>2011-Present</td>
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<td>Guzman, Gildardo</td>
<td>Farm Maintenance Worker</td>
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<td>Hamilton, Jr. Kay</td>
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<td>Machado, Max</td>
<td>Senior Custodian</td>
<td>2003-2012 (Retired)</td>
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<td>Magallon, Gilberto</td>
<td>Agriculture Technician</td>
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<td>Martinez, Sergio</td>
<td>Animal Technician</td>
<td>2006-Present</td>
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<td>Miramontes, Jr. Fernado</td>
<td>Superintendent of DREC</td>
<td>1980-Present</td>
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<td>Preciado, David</td>
<td>Physical Plant Mechanic</td>
<td>2004-Present</td>
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<td>Presley, Jonathan</td>
<td>Agriculture Technician</td>
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<td>Quintana, Silvia</td>
<td>Administrative Assistant</td>
<td>1996-Present</td>
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<td>Robertson, Alan</td>
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<td>Salazaa, Sam</td>
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<td>Zinn, Richard A. Ph.D.</td>
<td>Professor, Animal Science, UC Davis</td>
<td>1981-Present</td>
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<td>DEPARTMENT</td>
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<td><strong>AGRONOMY DEPARTMENT</strong></td>
<td>Boswell Shafner B.</td>
<td>Jul. 1949 - Mar. 1953</td>
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<td>Worker, George F. Jr.</td>
<td>Sep. 1953 - June 30, 1987</td>
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<td>Lehman, William F.</td>
<td>Aug. 1956 - 1989 (Deceased)</td>
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<td>Chen, Yi Wu</td>
<td>1980 - 1981</td>
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<td><strong>ANIMAL SCIENCE</strong></td>
<td>Ittner, Nicholas R.</td>
<td>Mar. 1946 - Feb. 1958 (Deceased)</td>
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<td>Lofgreen, Glen P.</td>
<td>Jan. 1968 - Sep. 1977</td>
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<td><strong>AGRICULTURAL ENGINEERING</strong></td>
<td>Speck, Eugene</td>
<td>Jul. 1950 - Mar. 1952</td>
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<td><strong>VEGETABLE CROP</strong></td>
<td>Hoffmaster, Keith</td>
<td>Jun. 1947 - Jun. 1948</td>
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<td>Zink, Frank W.</td>
<td>Sep. 1948 - Feb. 1952</td>
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<td>Baughn, C. Grant</td>
<td>Mar. 1952 - Jan. 1956</td>
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<td>McCoy, Orval D.</td>
<td>Feb. 1956 - Jun. 1973</td>
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<td><strong>VETERINARY SCIENCE</strong></td>
<td>Taylor, Walter J. (UC Berkeley)</td>
<td>1913-1915</td>
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Personnel Photo Gallery - October 2012

IMPERIAL COUNTY COOPERATIVE EXTENSION RESEARCH

Left
Khaled Bali, Ph.D.
Interim Director, DREC
July 1, 2012 - Present
Director, Imperial County
Cooperative Extension
Farm Advisor, Irrigation & Water
Management - 1992 - 20 Years

Right
Eric Natwick
Farm Advisor, Entomology
1981 - 31 Years

COOPERATIVE EXTENSION OUTREACH

Left: Mary W. Bezemek-2009
Right: Martha Lopez-1998 Program Representatives - Nutrition
Matthew Smith - 2011 Program Representative 4-H Youth Development
Milton McShan - 2009 Program Representative 4-H Military Youth Development

RESEARCH AND EXTENSION CENTER LABORATORY

Animal Science
Left:
Carl Adam, Staff Research Associate - 1982 (30 Years)
Right: Jesus Hernandez, Laboratory Assistant - 2010
Far Right: Daniel Buenrostro, Laboratory Assistant - 2006

Soils & Water

Plant Pathology and Entomology

From Left to Right:
Rafael Lara
Laboratory Assistant - 2006
Efrain Sambrano
Laboratory Helper - 1997
(continuing)
Martin Lopez, Ph.D.
Staff Research Associate 1999
Jorge Celis
Laboratory Assistant - 2006
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<td>Bali, Khaled, Ph.D.</td>
<td>DREC Director (Interim since July 1, 2012)</td>
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<td>Boutwell, Brent</td>
<td>County Director UCCE Imperial County, Farm Advisor, Irrigation &amp; Water</td>
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<td>Buenrostro, Daniel</td>
<td>Laboratory Assistant</td>
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<td>Celis, Jorge</td>
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<td>Escobosa, Isabel</td>
<td>Laboratory Assistant</td>
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<td>Estrada, Andrea</td>
<td>Office Assistant</td>
<td>2007-Present</td>
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<td>Garcia, Jenifer</td>
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<td>1999-Present</td>
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<td>Hernandez, Jesus</td>
<td>Laboratory Assistant</td>
<td>2010-Present</td>
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<td>Lara, Rafael</td>
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<td>2006-Present</td>
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<td>1998-Present</td>
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<td>Program Representative</td>
<td>2009-Present</td>
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<td>Natwick, Eric</td>
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<td>Olea, Cecilia</td>
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<td>Sambrano, Efrain</td>
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<td>Welch-Bezemek, Mary</td>
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<td>2009-Present</td>
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I. C. COOPERATIVE EXTENSION OFFICE STAFF

(From left to right)
Annette Tietz, Office Technician - 2004;
Jennifer Garcia, Office Technician- 1999;
Cecilia Olea, Office Supervisor- 1984;
Andrea Estrada, Office Assistant - 2007
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<td>Adams, Craig</td>
<td>unknown</td>
<td>mid 80s-mid 90s</td>
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<td>1958-1959</td>
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<td>Alvarado, Fuesto</td>
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<td>Armstrong, Albert</td>
<td>Agricultural Technician</td>
<td>1985</td>
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<td>Ash, F. J.</td>
<td>Cultivationist/laborer</td>
<td>pre 1954-1956</td>
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<td>Beasley, Alna C.</td>
<td>Custodian</td>
<td>1961-1968</td>
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<td>Cultivationist</td>
<td>1959-1970 (Deceased)</td>
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<td>Farm Machinery Mechanic</td>
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<td>Bornt, Robert K.</td>
<td>Assistant Farm Machinery Mechanic</td>
<td>1977</td>
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<td>Boswell, Shafner B.</td>
<td>Agronomy Assistant</td>
<td>1949-1954</td>
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<td>Brenan, Donald</td>
<td>Lab. Tech./Animal Husbandry-UC Davis</td>
<td>1965-1966</td>
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<td>Bright, Bruce</td>
<td>Ag. Tech./Farm Maintenance Worker</td>
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<td>Brogan, Richard</td>
<td>Laboratory Helper</td>
<td>1964-1965</td>
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<td>Cardona, Jose</td>
<td>Laboratory Helper</td>
<td>1977-1979</td>
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<td>Chastain, Tilmon G.</td>
<td>Agronomy Field assistant</td>
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<td>Superintendent, Physical Plant</td>
<td>1990-2004 (Retired)</td>
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<td>Combe, Robert</td>
<td>Superintendent, Grounds &amp; Buildings</td>
<td>1950-1954 (Retired)</td>
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<td>Corfman, Orval E.</td>
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<td>Demmer, Dave</td>
<td>Laboratory Technician</td>
<td>1966-1967</td>
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<td>Denton, Horace D.</td>
<td>Senior Superintendent , Cultivations</td>
<td>pre 1954-1963 (Retired)</td>
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<td>Domingos, Frank</td>
<td>Senior Superintendent, Cultivations</td>
<td>1963-1964</td>
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<td>Dunn, John</td>
<td>Farm Laborer</td>
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<td>1975-1976</td>
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<td>Fourong, Richard F.</td>
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# Roster of Part Time Personnel Previously Assigned to UC DREC

**All Years**

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# Roster of Summer Student Personnel Previously Assigned to UC DREC

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IMPERIAL COUNTY  
COOPERATIVE EXTENSION CENTER  
PREVIOUSLY ASSIGNED PERSONNEL ROSTER  
(AFTER 1989 LOCATION AT UC DREC)  

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## WINTER VISITOR PROGRAM - FULLTIME ASSISTANCE

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<td>McClay, Lyle &amp; M'Lee</td>
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## WINTER VISITOR PROGRAM - MUSICIAN VOLUNTEERS

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## PART TIME VOLUNTEERS

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AREA IDENTIFIER MAP
THE "MELOLAND STATION"

ALSO KNOWN AS:
DEsert RESEARCH AND EXTENSION CENTER (1990-PRESENT)
IMPERIAL VALLEY AGRICULTURAL CENTER (1984-1990)
IMPERIAL VALLEY FIELD STATION (1948-1984)
IMPERIAL VALLEY EXPERIMENT FARM (1912-1948)
SOIL TYPES AT DREC

Source: Agricultural Field Stations, University of California, Davis
A network of water table data recorders was first installed around the 1956-1957 season. In the 1963-64 season, a "Leaching Trial" was conducted by UC Davis specialists J.N. Luthin, R. Worstell, Frank Robinson and P. Puri. Salinity was measured at three depths in the water Table Recorders. As a result of the "Leaching Trial", the Department of Irrigation at UC Davis created a staff position at the IVFS in 1964 and Dr. Frank E. Robinson was appointed to that position. The chart above first appeared in the 1964-1965 IVFS Annual Report and continued until the 1983-84 Annual Report. Data continued to be recorded until they were removed sometime before 2000. Soil sampling was conducted using a hand auger at locations indicated.
How did the University of California Desert Research and Extension Center (UC DREC) come into existence? Why did the UC DREC come into existence? Why would anyone want to develop a research farm let alone live here in the harsh, desert environment of the Imperial Valley? At the turn of the Twentieth century, there wasn't even a farming population to speak of, living conditions were primitive unbearable and air conditioning probably wasn't in Americans' vocabulary. Fort Yuma, (initially located in California) was little more than a supply depot for the for U.S. military presence in Arizona following the Mexican-American War.

However, as the California Gold Rush created dreams of untold wealth for adventuresome pioneers, Yuma became part of a southern route across America that provided a jumping-off point into California allowing people to avoid the life-threatening hardships of crossing the Sierra Madre Mountain Range. The American southwest was becoming part of America's last frontier and the only reason people explored this region in the 1850s was to find a way west in order to get the gold and strike it rich (fortwiki.com/Fort_Yuma)! In the 1850s, explorers and surveyors discovered that the region of what is now the Imperial and Coachella Valleys was actually below sea level. However, the soil quality proved a pleasant surprise in spite of the arid desert conditions and soon dreams began of ways to establish agriculture in the region of southwest Arizona and southeastern California. Now, the fact that southeastern California was below sea level but Arizona wasn't doesn't seem relevant at first but the dreamers who saw a future for agriculture in California realized that geography was on their side.

While Yuma's elevation was about 130 feet above sea level, a prehistoric alluvial flood plain was discovered by 19th century surveyors that wound its way southwesterly from Yuma, around what is now Pilot Knob, west towards what is now Calexico, then northerly towards what is now the Salton Sea. As the Colorado River revealed her mighty history to American discoverers, it became apparent that she did not always flow uninterrupted into "El Golfo" or the Gulf of California. What is constant about the Colorado is that there have always been large quantities of silt traveling in the river. Over the course of prehistoric time, it has been discovered that the Gulf of California extended much farther to the northwest than the end of its current location. As the Colorado flowed south towards the Gulf of California, large quantities of silt would build up creating a natural dam in the vicinity of present day Yuma. The river flow was diverted into what has been called the Salton Trough which ran northwesterly to a depth of about 230 feet below sea level. Eventually, the Colorado River flow resumed its original course to the Gulf of California leaving nothing more than a huge lake of standing water in the Salton Trough. That huge lake's final evaporation cycle created the Salton Sink at the north end of the Salton Trough leaving large salt deposits there while recurring strong wind storms carried sandy deposits to the east and northeast creating the sand dune mountains of today (britannica.com/Colorado_River). The remaining soil deposits were eventually discovered to be very suitable for agriculture in the area now known as the Imperial and Coachella Valley.
So, at the turn of the 20th Century, with gravity on their side, engineers of the California Development Company changed their plan of developing irrigation in Arizona to instead focus on developing an irrigation network in southeastern California. The California Development Company had its origins in 1891 as The Arizona and Sonora Land and Irrigation Company. In 1893, the company became renamed The Colorado River Irrigation Company and promptly went bankrupt as a result of a stock market panic. In 1896 the California Development Company was formed and it signed a contract with Mexico in 1900 which allowed the construction of a canal into Mexico. It was to proceed from Intake #1 across from Yuma near Pilot Knob, south for a ways into an ancient overflow channel of the Colorado River named the Alamo Canal then west for forty miles to Sharp’s Heading, east of Calexico, where the canal was turned north: basically following the prehistoric flow pattern previously indicated. As the irrigation network was created for Imperial Valley, The Imperial Land Company was created as part of the California Development Company in order to sell land and develop towns.

With the addition of rail service into the valley, farmers and towns began to emerge and crops were grown. The success was short lived, however, and by the winter of 1903-04, silt had built up at Intake #1 to a level that prevented water from flowing into the canal. A small bypass around Intake #1 had been constructed and used in 1902, 1903 and 1904 during periods of low water but additional remedies became essential since farmers were threatening lawsuits for inadequate water delivery. A plan was devised to dynamite the bottom of the dam at Intake #1 in order for the river to rush through and clear the silt. However, the chief engineer for the project considered that too dangerous and prevailed with an alternative plan. He installed Intake #3 four miles below the Mexican border in order to bypass the heavily silted area around Intake #1. Due to the contractual agreement with Mexico, the cut in the river was constructed but flood control structures could not be built until approved by the Mexican Government. As Intake #3 was installed in the fall of 1904, plans for the flood control structures were submitted to the Mexican Government and minor safeguards were installed while awaiting approval. An open cut was made against the chief engineer’s professional judgment, but his fears about flooding were somewhat alleviated after he studied thirty years worth of river flow data for the Colorado and the Gila rivers and discovered that there had been only three minor floods in the previous twenty seven years. His worst fears were more than realized, however, when the first of seven major floods occurred between February, 1905 through December, 1906. As history shows, the damage from those floods severely jeopardized agriculture in Imperial Valley as the floodwaters eroded huge sections of land on its flow northward creating the Salton Sea.

The battle to control the flood waters was epic but by February, 1907, the floods were finally stopped and the flow of the Colorado River was restored to its normal course towards the Gulf of California. The final battle involved a seven month campaign from August, 1906 until February, 1907, whereby the Southern Pacific Railroad dumped trainloads of boulders across the breach in the Colorado River at Intake #3 (The Journal of San Diego History, Winter 1975. Volume 21, Number 1, “When the Imperial Valley Fought For Its Life,” Robert L. Sperry). So, the railroad company proved to be the victor in the battle to restore irrigation water to Imperial Valley.
ADDITIONAL IMAGES: THEN AND NOW

LEFT: THE HANLON HEADING. BUILT AS BYPASS FOR INTAKE #1 VISIBLE TODAY ALONG ALGODONES ROAD JUST BEFORE THE BORDER CROSSING. NOTICE DASHED LINES ON MAP SITE OF INTAKE#1 KNOWN AS THE CHAFFEE GATE SOURCE: COMONS.WIKIPEDIA.ORG

AUTHOR’S NOTE: MORELOS DAM IS THE FINAL DIVERSION OF THE COLORADO RIVER. ALTHOUGH WATER IS VISIBLE BELOW THE DAM IT IS MERELY STANDING WATER. THERE IS RARELY ANY FURTHER FLOW OF THE COLORADO TO THE GULF OF CALIFORNIA. IT’S LIKE A WATERSHED WITHOUT A RIVER. “COMO UNA CUENCA SIN RIO”

ABOVE: MORELOS DAM -2012. LOOKING NORTH AT COLORADO RIVER. (FORMER INTAKE #2) PHOTO BY LAURA FOX

ABOVE: MORELOS DAM-2012. LOOKING WEST AT DIVERSION STRUCTURE PHOTO BY LAURA FOX

ABOVE AND LOWER RIGHT VICINITY OF 1904 INTAKE #3. ABOVE: 2012 - DIVERSION STRUCTURE ALONG IMPERIAL CANAL LOOKING WEST. RIGHT: 2012 - VIEW OF THE OLD ALAMO CHANNEL FROM DIVERSION STRUCTURE. LOOKING WEST PHOTOS BY AL ROBERTSON

A CREW ERECTING A DIKE VICINITY THIRD HEADING OF FLOODED IMPERIAL CANAL. CIRCA 1905 PHOTO-JOSEPH LIPINCOTT SOURCE ONLINE ARCHIVE OF CALIFORNIA

ABOVE: 2012-IMPERIAL CANAL LOOKING WEST FROM MORELOS. PHOTO BY AL ROBERTSON
The struggle had caused the California Development Company to go bankrupt while pushing the resources of the Southern Pacific Railroad Company to its limit (When Imperial Valley Fought for its Life, Robert L. Sperry).

Beginning in February, 1907 the Imperial Valley was finally realizing a more reliable source of irrigation water. It marked a time when the Colorado River was more or less under control. It has been said, however, that the Colorado never gave up until its flow was stabilized with the completion of the Hoover Dam in 1935. Then, In 1942, with the completion of the All-American canal, water delivery to Imperial Valley became much more streamlined. In 1907, however, a more or less stable delivery of irrigation water to Imperial Valley allowed for more stable growth to the valley. Imperial County became incorporated in 1907, having been part of San Diego county prior to that time. Deriving its name from the Imperial Land Company, the Imperial Valley became Imperial County and by 1910, agriculture was thriving and developing rapidly with alfalfa becoming a most important cash crop (Wikipedia.org/Imperial Valley). So, now we have a partial answer to the opening questions regarding the establishment of the University of California Desert Research and Extension Center. Simply put, the area became suitable for growing crops.

Before proceeding further, however, the author would like to make a special acknowledgement of a book by Ann Foley Scheuring entitled "Science and Service, A History of the Land Grant University and Agriculture in California". It is a wonderful book and readers are encouraged to obtain a copy. The book is an extremely thorough presentation of the University of California's history and illustrates many factors influencing philosophical and organizational change from its earliest origins until the book's publication in 1995.

We will now explore how the University of California became involved in establishing a research farm in Imperial Valley. The University of California, located in Berkeley, is the Land Grant University for the state of California created under the Morrill Act of 1862. Vermont Representative Justin S. Morrill first introduced his bill in 1857 but it wasn't successfully passed until 1862 and was also known as the Agricultural College Land Grant Act (Scheuring p. xi, a preface by Loy L. Sammet, Professor Emeritus, Agriculture and Resource Economics, University of California, Berkeley). Just as the Morrill Act of 1862 (and again in 1890) enabled the national creation of land grant universities for teaching agriculture, the Hatch Act of 1887 (and again in 1955) allowed for the creation of agriculture experiment stations (Scheuring, p.40, p.76). Although not the first dean of Agriculture at the University of California, Eugene Hilgard has been regarded as the real founder of the UC College of Agriculture and the University of California's first Experiment Station located on the Berkeley Campus. Arriving in 1875, Dean Hilgard began soil research projects in earnest before the Hatch Act was passed; allowing him the claim of operating the first true land grant college experiment station in the United States. His tenure from 1875 -1905 left a profound effect at the university. He is best remembered for his work in soils, wine-making, crop research, entomology, pest control and plant disease. As part of his legacy in soils, Dean Hilgard developed a collection of soil survey maps for the entire state beginning in 1879. Soil mapping continued to develop as well as his insistence that California's land needed scientific understanding and management. He proved how soil composition and climate interacted, how plants endure drought, how they seek moisture and how, even in arid and alkali environments, organic matter and microorganisms contributed to soil fertility. His irrigation, tillage and percolation experiments were also valuable in the field of irrigation science in later years (Scheuring p. 25-47).

After the passage of the Hatch Act in 1887, Dean Hilgard established three additional experiment stations by 1890. His caveat for their creation was threefold: 1) stations should represent conditions in each geographic area,  2) stations should be able to provide answers to questions on appropriate crops and agricultural methods, 3) stations should have the support of local citizens. Additionally, Hilgard dictated that the land for each station be lent to the university with reversionary clauses to the sellers in the case of station abandonment (Scheuring p. 40). In 1893 three more experiment stations were established and then one more in 1904. As noble an idea as it was to create these facilities, they all suffered a relatively short life span, closing before 1909.
The three most notable factors leading to their closure were; 1) they were too expensive to maintain, 2) there was a shortage and or lack of scientifically competent supervision, 3) inadequately small budgets which brought about a level of poverty that caused reductions in projects and reduced stations to little more than "care-taker" status (Scheuring, p. 41).

In addition to the enabling legislation of the Hatch Act of 1887, the University of California was able to obtain funding for a citrus experiment station and plant pathology laboratory in 1905. The state citrus experiment station bill was spearheaded by a group of orange growers, sponsored by California State Assemblyman Miguel Estudillo and carried an appropriation for $30,000.00. Thus marks the beginning of what would ultimately become UC Riverside with an official founding date of February 14, 1907 (Scheuring p.72). As part of the citrus bill, a three member commission was created to select a location. That commission being comprised of California Governor George Pardee, UC President Benjamin Wheeler and acting Dean of Agriculture, Edward Wickson (Scheuring, p. 71).

The UC Meloland Station was the next experiment station to be created in 1912. According to Mr. George Worker's 1984 Annual Report, the need for agricultural research became recognized in 1908 (see inset below and left) and the wheels were set in motion for the creation of the University of California, Imperial Valley Experiment Farm. A portion of Mr. Worker's report is reprinted below.

In 1908, the California State Legislature passed law appropriating $6,000.00 directing UC to establish Agricultural Experiment station (no cost to state) in El Centro. A public hearing in El Centro in September, 1909, determined that the money would be used for hiring someone to do the site selection and conditions survey. In December, 1909, Walter Packard was chosen by UC because he was employed as an irrigation field agent doing irrigation studies in the upper San Joaquin Valley while in the process of completing his M.S. Degree. The two year study resulted in his publication in 1911 entitled "The Imperial Valley Settlers' Crop Manual". UC Berkeley Press. Truly, the first publication associated with the I.V.E.F.

As a result of Packard's report (inset above left), the Meloland Station was established when he demonstrated the need for research due to the climactic and soil conditions of the Imperial Valley that were, and still are, unique in American Agriculture.

Walter Packard was the first superintendent of the farm and along with Professor Ben Madson, was involved with site evaluation and selection.

The Agronomy Division had shifted to from Berkeley to Davis as decentralizing forces served a growing trend to provide more hands-on agricultural training. The theoretical, scientific training at Berkeley was visionary in order for more stable, long term agricultural development but Davis was reaching out to a growing population.
In summary, then, we have shown that the UC DREC was not established suddenly as if on a mere whim. Irrigation and population had to occur first and prove to be reliable, successful and capable of sustaining growth. The Citrus Belt of Riverside and Orange County are earlier examples, especially with regard to the 1907 Riverside Experiment Station.

At this point, mention should be made of engineering pioneer, George Chaffey. He had achieved success as a land and community developer in the Inland Empire with his development of the Cucamonga Plain, later to become Rancho Cucamonga and the Etiwanda Water company. This is only significant because it was George Chaffey who joined the California Development Company in its early years and was responsible for the construction of Intake #1 on the Colorado River, known as the Chaffey Gate; the first part of Imperial Valley’s irrigation network (*A Brief History of Irrigation in the Imperial Valley. Desert USA.com, 2011*).

Why people came to settle here is astounding. Maybe the draw was stronger than gold. Maybe they were driven to prove agriculture was worth the sacrifices necessary to succeed. After all, rural life throughout America in its early years was bonded by common factors of family and community strength. It has persevered here in the Imperial Valley and today a strong sense of community seems a very important part of why people choose to live here.

In fact, with regard to Dean Hilgard’s caveat in 1888, the 1911 establishment of the Meloland Station received support from local citizens. The station also represented conditions typical of the geographic area with its Meloland Soil, a fine silty loam and would help provide answers to questions on appropriate crops and agricultural methods due to the advances in soil science. With Hilgard’s vision of establishing a scientific understanding of agriculture, the way was paved for the arrival of Agronomist Walter Packard and the establishment of the Imperial Valley Experiment Farm with administrative direction from UC Agronomist Ben Madson.

In the next chapter we will present the acquisition and development of the UC DREC but at this point it is appropriate to include the following reprint from Mr. George Worker’s 1974 annual report for the Imperial Valley Field Station regarding Professor Ben Madson.

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The eulogy for Professor Ben Madson is included to indicate the importance of our first administrator.

Professor Madson was very instrumental in keeping the experiment farms functioning in spite of the many variables working against them such as World War I, the Great Depression, the great drought of 1934 and even World War II. The UC Davis Special Collections Library has an Oral History of Professor Madson’s tenure at UC Davis. He provided excellent insight regarding the administrative organization of the experiment stations.

An interesting trivia point is that Professor Madson and Walter Packard were classmates at Iowa State University, both graduating in 1907. Then to arrive at UC Berkeley in 1910, both via different career paths, seems no small coincidence. This fact seems very crucial in the history of agricultural research especially for Imperial Valley.

The above aerial photo has been included in order to provide a graphic reference for the acquisition and growth of the UC DREC. In the above display, the white solid line indicates the perimeter boundary of the farm. The dashed lines within the boundary of the farm indicate the division of the parcels of land as they were acquired by the University of California. The graphic boxes with arrows indicate six transactions of deed activity that occurred between 1911 and 1947 (Imperial County Recorder's Office, El Centro, California). Following from lower left, the transactions are numbered in chronological sequence. The total acreage has expanded from twenty (20) acres to two hundred fifty five (255) acres with about 190 acres used for experimental plots.

A Wikipedia search indicated that before this area was known as Meloland, it was called the Gleason Switch. There was a train siding here where sugar beets were loaded. During the author's title search, information from the county assessor's office and the county surveyor's office indicated that this land belonged to Mr. & Mrs. Irving Gleason and was used as a grapefruit and citrus orchard. The train siding was named after grapefruit farmers so the UC DREC owes its beginnings to grapefruit farmers! In fact, the first three transactions involved the Gleasons: 1) November 11, 1911, twenty acres 2) October 7, 1912, ten acres 3) July 18, 1913, ten acres. An interesting side note to the first two transactions is that they were completed in gold coin! That was definitely a different time.

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Date</th>
<th>Acres</th>
<th>Price</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Nov 11, 1911</td>
<td>20 acres</td>
<td>$1,800</td>
<td>Gleason</td>
<td>UC Regents</td>
</tr>
<tr>
<td>#2</td>
<td>Oct 7, 1912</td>
<td>10 acres</td>
<td>$1,000</td>
<td>Gleason</td>
<td>UC Regents</td>
</tr>
<tr>
<td>#3</td>
<td>Jul 18, 1913</td>
<td>10 acres</td>
<td>$1,000</td>
<td>Gleason</td>
<td>UC Regents</td>
</tr>
<tr>
<td>#4</td>
<td>Oct 16, 1913</td>
<td>10 acres</td>
<td>$10</td>
<td>UC Regents</td>
<td>Imperial County</td>
</tr>
<tr>
<td>#5</td>
<td>Mar 3, 1941</td>
<td>40 acres</td>
<td>Grant</td>
<td>Imperial County</td>
<td>UC Regents</td>
</tr>
<tr>
<td>#6</td>
<td>Oct 30, 1947</td>
<td>175 acres</td>
<td>$10</td>
<td>H.L. Keating</td>
<td>UC Regents</td>
</tr>
</tbody>
</table>
The 1915 photo above is the earliest picture found in the archives at the UC DREC. At the end of the entrance driveway, four structures were built: Main residence, hired hand residence, office building and a barn. Notice the water behind main residence. Entrance sign reads:

IMPERIAL VALLEY
EXPERIMENT FARM
UNIVERSITY OF CALIFORNIA

Even more interesting than the discovery of the gold coin purchase, was that funding for the purchase came from the Imperial County Board of Supervisors and sixteen local, interested citizens. According to Farm Superintendent George Worker's 1983-84 IVAC Annual report, the Imperial County Board of Supervisors funded $900.00 for ten acres and sixteen local area citizens funded $900.00 for the second ten acre parcel. Of significance is that 25% ($225.00) was funded by Mr. W. E. Holt, founder of Holtville, and 14% ($126.00) was funded by Mr. Harold Bell Wright noted painter and author ("The Winning of the Barbara Worth").

According to local residents, William D. Lehman, and Charles Denton, the property where Mr. Harold Bell Wright lived was about one mile east of the current location of the UC DREC and on the south side of the road. The remnants of the turn-off to that former property are still visible from the Evan Hewes Highway a short distance east of Barbara Worth Road.

William D. Lehman also indicated that Mr. Wright, while observing site selection studies for an experiment farm, reportedly commented that this area was a very "mellow" place to live and farm. Hence the name of Meloland.

Images of Harold Bell Wright's Teco-lote Ranch located very close to the I.V.E.F.
From a collection by Gerry Chudleigh
According to a Wikipedia article, Meloland (formerly, Gleason Switch) was an unincorporated community from 1908 to 1911 and was 4 miles west of Holtville at the intersection of Meloland Road and U. S. Highway 80. There was a school house and a post office there but the post office burned in 1911. The schoolhouse still stands and is a personal residence with the old bell tower still visible from Meloland Road. The word Meloland also defines a soil type. It's a very fine sandy loam which existed throughout the area and it's likely that the Meloland soil type came about after the name of this "Mellow Place" as coined by Mr. Harold Bell Wright. According to a 1918 soil survey published by the U.S.D.A., Bureau of Soils, there were four primary soil types in the section of land that was to ultimately become the 255 acres of UC DREC. They were: 1) Holtville silty clay loam (Hs) at the south end of the farm 2) Imperial silty clay loam (Lm) in the next sector north 3) Imperial silty clay (Ls) in the third sector: 4) Meloland fine sandy loam (Mi) in the northeast sector. While the soil texture and composition has remained the same, for some reason it has been referred to as mostly Imperial-Glembar Silty Clay Loam. Whatever the name, the common factor is the wide variety of soil texture existing throughout the UC DREC. Recollections from local residents are that the DREC site was originally chosen because the soil was a very representative and desirable soil type located throughout the area.

As previously indicated, the area was known as the Gleason Switch because of a railroad siding in front of Gleasons' farm. That siding was part of The Holton Interurban Railroad line which originated in Holtville, ran along Holton Road and U.S. Highway 80 (now the Evan Hewes Highway) and into El Centro. The Holton Interurban Railroad primarily carried produce from packing sheds and pallets from a manufacturing plant before stopping at the Gleason Switch where sugar beets were loaded. In El Centro, the line then went north to Niland, California, where it connected with the main line to Los Angeles.

There was a time when the siding became unused but the train line remained in use until the 1990s. The track was finally removed from its bed around 2006 by a historic train group from Yuma, Az. But there are times even still, when phantom diesel locomotive whistles can be heard outside the UC DREC. It's as if the old Holton Interurban Line was still in operation. What a wonderful time travel it is hearing such a sound.....but then employees will all wave at Mr. Walt Britschgi as he drives by in his farm truck equipped with his diesel locomotive whistle.

Holton was the original name for the community of what is now Holtville and that is how the train line was named. However, the name Holton created confusion for the U. S. Post Office because there was also a town named Colton in the Inland Empire near San Bernardino. So, to avoid confusion, and to satisfy the U.S. Post Office, Holton became Holtville.

The first three land tractions involved the purchase land from Irving and Fannie Gleason. The third land transaction was not for additional land but rather involved a transfer of title. The southwestern most ten acre parcel of the farm was transferred back to the County of Imperial and to this day, is still titled in the name of Imperial County. The title indicated that the land was for use by the University of California as long as it was used as an agricultural experiment farm. This transaction probably occurred in order to insert a "reversionary clause" into the title since the original had no such clause. Reversionary clauses date back to Dean Eugene Hilgard's requirement that land used for experiment farms should revert back to the original owner in the case of abandonment.

The consideration as listed in the title was for ten dollars ($10.00) and some capital stock of the Imperial Water Company Number One which was one of the many, small independent water companies assimilated into the emerging Imperial Irrigation District.
It is curious. What was the significance of granting capital shares in the Imperial Water Company? Did that ensure water rights for irrigation to the farm? That answer has not yet been found.

The next transaction, number five on the graphic aerial photo, involves the acquisition of forty acres on March 3, 1941; nine months before the United States became involved in World War II. That parcel is now the area where the Imperial County Cooperative Extension is located and runs north for one half mile to an east-west division road and includes the cattle nutrition feedlot. At the time of the transaction, the land was known as Hill Ranch and on May 6, 1940, the Imperial County Board of Directors passed its original resolution to "execute and deliver a deed from the County of Imperial to the Regents of California for the Hill Ranch as an addition to the Meloland Experiment Station".

That resolution was amended on March 3, 1941, delivered to UC Regents on March 31, 1941, and recorded in the Imperial County Book of Deeds on April 9, 1941.

The sixth and last transaction for the Imperial Valley Experiment Farm was in October 30, 1947. The University of California purchased approximately 175 acres from Hugh and Mabel Keating for Ten Dollars ($10.00). The purchase also included a small ten and 10/100 acre triangular parcel now known as the "Bull Pen". In the title, the land was referred to as "that triangular portion cut off from the Irving W. Gleason Grapefruit Subdivision by a diagonal canal". The Gleasons still owned land here in 1947 and were still farming grapefruit.
This chapter will highlight some of the more significant changes and developments of the farm through its history. Before proceeding further it is important to indicate the different names of the farm. One longstanding title has been the unofficial name "The Meloland Field Station". When our employees explain where they work to local residents, they'll say that they work for the University of California Desert Research Farm. The puzzled look on the listener's face usually disappears into a knowing sigh when told "you know, the Meloland Station".

Below is the listing of the four official names to "The Meloland Station".

1) 1912-1948 - Imperial Valley Experiment Farm: name on the original farm entrance
2) 1948-1984 - Imperial Valley Field Station: coincides with reorganization establishing "Director of Field Stations Administration"
3) 1984-1990 - Imperial Valley Agricultural Center coincides with renaming from Division of Agricultural Sciences to Division of Agriculture and Natural Resources.
4) 1990-Pres. - Desert Research and Extension Center (DREC)*

* For a brief time in 1990 the "Imperial Valley Research and Extension Center" name was used based on a submitted recommendation by the Research Advisory Committee in about 1989. The recommendation was the result of the Imperial County Cooperative Extension Service being located on the Imperial Valley Agricultural Center. The colocation was necessitated as a result of a 1979 earthquake that destroyed the Extension Service building in El Centro. Before formal approval of the "IVREC" name, UC Vice President - A.N.R. Kenneth Farrell, indicated his approval of the name "Desert Research and Extension Center" (source is a June, 1990 publication, Imperial Valley Agricultural Center Review, Allyn Smith, Director, ANR Programs, Southern Region).

1908*

California State Law passed appropriating $6,000.00 for the "investigation of agricultural and horticultural problems and conditions in Imperial Valley and providing for the establishment in said county of a branch agricultural experiment station for the purpose of prosecuting said work."

UC Regents tasked with carrying out provisions of the act.

1909*

W.E. Packard given assignment to perform field studies in Imperial Valley. This is a story of being in the right place at the right time. After graduating from Iowa State College in 1907, Packard took a job at Stanford as a Secretary at the YMCA. He soon decided to enroll at the University of California in 1909. Simultaneously, he became employed at the Department of Agriculture, Berkeley serving as an irrigation field agent assigned to Upper San Joaquin Valley. Packard received an M.S. degree in Plant Nutrition with thesis on Irrigation in King and Tulare County. (Source John Skaarstad, UC Davis Library, Special Collections)

General populace meeting in El Centro, in Sep. 1909, requested UC to assign someone to the Imperial Valley. Packard received assignment in December.
1910*
Packard moves to El Centro with new bride Emma. First ten days stayed in Oregon Hotel and studied area on horse and buggy (only two cars in Imperial Valley then). Begins two year project as directed by UC Berkeley to "determine if agricultural conditions in that newly irrigated desert area, were different enough to warrant establishing a special experiment station in the Valley." First daughter Clara born in Pasadena. Salary: $100.00 per month for next two years.

1911*
Packard's completed study becomes first publication associated with the Imperial Valley Experiment Farm. Publication entitled "Imperial Valley Settlers' Crop Manual" (also referred to as "Agriculture in the Imperial Valley"). Solutions to silt and alkali issues were presented in great detail. UC decides to acquire land. First twenty acres purchased November 11, 1911. Packard chose site known as the Gleason Switch along railroad line from El Centro to Holtville. Land was primarily a citrus farm sold by Irving and Fanny Gleason. The stratified nature of soil log samples taken were indicative of soil throughout Imperial Valley.

1912*
Packard built first buildings for IVEF: house, barn, office building and small residence for hired hand. May 25, 1912: first open house celebrating Imperial Valley Experiment Farm. October 7, 1912, a third ten acre parcel was purchased from the Gleasons.

1913*
July 18, 1913; UC obtains ten more acres from Gleasons. Total acreage: 40. October 16, 1913; UC deeds ten acres back to Imperial County (the southwestern most ten acre parcel where buildings are located). Reversionary clause to title means UC can use land as long as research is performed. Otherwise, land reverts back to Imperial County.

1914*
Continued crop planting research for various UC departments...grapes, apricots, oranges, lemons, cotton, alfalfa and dates. The Packard's second child, Emma Lou, was born, April 15, 1914, in the Experiment Station Home. Emma becomes the first baby born at the Experiment Farm. (January 7, 2012, Max Gunderson becomes Centennial Baby...S.R.A. Jeff & Allison are proud parents)

* NOTE REGARDING DATA FROM 1908-1914:
Material was obtained courtesy of The Bancroft Library, UC Berkeley. Collection: Banc MSS 67/81c carton #11.

1915

Photo above is from UC DREC collection dated 1915. Notice residence home on right. Office on left? Barn in center behind residence? Hired hand residence also behind and to right.. Water tower in view behind residence. Driveway is same as current UC DREC entrance?

Inscription on left: from back of photo above: "House on Univ. Experiment Farm, Imperial Valley-Packard home for 5 yrs."
Sometime around 1915, Walter Packard also established the Imperial Valley Farm Bureau and organized many of the meetings held for farmers.

1917

Mr. Packard's last year as superintendent of I.V.E.F. He published two more bulletins: "Growing Cotton in Imperial Valley" and "Irrigation of Alfalfa in Imperial Valley". UC Berkeley Press.

Alfalfa Bulletin had extensive presentation regarding soil preparation, seeding, wilting point variances for soil types, root development and irrigation methods for different soil types; e.g. smaller head of water for compact soils, larger head of water for more porous soils. Due to the unique nature of the growing conditions in Imperial Valley, Packard's bulletins were invaluable.

Salary during term: $1200-$2750: Annual!
DEVELOPMENT - A CHRONOLOGICAL TIMELINE

IMAGES FROM THE 1920S

The following pages of photos from the 1920s attempt to provide some sense of the evolution of agricultural practices in the Imperial Valley; unique to anywhere else in the country.

Above: making onion beds for seeding, Imperial Valley location unknown. October, 1921. This is quite a photo illustrating excellent teamwork between man and mule. Those furrows are very straight considering no GPS technology.

Below: Planting Onions with two row planter. October 1921

Photos: Courtesy Imperial County Cooperative Extension collection, Cecilia Olea, Annette Tietz

Below: 1923 cover crop trial at IVEF. Note water tower in background. Photo Courtesy of ICCE Collection. Cecilia Olea, Annette Tietz.

Photos of IVEF Agronomy trials 1923. Person in photos is presumed to be Superintendent L.G. Goar (May '21-July, '24)

Photos courtesy of Imperial County Cooperative Extension collection. Cecilia Olea, Annette Tietz
Above and below: October 1924 photo of summer legumes trial. IVEF Superintendent was Mr. L. Beatty (Aug'24-Jul"26), (Assumed to be man on the left).

Above and below: 1929 power mowing operation at Imperial Valley Experiment Farm. Train in background is Holton Interurban R.R. parked on the "Gleason Switch".

Photos: Collection of Francisco Maciel, UC DREC Staff Research Associate

Three photos showing lettuce farming techniques from 1925.
1: "Floating" or leveling the field
2: Using a "Lister" to make lettuce beds
3: Bed shaper and seed drill for planting lettuce. There was a proliferation of "homemade" planters in the pictorial archives but this one seemed most representative.

Courtesy ICCE Collection: Cecilia Olea, Annette Tietz.
The author enjoyed a very informative meeting with Mr. Dubois and Mr. McConnell at 10:00 a.m. at Imperial County Farm Bureau Board Meeting Room. Obtained clearance for room use from Candace Nelson on previous week.

Presented Mr. McConnell & Mr. Dubois with the centennial flyer and informed them of my assignment as historian for publishing book about DREC Centennial.

Gave them brief description of layout and topics for presentation.

Told them of book's title being "From Citrus to Centennial" as a result of DREC property originally being a grapefruit farm.

They both entered into discussion that the whole area had a lot of citrus but that there became a time, probably in the late 40s, when citrus just quit growing because of the salt build up in the soil as a result of no drainage system. This was also reported by Al Kalin on a separate occasion.

Told Bill and Jack about W.E. Packard as the first superintendent of farm and his efforts to organize I. V. Farm Bureau. They were unaware about him although when I showed Bill the pamphlets Packard wrote, he recognized the one entitled "Irrigation of Alfalfa in Imperial Valley."

Entered into discussion of travel in pre WWII years. Bill drove hogs to L.A. and occasionally became isolated on road to Indio (Hwy. 86 now). As a youth he drove with his dad to LA and told of numerous wash flooding problems between Indio and Banning and how they would pull other cars through the washes utilizing towing lines made of rope. The road from El Centro to Beaumont was dirt the entire way. Paved roads to L.A. started at Beaumont.

Bill and Jack knew most of names on 1955 Meloland farm Advisory committee. J. E. Brock was Bill Dubois' scout leader. Recalled scout trip to Grand Canyon and swimming in canal near downtown Phoenix on the way.

Story from Bill about drought of '34; The year that the Colorado ran dry. The river didn't really run dry but the drought was so severe that there were penalties for using water for non agricultural uses. The water to Imperial still ran through Mexico and there wasn't enough left over by the time the water arrived back in the U.S.. Bill was able to form a small enterprise whereby they were able to reclaim unused, standing irrigation water from below the siphon turnouts throughout the valley. They were able to then haul it into town for residential uses without penalty. He had some legal help in that regard.

The '34 drought was a pretty big reason that the All-American Canal was built.

Spotted aphid outbreak of '54. Big increase in use of pesticides. WW II actually provided chemical technology breakthroughs. Use of D.D.T. worked to kill off harmful aphids but it also killed off Lady Beetle predators. Use of integrated pest management techniques evolved as a result of Spotted Aphid outbreak.

Jack said he knew of story regarding Harold Bell wright's coinage of the word Meloland as a fine location to farm.

Meeting ended at 11:30 in time for the Board of Directors' Meeting, Imperial County Farm Bureau.

This was an extraordinary interview. Thanks to both men.
1912-1946

- A report by Professor Ben Madson, April 23, 1953 to members of The Agricultural Advisory Council at The Davis Campus indicated that from 1912 to 1946 the I.V.F.S. was a one man station staffed by an agronomist, who acted as superintendent. Research was performed on field and vegetable crops utilizing hired labor as necessary to carry out various projects. Most notable projects involved cereals, sorghums, flax, sugar beets, cover crops, forage crops cantaloupes, and lettuce. Many studies also performed regarding cultural practices such as fertilization, irrigation and drainage.

- For a number of years, there was growing pressure from valley farmers needing expanded research in vegetable crops and livestock production. The University added a livestock specialist in February, 1946 and a vegetable crop specialist in July, 1946. Livestock management, particularly beef animals, needed special attention because the high summer heat conditions created problems encountered nowhere else.

- This increased commitment by the University resulted in the decision to buy the last 175 acre parcel in order to provide additional pasture and feed development research. The California State Legislature passed a special appropriation for the purchase and improvement of $75,000 in the spring. On October, 1947, the UC Regents purchased the land from Hugh L. and Mabel T. Keating for the sum of ten dollars ($10.00).

1946

- Senator Ben Hulse obtained $300,000.00 financing for building and facility construction.

1948

- July 1, 1948, all field stations (five at the time) were divorced from control by the various departments and placed under the administration of a Director of Field Stations with a separated operating budget for each station. As interdepartmental activity increased at each station it became more difficult for departmental chairmen to adequately supervise administrative and financial issues of their respective station activities in addition to departmental operations.

1949-1950

- February, 1949. N. R. Ittner is new superintendent of Imperial Valley Experiment Station.

- The $300,000.00 building program completed: three staff members' houses, two duplex units known as laborers' cottages, and office and laboratory building, machine shed, granary, pump house and associated utilities.

- Old buildings were moved off site except for a ten year old superintendent's house (Bldg. 301).

- California Legislature passes a $45,000 appropriation for additional buildings: another duplex unit with an attached dormitory accommodating four men, three additional garages attached to machine shed, a 50,000 gallon water storage tank and a livestock feed storage building.

- All but 80 acres of the farm's 250 acres was in production at beginning of the year. By the fall, the remaining 80 acres had drainage tiles installed and was in production as well.

- Successful land reclamation occurred with planting of a sesbania cover crop followed by barley. Yield showed a significant increase.

- Thirteen employees now working: 4 UC assigned staff, 5 field assistants, Superintendent of Buildings and Grounds, secretary, beef herdsman, night irrigator.

- Incorporated use of field days to keep people posted of work on the farm: Livestock one year then Truck Crops and Agronomy the next year.

1951

- Second building program completed (see above).

- Added two bulk grain storage bins at feed storage shed.

- Replaced 600 feet of old concrete pipeline.

- Mr. Robert Combe, Superintendent of Buildings and Grounds, collaborated with engineers from U.C.L.A. to install a fire protection system for the station.
1951 (continued)

- Staff personnel at station also referred to as project leaders. Visits from department members at Davis on the increase.
- Professor Madson visits every six to eight weeks throughout the year.
- 1,563 visitors came to farm. Foreign visitors on the increase, notably Egypt and India.
- Livestock work in pasture and feedlot includes feeding trials, environmental studies (shade and cooled drinking water) breeding for beef and dairy cattle.
- Livestock work in pasture and feedlot includes feeding trials, environmental studies (shade and cooled drinking water) breeding trials for beef cattle (Braford cows to Charollais bull). Dairy cattle studies included Herefords, Brafords, Shorthorn-Hereford crosses and Brown Swiss.
- Livestock program also involved swine environmental studies (Imperial County at one time produced more hogs than any other California County) and sheep feeding research.
- First Agronomy report issued by Shafner Boswell indicating five basic projects.
  1) Comparison of wet, medium and dry irrigation procedures on sugar beets,
  2) Date of planting test with five cereal varieties,
  3) Yield trials for several crops: Alfalfa (six varieties), Oats (four varieties), Barley (nine varieties), Wheat (seven varieties), Grain Sorghum (eleven varieties), Sudangrass (six varieties), Hybrid Field Corn (twelve varieties), Cotton (four varieties), Flax (forty varieties with Imperial and Punjab showing best yields). Safflower (Date of Planting, Row Spacing, Rates of Seeding and Variety).
  4) Weed control test on Safflower using I.P.C.
  5) Foundation seed increase for release to Certified seed growers: Barley (California Mariout), Wheat (Ramona 44 and Imperial), Flax (Punjab), Imperial Kafir, Alta Fescue, L.G. Goar's selection.

1952

Agronomy work in Alfalfa, Sugar Beets, Cotton, Cereals, Flax, Trefoils (legume alternative), Hybrid Field Corn, Safflower, Flax, Castor Beans, Fescue variety trials, seed increase for California Mariout Barley, Ramona 44 Wheat, Alta Fescue (Goar's Selection) and other lesser varieties.

1953

- The station sold some agronomic crops for revenue and they were; 1) 16,275 pounds of foundation Mariout Barley at 1/2 cent per pound ($81.37); 2) 1,440 pounds mill flax seed; 3) 815 pounds cotton lint and 709 pounds cotton seed.
- Recording of daily temperatures was started in 1953 (high and low).

Agronomy

- George Worker and Shafner Boswell were the station agronomists. Other researchers who were mentioned but not stationed here include Berkeley soil scientist Daniel Aldrich (he became UC Dean of Agriculture in 1958, then UC Irvine Chancellor in 1963), C.W. Schaller, D.S. Mikkelson, E.H. Stanford, Paul F. Knowles, B.E. Comstock and David Ririe.
- Twelve agronomic crops were trialed throughout the calendar year:
  2) Barley - Ten varieties, five replications.
  4) Corn - Variety trial ten varieties of hybrid corn.
1953-1954 (continued)

5) Cotton - One yield trial for stub cotton (Alcala 44), a variety trial: six varieties, five replications.

6) Fertilizer Test - Phosphate effect on Alfalfa.

7) Flax - Thirteen varieties, six replications.

8) Green Forage Trial - Alfalfa clipping test.

9) Krillium Barley - Germination Trial. Two varieties, five replications.

10) Sugar Beets - Fertilization trial.

11) Wheat - Variety Trial. Four varieties, four replications.

12) Soil Amendment (Nitrogen) Barley trial. One variety, three replications.

Vegetable Crops

- First report for Vegetable Crops issued. C. Grant Baughn had been the vegetable crop specialist since 1949 and summarized a progress report for a number of trials. Other researchers involved (but not stationed here) were, J.E. Knott, J.F. Harrington and C.M. Rick.

- Trials were for the following:
  
  Vegetable Breeding, Broccoli Spacing Test, Cantaloupe Irrigation Study, Carrot Pronging Study, Cauliflower Spacing Test, Celery Variety Trial, Corn Irrigation Study, Phthalamic Acid Study (Fifteen crops) Lettuce Coated Seed Test, Variety trials Lettuce, onion and tomato.

1954-1955

- Visitors to the I.V.F. S.: 1,355 people came to the farm for tours, meetings, field days and visits.

- The Meloland Advisory Council was mentioned for the first time. There were 26 members and the purpose was to promote the exchange of ideas between local farmers and farm personnel.

- There were three members of academic staff from UC Davis assigned to the farm: 1) George Worker, Jr., Farm Superintendent and Agronomy Specialist, 2) N.R. Ittner, Animal Science Specialist and 3) C. Grant Baughn, vegetable crop specialist. Also, Robert Combe was the Superintendent of Grounds and Buildings (today's title is Superintendent of Physical Plant).

- Progress reports presented to annual meeting at Farm Bureau Building in El Centro. They are summarized below to provide an insight about the level of research activity here.

  Agronomy (George Worker)

- Emphasis was placed on sorghum research in 1954 to determine reasons for seed set failures in certain varieties but not in others. It seems that aside from large amounts of bird damage to sorghum plants, Imperial Kafir produced the highest yield while Double Dwarf 38 produced the lowest. 20 varieties were grown in the nursery then four varieties were planted with six different planting dates. It seems the first results indicated that although the pollen was fertile and the stigmas were receptive the anthers were failing to open up to discharge their pollen (dehisce).

  Vegetable Crops (C. Grant Baughn)

Baughn indicated that emphasis on Vegetable crop research involved breeding, plant selection, variety testing, and various cultural methods. Earlier maturity dates and increased quality were of interest as well as insect and disease resistance. Trials necessary due to increasing severity of Fusarium wilt in tomatoes. Variety testing also included optimum planting dates for onions, lettuce, sweet corn, garlic, snap beans, potatoes, tomatoes and watermelons. Cultural methods trialed included "plant spacing, effects of summer cover crops, soil fumigation, dates of planting, weed control, soil insecticide residue, fungicides, germination, pre-planting, seed treatment, coated seed, irrigation and fertility" (Grant Baughn, 1954)
1954 (continued)

Animal Husbandry (N.R. Ittner)

- Since inception, environmental research for livestock involved efforts to improve comfort during summer heat. Four areas studied: 1) methods to provide cool drinking water (cooling water from 90 degrees to 65 degrees resulted in daily weight gains of .18 pound), 2) Improve shade material for livestock (best insulating material for shade was hay placed on shade structures at about 10-12 feet above livestock), 3) Improve digestion with change from a roughage diet to a roughage concentrate ration (results showed a 1/2 pound per day increase), 4) Corral construction: wire pens versus wooden pens (effective difference was 5 1/2 to 6 degrees cooler).

- Green chopping alfalfa for feed produced an increase in beef production compared to rotational grazing but improved pasture management techniques were being evaluated also. Studies also underway to determine relation of soil fertility palatability and nutritive value of alfalfa.

1955

- 15 employees on payroll.

- 2,804 visitors. 37 were from foreign countries: Philippines, Canada, Israel, Sweden, India, Jordan, Canary Islands, Egypt, Guam, Spain, France, Turkey, Chile, Korea, Brazil, Australia and Mexico.

- Annual Field Day held on April 29, 1955. 200 present. Three topics, Agronomy, Animal Husbandry and Vegetable Crops. Lunch served by Meloland Advisory Committee furnished by Board of Trade. Talk by Raymond G. Bressler, Professor of Ag. Economics, UC. entitled "The Agriculture Outlook".

- Farm Advisor classes - weekly series commenced in October. Held in cooperation with Research specialists and staff researchers. Subjects were: Swine, Feeding and feeds, Stilbestrol, Alfalfa, Flax, Weed control, Weed Identification, Flax & Sugar Beet Pests, Pest Control for melons & vegetables, Cantaloupe culture, fertilizer sources and proper placement, phosphates on vegetables & beets.

- First listing of Meloland Farm Advisory Committee: Roy Bellwood, Brawley, J.E. Brock El Centro, Nelson Correll, Calipatria, Claude Finnell, El Centro, Bernard Galleano, Calipatria, Paul Glud, Calexico, Joe Guidotti, Heber, Fred Gunterman, Sr., Calexico, C.D. Hansen, El Centro, B. A. Harrigan, El Centro, Harold Hunt, El Centro, John Kubler, Calexico, Rudolph Miller, El Centro, Fred Sterzing, El Centro, W.H. Thornberg, Jr., Holtville, Clarence Walker, Westmoreland, B. R. Olson, Blythe, Robert Bowlin, Indio, Ray Rummonds, Thermal, Bruce Kratka, Ripley. Meetings were twice a year with UC Staff from Ag. College, Southwest Irrigation Field Station and Farm Advisors. 65 people were present.

- Also listed for the first time were the members of the Imperial Valley Research Advisory Committee. Two meetings held to review research projects being conducted. Members were: J. L. Myler (Davis, Asst. Agronomy), George F. Worker, Jr., M. L. Peterson, H. H. Cole, O. A. Lorenz (Veg. Crops-Riverside), Roy Bainer (Ag. Engineering-Davis), L.D. Anderson Entomology-Riverside), J. B. Kendrick (Pathology-Riverside), J. P. Martin (Soils-Riverside), R.S. Ayers, N. L. McFarlane (Ag. Ext. Service-Riverside).

Farm Improvements

1) New high pressure water line for fire protection.
2) Replaced old cement irrigation line in center of station 3) Construction of eighteen (18) livestock pens: three steers to a pen, cable wire construction used for heat reduction. Data collection was tripled.

Agronomy (Worker)

- There were thirty different projects conducted in 1955 including alfalfa, cotton, flax, ryegrass, foundation seed increase (flax & barley), hybrid corn (ensilage and grain yields), small grains, sudan grass sugar beets, sorghum, soybeans, sunflowers.

- Notable trials: Use of P2O5 as it pertained to improved yields in alfalfa. A 100# annual application was determined to produce greatest yield in alfalfa compared to one time or annual applications or differing quantities.
1955 (continued)

- Sugar beets: Test to better understand relationship of interval between date of last irrigation and time of harvest. Initial results indicated little advantage gained in letting beets suffer from lack of moisture before harvest. The small gain in sugar percentage was offset by a loss in root yield.

Hybrid Field Corn (Worker)

- Test begun to determine profitability of field corn for ensilage and grain in desert conditions. Target of profitability for ensilage was set to be at 20 tons; Mexican June best yield at 30.8 Tons per acre. Target of profitability for grain was set to be at 5,000 pounds per acre; best yield from four varieties was around 4,000 pounds per acre. More tests necessary.

Sorghum Research (Worker)

- Station testing of Sorghum increased greatly as a result of the rapid drop off in 1951 of seed production of Double Dwarf 38, the best variety in Imperial Valley. First approach was to determine effect of adverse weather at time of pollination relating to seed set and plant performance. Second approach was to evaluate new varieties or improve DD38 seed.

- Non-Technical Publications (Worker):
  1) Effect of interval between the last irrigation and the time of harvest on sugar beet production. George F. Worker, Jr., David Birie, Robert S. Ayers.
  2) Meloland Field Station. George F. Worker, Jr.
  5) Field Crops Report, Imperial Valley Field Station. George F. Worker, Jr.

Animal Husbandry (Ittner)

- Cooling fans added to efforts reducing thermal stress on livestock
- Since 1952, studies of Brown Swiss versus Holsteins indicated that Brown Swiss hold up in milk production better than Holsteins. More summer milking seasons needed for better analysis.
- Sheep studies begun on evaluating pelleting versus chopped hay. Also inclusion of antibiotics at low levels in rations.
- First study noted regarding utilization of alfalfa by beef steers.
- First results of breeding study were presented.

Entomology (G.R. Pesho)

- Large scale experiments begun at Riverside Citrus Experiment Station and Imperial Valley Experiment Station to study effects of pesticides in the soil on growth, flavor and yield of various crops and upon residues in soil. L.D. Anderson, project leader.

Vegetable Crop (Baughn)

- Studies in following crops: cantaloupe, carrot, garlic, lettuce, onion, potato, tomato, watermelon. Other specialists doing research were; L.K. Mann (garlic), Glen Davis (potato), O.A. Lorenz (phosphate fertility studies), C.M. Rick and Paul G. Smith (tomatoes).
- At this point in the history of the Station in 1955, researchers started to indicate when their research projects were published. Referred to as Technical Publications in The I.V.F.S. Annual Reports, they were presented in annotated bibliographical format. Also, Mr. Worker documented Non-Technical Publications and research progress reports presented by researchers. Combined, they present a good picture of research efforts at the Meloland Station until the 1985-1986 Annual Report. They will be presented in the timeline highlights for each fiscal year (July through June).
The bibliography below has been excerpted from the 1955 Imperial Valley Field Station Annual Report. Dr. N. R. Ittner indicated that his bibliography included published data from previous projects dating back several years: assumed to be from Dr. Ittner’s date of hire, 1946.

Technical Publications (Ittner):

1955 (continued)


1955-1956

- Eighteen employees plus a U.S.D.A. Entomologist now stationed at I.V.F.S.
- W.F. Lehman, Jr. is new agronomy specialist at I.V.F.S.
- Orval D. McCoy is new vegetable crop specialist.
- Station Improvements:
  1) 2,538 foot Centrifugal Spun Reinforced concrete irrigation pipeline (12" diameter) replaced old concrete pipeline in center of area 40 and 50. 300 foot pipeline installed to connect to east side irrigation supply.
  2) New plastic greenhouse structure installed for alfalfa research.
- Farm Advisor's meetings continued utilizing station's "auditorium" (conference room). 26 weekly meetings held starting in September. Instructors were mostly from the Extension Service but Station Staff specialists also participated.
- Total visitors to station: 1,889.
- Three meetings of Meloland Advisory Committee; two meetings of Research Advisory committee.
- Annual Field Day, April 18, 1956. Presentations from 17 specialists throughout UC system. Three main areas were Agronomy, Vegetable Crops and Animal Husbandry.
- Vegetable Field Day, March 14, 1956

Agronomy (Worker)

- 35 projects underway. Similar crops as previous year but expanded subjects.
- Project participants: George Worker, Jr., Earnest Sanford, Roy Vanoni, Duane Mikkelsen, Dr. Albert Ulrich, William F. Lehman, Donald C. Erwin, Horton Laude, Paul Knowles, Charles Schaller, Dale Smeltzer, Robert Loomis, Robert Pearl, Dr. John Turner, Dr. William Sappenfield.
- Foundation Seed production, grown for release to area farmers. California Mariout-21,000 pounds; Punjab 47-6,800 pounds, Imperial Kafir-7,900 pounds.

Animal Husbandry (Ittner)

- Studies were a continuation of previous year with the additional help from C.F. Kelly, Ag. Engineering, Davis and T.E. Bond U.S.D.A., Davis, W.C. Weir, J.H. Meyer, G. P. Lofgreen (IVFS Staffer from 1968 to 1977), Wade C. Rollins, L.G. Jones, and R.C. Laben, Animal Husbandry, Davis, V.V. Rending, Soils Department, Davis, Food Technology and Home Economics Department, Davis.

Entomology

- L.D. Anderson study on effects of pesticide in soil: after three years, chemical residues in soil appeared to be accumulating at significant rates.

Vegetable Crops (McCoy)

- In addition to O.D. McCoy, other specialists were: C. Harvey Campbell, Jr., C.A. Shadbolt, F.H. Takatori, O.A. Lorenz, L.K. Mann, C.G. Baughn, D.E. Hunt, Robert Kortsen, Arthur Spurr, Paul Smith and G.N. Davis.
DEVELOPMENT - A CHRONOLOGICAL TIMELINE

1956-1957

- Station Improvements:
  1) Ground survey project initiated of drainage, irrigation ditches, roads, fences, etc. The need to reduce the water table was evident and $30,000.00 was made available in July, 1957.
  2) Seven 3 ton air conditioning units were installed in same place as desert coolers with water towers. Cost: $13,252.33.
  3) Initiated project to replace cast iron domestic water supply pipeline.
  4) Plastic greenhouse was added onto with a 16 foot extension (new dimension is 16' x 40').
  5) Cal. State Highway Dept. placed two road signs on Highway 80 to indicate location of Imperial Valley Field Station.
  6) Wooden sign in front of station replaced with porcelain enamel painted sign with gold letter on a blue background.
  7) Installed ten water level recorders throughout the station.


- Two meetings held with research Advisory committee.

- Farm Advisors meetings still conducted only more of a monthly basis.


- 1,799 visitors to station,

  Agronomy (Worker and Lehman)

  William D. Lehman was very busy giving num-

- There were thirty other agronomy projects conducted. Team members were: Paul F. Knowles, Charles Schaller, Dale G. Smeltzer, Duane S. Mikkelsen, William A. Williams, Robert S. Loomis, Dan W. Ragsdale, Peter Van Schaik, Leroy H. Zimmerman, William George, Frank Parsons, Donald C. Erwin.

- Non-Technical Publications (Worker):

  Animal Husbandry (Ittner)

- Farm began study of feeding silage compared to pelletized feed in response to revived interest in California and since there had been little research in that area. High yielding sorghums, alfalfa hay and alfalfa pellets were tried. The pelleted feeds were fast becoming desired as a means to reduce labor costs of feeding and for livestock to realize greater daily weight gains due to their ease of consumption.

- Technical Publications:
1956-1957 (continued)


Vegetable Crops (O.D. McCoy)

- 21 projects involving broccoli, cantaloupes, lettuce, onions, beets, cabbage, carrots tomatoes, watermelons, potatoes.

- Non-Technical Publications:

- Technical Publications:

1958-1959

- Since 1951, station has provided its own fire protection. Fire hydrants and nozzles inspected as needed. Hoses inspected every six months. Stored air pressure water extinguisher inspected and operated every six months.

- Domestic water tested monthly by Imperial County Health Dept.

- Four Farm Advisor meetings were held in 1958.

- Annual Field Day, April 13, 1958

Animal Husbandry Research
(Ittner and Garrett)

- After providing twelve years of service to I.V.F.S., Nicholas Ittner passed away in February, 1958.

- William N. Garrett assumed duties in Animal Husbandry research.

- Four wire feeding pens with shades were constructed south of livestock corrals for summer environment testing.

- Technical Publications (Ittner):


Agronomy (G.F. Worker, Jr.)

- Twenty six projects underway including castor beans, cotton, flax, safflower, barley, oats wheat, sorghum, soybeans, sugar beets. Foundation seed produced at IVFS: New River Flax-8,675 pounds; California Mariout Barley-16,145 pounds; Imperial Kafir Sorghum-9,000 pounds.

- Non-Technical Publications:

2) "Double Cropping" Sorghum in Imperial Valley, Agronomy Notes, January 21, 1958, George F. Worker, Jr.
1958-1959 (continued)

Alfalfa Research (William F. Lehman)

- Large scale research continued into developing Spotted Aphid resistant lines of alfalfa. E.H. Stanford, Davis, Agronomy, Frank Lieberman and George Pesho, Entomology Branch, USDA, also participating.

Vegetable Crop Research (McCoy)

- Six projects underway with several trials within each project: cabbage, cantaloupe, corn, lettuce, phosphate studies.

- Technical Publications (McCoy):

1959-1960

- Farm Improvements:
  1) Drain lines for irrigation begin to get installed. Area 90 (northeast corner) was completely retiled with 4", 6",8" and 10" lines.
  2) Additional drain lines and irrigation laterals installed in area 90 and area 40.

- 1,438 visitors to farm.
- 38 reports or presentations made by staff of Worker, Garret, Lehman and McCoy.

Agronomy (Worker)

- Twenty projects underway including a small silo study over a two month period to determine change in composition for different silo construction types.
- Technical Publications:
1959-1960 (continued)

- The photo from previous page dates to April 4, 1960. George Worker, Jr. performed a Safflower - Nitrogen rates study utilizing four rates of nitrogen application, two planting methods (flat and on beds), and on plots with three previous cropping histories (alfalfa, fallow, bermuda grass). Highest yield (3,909 lbs. per acre) was obtained from 150 lbs. nitrogen following alfalfa and planted flat. Yields were only slightly lower (3,443 - 3,536 lbs.) with 50-150 lbs. nitrogen applied on fallow plot and flat planting. I.V. F. S. was attempting to find a crop to fill the need for a crop after cotton but be out of the field in time for fall planting.

Alfalfa (Lehman)

- Technical Publications (Lehman):


Animal Husbandry (Garrett)

- Technical Publications (Garrett):


Vegetable Crops (McCoy)

- Technical Publications (McCoy):


  3) Orval D. McCoy, et.al. "Progress report of Vegetable Crops Research". University of California, Imperial Valley Field Station, mimeograph Report. 52 pages.

1960-1961

- Station Improvements

  1) Fall 1960 - equipment storage building: 24' wide x 128' long. This replaces original equipment shed. Original shed on the west side was divided into five sections each and made into rooms for departmental working and storage.

  2) Replacement of galvanized domestic water line with copper line.

  3) Galvanized pipeline to corrals replaced with plastic pipeline.

  4) Concrete ditch lining project completed for basically the north half of the station. Irrigation and waste ditches installed as a result of bermuda grass in ditches.
1960-1961 (continued)
- Irrigation water applied: 1,724.6 acre feet.
- Cost of water applied: $3,491.85.
- Cost per acre foot: $2.02.
- Annual field day held on March 16, 1961. Afterwards, a joint meeting was held of Meloland Farm Advisory Committee and Research Advisory Committee.

Agronomy (Worker)
- Twenty one progress reports submitted.
- Non Technical Publications:

Alfalfa research (Lehman)
- Nine progress reports submitted.
- Non Technical Publications:

Animal Husbandry (Garrett)
- Six progress reports submitted.
- Non-technical reports:
  2) Animal Husbandry Research at the Imperial Valley Field Station. Imperial Valley Farm Advisor Briefs. March 6 1961.
  4) Animal Husbandry Field Day Mimeograph. Imperial Valley Field Station. March 1961 (portions or entire articles originally written by W. N. Garrett for this mimeograph have appeared in the Western Livestock Journal, Farm Journal and Post Press Newspaper.
  - Technical Publications (Garrett):
1960-1961 (continued)

Vegetable Crop Research (McCoy)

- Ten research progress reports submitted.
- Non Technical Publications:
  3) O.D. McCoy. Eleventh Annual Vegetable progress Report 1959-60. Department of Vegetable Crops, Imperial Valley Field Station, University of California, 57 pages.

1961-1962

- Station Improvements:
  1) Original livestock and feed storage building was raised four feet, additional room added for sampling, office shop and laboratory.
  2) Additional funding obtained for improving drainage tiles in Area 60, 20 and 30.
    - Annual Field Day on April 19, 1962 followed by a joint meeting of Melololand Farm Advisory and Research Advisory Committees.
    - Total visitors to the station: 1,726.

Agronomy (Worker)

- Twenty five progress reports made.
- Non-Technical Publications:
  1) Phosphorous Experiment IX-5 at the Imperial Valley Field Station 1959-60. George F. Worker, Jr. and Robert S. Loomis. I.V.F.S. Mimeo #2, June 1961, 3 pages.

- Technical Publications (Worker):

Alfalfa Research (Lehman)

- Eleven progress reports submitted.
- Became involved in planning for 1962 construction of new, metal greenhouse.
1961-1962 (continued)

Animal Husbandry (Garrett)

- Eight progress reports submitted.
- Non-Technical reports:
- Technical publications:

Vegetable Crop Research (McCoy)

- Twelve progress reports submitted.
- Technical Publications:
  1) O.D. McCoy et.al. Twelfth Annual Vegetable Progress report 1960-61. Department of Vegetable Crops, Imperial Valley Field Station, University of California, 31 pages.

1962-1963

- Total visitors to I.V.F.S.: 2,197.
- Station Improvements:
  1) Glasshouse, lath house and potting shed. 25' x 41' greenhouse, 20' x 40' lath house and a 12' x 20' potting shed were completed in September 1962.

Below: 1962 photo of newly completed glasshouse and lath house.
Photos courtesy of Francisco Maciel, UC DREC
1962-1963 (continued)

- Station Improvements

2) More improvements made to drainage system at station: surface drainage in areas 20, 30, 40 and 50; tile drainage in area 60, 70 and 80.

3) Office and laboratory constructed in south room of feed barn.

4) Major alterations approved for dry lab in main office building: benches and cabinetry, fume hood, necessary health and safety devices, electrical and plumbing changes, additional laboratory equipment.

- Annual Field day held on February 13, 1963 followed by a meeting of the Imperial Valley Field Station Research Committee. It was at the end of a five year cycle of annual field days and a new five year cycle was to be prepared.

Data recording at I.V.F.S.

- Not only has the I.V.F.S. kept records about research projects, soil and climatic data has been recorded as well. In the early years, merely the maximum and minimum temperature was recorded. In 1958, a weather station was installed in the west end of the feedlot area. It recorded:
  1) Air Temperature (continuous maximum and minimum both at 80" above ground and 35' above ground),
  2) Black bulb temperature, max. and min.,
  3) Relative humidity, max. and min.,
  4) soil temperature 6" below ground (max. and min.),
  5) Wind velocity: 0600 -1800 average, and 1800-0600 average,

- Water table data was also recorded from ten recorders throughout the station.

- Salt analysis was performed at about 24 different locations throughout the station.

- In 1989, the weather data station was relocated to area 20 and was integrated into an automated collection system named the California Irrigation Management and Information System (CIMIS).

Agronomy (Worker)

Seventeen research progress reports submitted.

Non-Technical publications:

1) Sorghum Acreage Rises in Imperial Valley. George F. Worker, Jr.. Local newspapers, Arizona Ranchman, California Farmer, etc., March 8, 1963.


Technical Publications:

1) Benjamin H. Beard, George F. Worker, Jr. and George H. Able. "Cooperative yield tests of flax varieties in the Imperial Valley, 1961-1962".


Animal Husbandry (Garrett)

Non-Technical Publications:


1962-1963 (continued)

Technical Publications (Garrett):


Alfalfa Research (Lehman)

- On going research project report entitled "Breeding Non-dormant types of alfalfa adapted to the southwestern United States. Sonora was a new variety released in January 1963 and testing began cooperatively throughout the region to gather more information about this variety as well as varieties already under evaluation.

- Technical Publications (Lehman):


- Technical Publications:

1) O.D. McCoy. Thirteenth Annual Vegetable Crops Progress Report 1961-62. Department of Vegetable Crops, Imperial Valley Field Station, University of California, 49 pages plus an insert.

2) O.D. McCoy. "Three year results - rate and source of phosphorous experiment with lettuce at Imperial Valley Field Station, 1959-1962."

- Two vegetable crop variety releases:

1) Lettuce - "Calmar"

2) Tomato - "Imperial"

1963-1964

- Visitors to station: 3,221.

- Capital Improvements:

1) Old wooden cattle pens removed and replaced with six holding pens, six feeding pens, a large holding pen and a loading chute.

2) Roofing material was replaced on buildings at station.

- Research Advisory Committee reports that sugar cane could be established as a commercial crop. The Extension Service published a bulletin "Sugar Cane, a new crop for Imperial County" and Holly Sugar company conducted a feasibility study to incorporate sugar cane processing into their sugar beet processing and was to conduct variety testing pending legislation passage.

Vegetable Crop research (McCoy)

- There were twelve progress reports submitted.

- Non-Technical Publications:
1963-1964 (continued)

Annual Field Day

- Held on March 25, 1964. 163 attendees. These annual field days were important. There were nine speakers in a three hour presentation comprised of the following: James Myler, Head of Field Stations, UC Davis; J.H. Myer, Dean of Agriculture, UC Davis; M.L. Peterson, Statewide Dean of Agriculture, UC Berkeley; R.G. Curley, Agricultural Engineering, UC Davis; L. Jones, Agronomy, UC Davis; Wm. F. Lehman, UC Davis Asst. Agronomist, I.V.F.S.; Verne E. Mendel, UC Davis Assistant Animal Husbandman, I.V.F.S.; J. Burgess, Agricultural Extension Service, El Centro, CA.; J. Fielder, Dixon Dryer Company, Dixon, CA.

- The topic for that particular field day was "Alfalfa Production and Utilization". There were five year plans that enumerated topics in advance for upcoming annual field days.

- On the day before the Annual Field Day, there were meetings of the Research Advisory committee and the Meloland Farm Advisory Committee (later known as the Industrial Advisory Committee). These committees discussed important issues regarding station operations and research projects, on-going and up-coming. For example, the Irrigation Department announced that they had a staff position available and candidates were being interviewed. Also, publicity was apparently always at the forefront. Local press, radio and TV was important. Mr. Worker always documented talks, newspaper articles, public presentations and guided tours given by staff researchers.

- Station personnel numbered at thirty six (36).

Agronomy (Worker)

- Thirteen projects underway with progress reports issued.

- Non-Technical Publications (Worker):

1) Imperial Valley Field Station History. George F. Worker, Jr. mimeographed report, November 1963.


- Technical Publications:


Alfalfa (Lehman)

- Breeding trials were ongoing for insect and disease resistance. Clonal nurseries for 645 entries were being developed and tested. Yield trials were replicated and pollen studies were conducted as well.

- Technical Publications:

1963-1964 (continued)


Animal Husbandry (Mendel)

- In September 1963, W.N. Garrett transferred to UC Davis and Verne E. Mendel assumed duties as Animal Husbandry Assistant at I.V.F.S. Livestock environmental studies continued as well as sheep weaning and breeding studies.

Irrigation Drainage

- Drainage and salinity experiment conducted to improve methods of leaching salts out of soils. Field conditions were so extreme that more development was needed on automated recording equipment. Cooperators in this "Leaching trial" were J.N. Luthin, R. Worstell, Frank Robinson* and P. Puri.

*Frank Robinson would join I.V.F.S Staff the following year.

Vegetable Crops (McCoy)

- Disease and insect resistance, improvements in quality, yield and inheritance of characters continued to be studied with additional cultural studies including reactions to chemicals and mineral nutrition.

- There were about twenty one different researchers involved in vegetable crop projects.

- April 13,14, 1964 - the Carrot Breeders’ Conference was held at I.V.F.S. This was a biennial event with researchers from across the U.S. participating and U.S.D.A. coordinating. As a result of this meeting, it appears to have been decided that the U.S.D.A. would continue cooperative selection work at I.V.F.S.

- Since that time, the U.S.D.A. at the University of Wisconsin, Madison, Wisconsin, has been at the Meloland Station conducting an annual carrot field day.

- Technical Publications (O.D. McCoy):


1964-1965

"Extension and Teaching".

- This section was included every year in Mr. Worker's annual reports and he documented efforts of researchers to reach out to the community and spread the results of their applied research. That was as important as generating published reports.

- The following summary is indicative of the annual outreach efforts every year at the Station:
  * Field days: 5
  * Group tours and discussions: 15 (e.g. Holtville Cub Scouts, Utah University, foreign visitors).
  * Farm Advisor meetings/field days: 5.
  * Seminars of various groups: 20 (e.g. soil conservation service, Meadows union farm bureau, etc.)
  * Research committee meetings: 4
  * Total visitors to station: 2,379 (includes 15 foreign countries and 9 states outside of California).
  * Talks, presentations, field days, individual tours and publications by the five staff personnel of Worker, Lehman, McCoy, Mendel, Robinson: 55 (Frank Robinson even taught an irrigation class at Imperial Valley College).

- Station Improvements:
  1) Repaired asphalt roads around main office area.
  2) Surface drainage pipe installed area 20, 30, 40, 50.
  3) Installed 1,000 gallon gasoline tank under ground and connected to pumps. Two old tanks (500 and 800 gallon) were filled with sand.

Alfalfa (Lehman)

- Non-Technical Publications:

- Technical Publications:


Vegetable Crops (McCoy)

- Non-Technical Publications:
  1) Use of overhead irrigation to remove salt - save seed labor and water. Orval D. McCoy and Frank E. Robinson.


1964-1965 (continued)

- Technical Publications (McCoy):


- Non-Technical Publications:


- Technical Publications:

1964-1965 (continued)


Agronomy (Worker)

- Ten progress reports were submitted.

"Meloland grain Sorghum was approved for certification and 6,000 pounds of foundation seed was released in the spring." (George F. Worker, Jr. I.V.F.S. annual report. 1964-1965).

- Non-Technical Publications:


3) Select forage sorghum on use basis. George F. Worker, Jr.. Crops and Soil, Vol. 16, March 1964.

4) Grain sorghum studies. George F. Worker, Jr. IVFS Mimeograph No. 5, October 1964.

- Technical Publications:


2) G.F. Worker, Jr.. "Study of combine losses and seed size of four grain sorghum at the Imperial Valley Field Station". Sorghum Newsletter 18 (5): Page 16, 1965.


1965-1966

- Total visitors to Station: 2,195 (287 visitors from 23 countries, 34 visitors from 18 states outside California)

- Station Improvements:


2) Livestock Feed Mill remodeled and expanded (W.E. Douthitt, steel, Checkers Construction, Sheffield Electrical).

December 1965

Above and Below: Livestock Feed Mill, Handling Area and Reference Barn, December 1965 and December 1966.

Photo courtesy of George Worker I.V.F.S. 1965-1966 Annual Report

December 1966
1965-1966 (continued)

- Station Improvements (continued):

  3) Completed installation of 4 concrete cistern tanks for domestic water storage: 3,500 gallon capacity.

  4) Imperial Irrigation District concrete lined irrigation delivery canals on west, north and east side of Station.


  6) Septic tank, disposal field, water closet, with shower, installed at Building #211 (feedmill); seepage field and connecting lines installed at Building #103.

  7) Overhead 440 volt distribution system installed in cattle facility.

  8) Truck weighing scale (20') installed in cattle area.

  9) Additional sub-surface drainage, Area 80.

Research Advisory Committee:

1) Reorganized to include five subcommittees: Field Crops, Forage Crops, Livestock, Vegetable Crops, Water Management.

2) Sheep pasture study delayed.

3) Budget unchanged, funds and personnel to newer stations.

4) Dr. Pal Puri transferred to Tulelake Station as Superintendent.

Agronomy (Worker)


- Ten progress reports issued.

- Non-Technical Publications:

  1) Grain sorghum and sudan research. G.F. Worker, Jr., Imperial Agricultural Briefs, Page 1, March 1965.


  4) Small grain research and testing program at the Imperial Valley Field Station. G.F. Worker, Jr., Imperial Agricultural Briefs, December 1965.


Technical Publications:


1965-1966 (continued)

- Technical Publications (Worker):

Alfalfa (Lehman)

- Project title: "Breeding Nondormant Types of Alfalfa Adapted to Southwestern United States. Cooperating with UC Davis, Agronomy Dept.; UC Riverside, Plant Pathology Dept.; Entomology Research Division, University of Arizona.

- Non-Technical Publications:
  1) Lehman, W.F., Questionnaire Pertaining to Alfalfa Research in Western United States. Mimeograph pamphlet.


- Technical Publications:


Animal Science (Mendel)

- Unexplained condition named "canary grass staggerers" in cattle being investigated. A cooperative survey conducted with local Farm Advisor, practicing veterinarians, and the Extension Veterinary Dept. They could not prove that canary grass was the cause.

- Environmental studies were of increasing importance as more and more cattle were being fed in pens, nationwide. Areas of importance include, engineering aspects such as flow rate characteristics from manure pits, aerobic digesters, space requirements for optimum performance in restricted conditions such as over slatted-covered manure pits or environmentally controlled buildings.

- The refrigerated reference barn is now referred to as the Ittner Building.

- Non-Technical Publications:


- Technical Publications:
1965-1966 (continued)

- Technical Publications (Mendel):

Vegetable Crops (McCoy)

- Eleven progress reports were submitted including trials on asparagus, melons, lettuce, tomatoes.

- Non-Technical Publications:
  1) Precision planting. O.D. McCoy Imperial County Farm Bureau Monthly, Vol. 40, No. 5, PP.3-4, May 1966.
  2) An old-timer gets new ideas for vegetable farming. Imperial County Farm Bureau Monthly, Vol. 40, No. 6, June 1966.

- Technical Publications:

Water Science and Engineering (Robinson)

- Continuation of research into improvement of irrigation management and salinity control.

- Non-Technical Publications:
  2) Comparative advantages of sprinkler and furrow irrigations on lettuce. Frank E. Robinson and Orval D. McCoy, Mimeograph, 1965
  3) Adaption of sprinkler irrigation in the Imperial Valley of California. Frank E. Robinson, Orval D. McCoy and George F. Worker, Jr., Mimeograph, 1965

- Technical Publications:

- Miscellaneous trials underway for residual effects of herbicides in soil and pre-emergent weed control herbicides.

1966-1967
1966-1967

- Total visitors to Station: 2,698.
- Station Improvements:
  1) Bldg. 201 remodeling complete. Upstairs is soils lab. Downstairs is seed storage, samplings, etc. (Wilson & Wilson Contractors)
  2) Improvements to domestic water: pressure controls for proper air-water ratio.
  3) Equipment Storage shed: 24' x 160' with 14' eaves (Duggins Construction).

Donations to Station by 15 seed companies valued at $871.00 (a typical year's worth of assistance from business community).

Agronomy (Worker)

- Ten research progress reports submitted.
- Non-Technical Publications:
  3) Protein percent of Grain Sorghum Grown at the Imperial Valley Field Station. G.F. Worker, Jr. Agronomy notes, November 1966.
  4) Protein Percent of Grain Sorghum Grown at the Imperial Valley Field Station. G.F. Worker, Jr. Imperial Agric. Briefs, November 1966
  6) Grain Sorghum Variety Testing and Date-of-Planting in the Imperial Valley. G.F. Worker, Jr. I.V.F.S. Mimeograph No. 6, March 1967.

Technical Publications:

2) J.R. Goodin, R.M. Hoover and G.F. Worker, Jr.


Alfalfa (Lehman)

- Non-Technical Publications:

- Technical Publications:


1966-1967 (continued)


Animal Husbandry (Mendel)

• Non-Technical Publications:


• Technical Publications:


Vegetable Crops (McCoy)

• Non-Technical Publications:


• Technical Publications:


Water Science (Robinson)

Removal of soil salinity much greater with sprinkler vs. flood irrigation. Increase in yield is 50% with 82" sprinkler irrigated beds vs. 42" furrow irrigated beds.

• Non-Technical Publications:


1967-1968 (continued)

Animal Science (Mendel & Lofgreen)

Six annual progress reports submitted.

First year of using Animal Science name instead of Animal Husbandry.

Technical Publications:


Vegetable Crops (McCoy)

Seven Progress reports submitted.

Non-Technical Publications:

1) Preliminary Results, Asparagus Variety Trial at Meloland. O.D. McCoy. Imperial County Farm Bureau Monthly, pp. 2-3, August 1967.

2) Preliminary results of asparagus crown spacing at Meloland. O.D. McCoy. Imperial County Farm Bureau Monthly, pp. 7-10, September 1967.

3) New Cultural Research Tool. O.D. McCoy Imperial County Farm Bureau Monthly, p. 11, July 1967.


Technical Publications:


Water Science (Robinson)

It was being proven that sprinkler irrigation was able to effectively conserve water, reduce soil salinity, maintain good soil which ultimately resulted in greater seedling emergence rates.

Non-Technical Publications:


Technical Publications:


1966-1967 (continued)

- Technical Publications (Robinson):

1967-1968

- Visitors to Station: 2,215.

- Academic staff changes:
  Dr. Verne E. Mendel transferred to Davis, September 1967 and Dr. Glen P. Lofgreen came to Station in February 1968. Glen's title was Animal Scientist, Animal Science Department, Davis.

- Station Improvements:
  1) February 1968; four (4) 3,250 gallon water storage tanks installed underground and a concrete reinforced rock and sand filled water filter was added to domestic water system
  2) Two horse corrals built - 28' x 56'.
  3) Additional sub-surface drainage tile was installed in area 80.
  4) Irrigation pump installed S. W. corner area 90.

Agronomy (Worker)

- Twelve Annual progress reports submitted.

- Non-Technical publications:
  1) Grain sorghum varietal testing at the Imperial Valley Field Station. G.F. Worker, Jr. Mimeograph No. 7, October 1967.
  2) Barley yields as affected by date-of-planting and seeding Rates. G.F. Worker, Jr. Imperial Agricultural Briefs, October 1967.

- Technical Publications:

Alfalfa (Lehman)

- Non-Technical Publications:

  2) Notice of release of SW44 Germplasm to Alfalfa breeders. W.F. Lehman and E.H. Stanford

- Technical Publications:
1967-1968 (continued)

- Technical Publications (Robinson):
  6) "From Desert to Oasis." Big Farmer, pp. W6-W7. Spring 1968.

- 1967-1968 Research Advisory Committee Members:
  L.D. Anderson, Entomology, Davis.
  Roy Bainer, Agriculture Engineering, Davis (Chairman)
  W.W., Donnan, Southwest Branch, Soil and Water Conservation Research Division, Riverside
  D.C. Erwin, Plant Pathology, Riverside
  H.H. Heitman, Animal Science, Davis
  C.E. Houston Irrigation Extension Specialist, Davis
  J.M. Lyons Vegetable Crops, Riverside
  R.M. Love Agronomy and Range Science, Davis
  J.P. Martin, Soils, Riverside
  M.F. Phelps, Agricultural Extension Service, Riverside County
  J.L. Myler, Director, Agriculture Field Stations (ex officio).
  A.F. Van Maren, Agricultural Extension Service, Imperial County.
  A.J. McKenzie, Southwestern Irrigation Field Station, USDA, Brawley, Ca.
  G.F. Worker, Jr., Agricultural Field Station, El Centro, Ca. (Secretary) (ex-officio)

1968-1969

- Total Visitors to the Station: 2,922.
- Five separate field days instead of Annual Field Day.
  1) Cotton: 10/22/68
  2) Lettuce: 11/12/68
  3) Small Grains: 4/15/69
  4) Livestock: 4/17/69
  5) Alfalfa 4/24/69

- Station Improvements:
  1) January 1969: Four concrete block pens for sugar beet storage (12’ x 13’)
  2) Large Cattle corral in area 80 was subdivided into five smaller pens for feeding trials (15+ cattle each)
  3) Remodel kitchens in residential units (sinks and cabinetry)
  4) Altered domestic water lines: replace 400 feet of cement pipe with 6” transite pipe.
  5) Irrigation water cost: $2.31 per acre foot. (1,746.6 acre feet: total cost $4,031.56)

- There was a larger number than usual Farm and Research Advisory committee meetings:
  1) Research Committee met Mar ’69, a.m. Combined meeting with Farm Committee in p.m.
  2) Water Management subcommittee met Mar ‘69
  3) Livestock subcommittee met two times: Sep 68/ Feb. 69.
  4) Field Crops subcommittee met twice: Oct. 68/ Mar. 69.
1968-1969 (continued)

- In May 1968, a special Research Advisory Subcommittee was created and tasked with developing future research plans for the Imperial Valley Field Station. The report was ten pages in length and followed recommendations at a May 1, 1968 Symposium on Desert Agriculture.

- A new roster of Research Advisory Committee members was created on June 27, 1969.

Agronomy (Worker)

- Seven research progress reports submitted. This appears to be the first year that the hybrid triticale (wheat/rye) was compared against wheat varieties.

- Non-Technical Publications:

  2) Barley Yields as Affected by Date of Planting and seeing rates. G.F. Worker, Jr., Field Crop Production Handbook, Arizona Extension and Field Crop Highlights, Riverside Agricultural Extension, December 2, 1968.


  5) Wheat Flowering as affected by Date of Planting, G.F. Worker, Jr., Imperial Agricultural Briefs, October 1968

- Technical Publications:


Alfalfa (Lehman)

- A new alfalfa mite was discovered (microscopic) and was suspected as one of the causes for declines in alfalfa stands. Newer techniques were available for developing resistant strains to the Alfalfa weevil as well. The spotted aphid was still presenting problems (See Gardens in The West, Chapter 2 The Little Stranger”). With reinvigorated efforts, it appears that Dr. Lehman had narrowed resistant strains to four and was nearing a time for release of a new strain of alfalfa.

- Non-Technical Publications:

Animal Science (Lofgreen)

- It appears that in January 1968, the term Animal Husbandry ceased to be used and was replaced by the term Animal Science. Also, sheep were removed from manure disposal testing and it appears that the Station began a shift to only testing cattle. As the feed lot was expanding its capabilities, the increased emphasis on cattle was seen to be in response to satisfying local needs. In fact, it appears that only steers were being studied.
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1968-1969 (continued)

Animal Science

- One interesting cattle nutrition study pertained to the inclusion of clay in diets where significant weight gains were observed when adding 2% clay to a high energy ration. Maybe that explains why even today, cattle are seen to be licking the soil in their pens to increase their mineral consumption. The project was referred to as “Montmorillonite in Finishing Rations.”

- There were twelve Animal Science progress reports submitted.

- Technical Publications:

Vegetable Crops (McCoy)

- There were twelve progress reports submitted. This appears to be the first year that trials for wider seed beds for lettuce occurred.

- Non-Technical Publications:
  2) Serious Internal Defect of Lettuce in Imperial Valley During the 1969 Season. Univ. of Calif. Coll. of Agriculture, Ag Exp. Sta., Imperial Valley Field Station, Vegetable Research Mimeo #27, February 20, 1969.
  4) Progress Report-1968. O.D. McCoy, et.al., Research in Vegetable Crops, University of California, Imperial Valley Field Station, Department of Vegetable Crops. 191 pages. A report assembled for the Vegetable Subcommittee meeting of the Imperial Valley Field Station, Farmers Advisory Committee, November 21, 1968.
  6) Modified: Rate of Phosphorous-Fumigation Study with Lettuce at Imperial Valley Field Station, University of California, El Centro, California. O.D. McCoy, J. Lyons, I. Thomason. Imperial County Farm Bureau Monthly, Vol. XLI, No. 12, December 1968.

- Technical Publications:
1968-1969 (continued):

Water Science and Engineering (Robinson):

- Experiment Station Project #2382. "Improvement of Irrigation Management and Salinity control in Imperial Valley." Frank Robinson. Utilizing a solid set sprinkler system, lettuce, onions and radishes were grown in symmetrical patterns instead of conventional bed furrow technique. Highest yield was 1,000 cartons per acre. Lettuce was grown with one-half the water and one-half the nitrogen fertilizer.

- Dr. Robinson made several presentations nationwide about the use of sprinkler irrigation. Notably, in Phoenix, AZ. at the American Society of Civil Engineers, "The Place of Sprinkler Irrigation in the Modernization of Desert Agriculture." Other locations; Tucson, Pomona, Washington, D.C., Riverside, Indio, Brawley and El Centro.

- Non Technical Publications:
  1) Sprinklers-Rate of Application. Imperial Agricultural Briefs. Agricultural Extension. p.4-5, November 1968.

- Technical Publications:
  8) Imperial Valley Field Station. Proceedings of Tile Drainage Conference, Water Resources Center, Imperial Valley Field Station, El Centro, pp. 31-33. November 1968.
1969-1970

- Glen P. Lofgreen was acting superintendent from August 1, 1969 to August 9, 1970. Mr. Worker went on a leave of absence to Kufra, Libya for agricultural study and research in that desert environment.
- Total Visitors to Station: 3,458.
- Six different field days: Cantaloupe, California Cattle Feeders Day (Annual), Veg. Crops, Irrigation, Cereal Grains, Cattle.
- Eight meetings of research committees and sub-committees.
- Station improvements:
  1) Modified building #200
  2) Built three small glass houses
  3) A wood framed shed was added onto the existing potting shed.
  4) Four concrete block storage bins built near potting shed.
  5) Two grain storage bins built in cattle facility
- Feed produced for livestock:
  1) Alfalfa hay 254.2 tons
  2) Sudan hay 96.4 tons
  3) Barley 88.4 tons
  4) Bermuda hay 35.9 tons
  5) Wheat 6.5 tons
- There were thirty four (34) total progress reports submitted for the 1969-170 season.
  Agronomy and Alfalfa (combined)
- There were twelve progress reports submitted.
- Technical Publications:


- Technical Publications:
1969-1970 (continued)

Animal Science (Lofgreen)

- Eight annual progress reports submitted.
- Made thirteen presentations from November '69 through June '70 including college lectures at Kansas State University and Oklahoma State University.
- Non-Technical Publications:

- Technical Publications:
1969-1970 (continued)

Vegetable Crops (McCoy)

- Eight Progress reports submitted.
- Made presentations in Fresno, Ca., Davis, CA., Jefferson City, Missouri and at IVFS, El Centro.
- Non-Technical Publications:


- Technical Publications:

Water Science and Engineering (Robinson)

- Plant temperatures reached 108º in July in surface irrigated areas but were held below 92º by sprinkler irrigation during hottest hours of the day.
- During freezing temperatures, plants were coated with ice by continuous sprinkler application; iced plants remained at 31º while surrounding area dropped to 21º.
- Two-inch thin wall plastic tile at three foot depth, 50 foot spacing improved salt removal from heavy clay soil.
- Two years after slip-plowing heavy clay soil root development was better in slip plow channels.
- Non-Technical Publications:
- Technical Publications:
1969-1970 (continued)

- Technical Publications (Robinson)


1970 - 1971

- Twenty different organizations now utilizing the IVFS facilities, mostly various departments from Davis and Riverside.

- Total visitors to the station: 2,933.

- The specialists were busy with their extension efforts: 81 various presentations were made both on and off the Station.

- Increasing numbers of schools visited the Station, including Imperial Valley college, Cal Poly Pomona, Utah State, Holtville sixth and seventh grade, Hedrick sixth grade.

- George Worker made numerous presentations regarding his sabattical visit to Kufra, Libya. Title of presentations were "The Miracle of sand and water in Kufra, Libya".

  Agronomy (Worker and Lehman)

- New wheat and alfalfa lines were released: D6293 wheat was released as "Anza" and UC52 alfalfa was released as UC Salton.

- Sixteen different progress reports were submitted.

- Non-Technical Publications:


1970-1971 (continued)

Agronomy (continued)


- Technical Publications:


Animal Science (Lofgreen)

- Dr. Lofgreen continued to receive wide attention for his livestock nutrition and environmen-
tal research. Sprinkler cooling was innovative and it was discovered that during periods of heat stress, cattle sprinkled for 60 seconds every half hour experienced more weight gain by 1/2 pound per day than those uncooled and 2/10ths lbs. more than those in a refrigerated barn.

- There were eight annual progress reports submitted.

- Non-Technical Publications:


1970-1971 (continued)


Vegetable Crops (McCoy)

- **On January 15, 1971, a new lettuce variety was released to commercial growers named Calicel.** It had originated at the Davis campus and grown under trials at the Imperial Valley Field Station since 1961-62 and at commercial fields in the Salinas-Watsonville district since 1964. It is related to a Great Lakes variety but matures sooner with a high degree of uniformity and firmer heads than the Great Lakes varieties. The name "Calicel" is a contraction of California and Cellophane relating to the ease with which the heads of lettuce could be "cello"-wrapped after harvest.

- The lettuce variety "Calmar" was also developed at the Imperial Valley Field Station.

- There were ten annual progress reports submitted.

- Non-Technical Publications:


- Technical Publications:

1970-1971 (continued)

- Technical Publications (McCoy)

2) Notice of release of lettuce variety "Calicel" by the University of California, California Experiment Station, Department of Vegetable Crops and Department of Plant Pathology, Davis, California; and United States Department of Agriculture, Agricultural Research Service, Crops Research Division, Beltsville, Maryland. 3 pp. January 15, 1971. (Under program No. 2685, Davis, Vegetable Crops and Departmental Project No. 3423, J.E. Welch, F.W. Zink, and O.D. McCoy). Appendix 1.

Water Science (Robinson)

- With the initiation of Sprinkler Irrigation in 1964, virtually all of the 36,00 acres of commercial lettuce being grown utilized sprinkler irrigation. It was shown to be an effective means of increasing yields and manipulating the size of harvested plants. It was also an effective tool in heat stress in summertime and preventing frost damage in winter.

- Continued research involved further defining advantages of sprinkler irrigation in further stages of crop development such as pink bollworm control through the use of insecticide injection into sprinkler water.

- Non-Technical Publications:


- Technical Publications:


1971-1972

- Total visitors to the Station: 3,026.

- Dr. G.P. Lofgreen named as President of the American Society of Animal Science.

- Non-Technical publications produced at the Station continued to be well received by local farmers. It's part of what is referred to as Research Extension: the release of agronomic data regarding new varieties, yields, hybrids, experimental lines, etc. Publications were progress reports, IVFS crop reports, agronomy notes and local extension service publications, as well.

- Twenty eight people stationed here.

- Each year donations to the farm occurred. This season 324 pounds of seed were donated by thirteen different companies.

- Farm Improvements:

  1) In early 1971, the trailer lab was installed out by the water storage tank (plumbing & electrical added as well).

  2) Building 215 built (pesticide storage)

  3) Chain link fence built around water treatment facility.

  4) Feed mill: ladders installed across top of bulk feed tanks
1971-1972 (continued)

5) March 1971: construction was begun for the Irrigation reservoir. Located in the southwest corner of Area 60, it was intended to be one acre in size and six feet deep containing six acre feet of water (currently it is slightly over five feet deep). Intake and discharge lines were installed. Supply pipeline was installed along west side of area 60 running north to supply water to the five checks; a pipeline was installed along the south of area 60 to area 80 then north to the pump in area 90. Also a pipeline ran east along the south boundary of area 90.

- Research Projects:
  1) 12 projects completed
  2) 18 projects were underway
  3) 6 projects were initiated

- This was typical for most years and as a general rule, the maximum number of projects seemed to be set at fifty.

Agronomy Research (Worker and Lehman):

- Ten annual progress reports were submitted
- A new barley variety (IV 66363) named UC Holt submitted for certification.
- Major accomplishment in rice project was the release of 1,933 new sources of Germplasm in United States and the processing of 1,096 additional varieties. The project was for developing seed bank storage to preclude shortages.
- Triticale and Durum wheat research was increasing.

Non-Technical Publications:

- Non-Technical Publications (Lehman):
  6) W.F. Lehman. Sunflower crop tested in Imperial Valley. Imperial Valley Press.
1971-1972 (continued)

Technical Publications (Worker and Lehman):


Animal Science (Lofgreen)

- There were four Annual Progress Reports submitted.

- Nutrition, management and health of stressed cattle was being performed in cooperation with local cattle feeders, Imperial, Riverside and Davis Agricultural Extension Service.

- Studies were performed to determine the best time to "process" calves; prior to shipment, upon arrival at the yard or 2 to 3 weeks after arrival. Delayed processing caused the poorest performance, cattle processed prior to shipment performed best in two of three tests and cattle processed upon arrival performed best in one of three tests. They all responded equally to showing protection from their vaccinations.

- Technical Publications:


1971-1972 (continued)

Vegetable Crop Research (McCoy)

- Eight Annual Progress Reports submitted.
- Non-Technical Publications:


2) H. Johnson, Jr., O.D. McCoy, D. Woodruff. Vegetable Briefs for California Farm Advisors. The effects of 2 chloroethylphosphonic acid as a harvest aid on fall cantaloupes.

3) O.D. McCoy. Tomato change is seed (illustrated). Monthly Desert Valley Farm News.

Water Science (Robinson)

- One Annual Progress Report was submitted: A cooperative project with Keith Mayberry and David Cudney of I.V. Agricultural Extension Office utilizing sprinkler irrigation for full season with seedless watermelon varieties. It was effective in reducing sunburn.

- Summer testing of various vegetable crops to determine temperature reduction advantage in daily sprinkling to promote germination and growth during a normally unproductive period.

- Non-Technical Publications:


Other research projects

- Entomology, Biological Control, Plant Pathology. Primarily for insect and pest control research.

- An increasing number of researchers from outside the Station were performing projects; individually and in cooperation with Station Specialists. This year showed 43 additional researchers performing research at the Station; individually and cooperatively.

- Photo below: 2012 Nancy Caywood-Robertson with retired UC Davis researcher, Lee Urie, Department of Agronomy and Range Science. In '71, he worked with Dr. W.F. Lehman on a project named "Genetic and agronomic studies of oil crops in Northern California. In February, 2012, he visited our Farm Smart winter visitor program.

Photo courtesy Al Robertson
1972-1973

- Above photo shows the new reservoir in the lower right corner. Four projects for '72-'73 were to install the irrigation system, the reservoir control system, the pumping plant and line the reservoir. Contractors were Co-Val Concrete pipe company of Coachella and Pacific Lining company of Indio, California.

- Cattle handling facility, project # IV-5376A, was for more corrals, six pens for calves, including shades, water and feed bunks and modifying a working chute. Contractor was Johnson Bros. Welding and Blacksmith Shop, Holtville, California.

- Total visitors to the station: 2,835.

- Twenty seven projects: 8 were completed, 17 were in progress, 2 were initiated.

- Dr. Frank Robinson honored as Sprinkler Irrigation Association's "Man of the Year."

- Non-Technical Publications related to research projects:


  2) Worker, Jr., G.F. Mar. 1973. "Grouping of grain sorghum cultivars by days to flowering for Imperial Valley and similar Southwestern desert areas." Agronomy Progress Report No. 50. 3 pages.


1972-1973 (continued)

- Non-Technical Publications (continued):


- Technical Publications:


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1972-1973 (continued)

- Technical Publications (continued):
  
  

1973-1974

- Total visitors to Station: 3,232.
- 52 total talks, tours, reports, field day presentations by Station Specialists.
- The passing of Dr. Ben Madson (March 19, 1887 through January 12, 1974). See Chapter One page six.
- O.D. McCoy, Vegetable Crop Specialist is no longer assigned to the Station. No information available about his new assignment.
- William Houser is newly assigned academic staff member. He was assigned as an Assistant Research Biologist, Division of Biological Control, UC Riverside. Research on Tilapia Fish as weed control in weed infested irrigation canals.
1973-1974 (continued):

- **Technical Publications (continued):**


- **Station Improvements:**

  1) Funding received for sewage upgrade. Water Control Board disallowed use of chlorination and effluent discharge into station tile drains. The Station requested Holtville to allow connection to their sewage plant. No action by city council at this time (connection to Holtville sewage system never occurred. Station installed its own septic field in the "Bull Pen" area with associated pumps and lines).

- **Non-Technical Publications:**


- **Total visitors to Station:** 3,113.

- **Imperial Valley College utilized Station facilities for conducting a college level class in Water-Drainage...once a week for 32 weeks.**

- **Non-Technical Publications:**

1974-1975 (Continued):

Non-Technical Publications (continued):*

For the 1974-75 season there were twenty-seven research projects: two completed, twenty-two in progress and three new projects initiated.

Technical Publications:*


1975-1976

- 40 personnel assigned to IVFS.
- Total visitors to the Station: 5,671.
- Two new lettuce lines introduced: Calrey and Calrico. Developed jointly by UC Davis and USDA.
- Alfalfa variety CUF 101 and UC 102 were first tested. They were bred for resistance to blue alfalfa aphid. CUF 101 was ultimately to prove to be the standard for many years.
- Two new wheat varieties released; Shasta, a common wheat, and Modoc, a promising durum.
- Sprinkler application of RoNeet Herbicide was proven to be effective at controlling weeds with no harmful effect on beets. Data from IVFS helped in gaining state registration of this method of application.
- Asparagus variety UC 157 released for commercial use.
- IVFS received a visit from UC President David Saxon, Vice President James B. Kendrick, Jr., Regent William F. Smith, Chancellor Ivan Hinderaker and party. Date of visit was February 11, 1976.
- First time a desktop computer was purchased.

Station Improvements:
1) Reference barn was remodeled: lab space was separated from livestock feeding area.
2) Cattle pens remodeled: additional concrete walks and floors poured; manure pond doubled in size.
3) A 12" levee with a holding pond was constructed around corrals to retain rain runoff.
- IVC expanded use of IVFS facility for college class instruction: 86 days of classes held; Fertilizer, Weed Control, Vegetable production.

Non-Technical Publications:
* Above entries from 1975-76 IVFS Annual Report, G.F. Worker, Jr.

Photo from 1975-76 IVFS Annual Report, IVFS Library courtesy G. F. Worker, Jr.
1975-1976 (continued)

- Non-Technical Publications (continued):*

- Technical Publications:*
1975-1976 (continued):

- Technical Publications (Continued): *

1976-1977

- Total visitors to Station: 4,154.
- Tropical Storm "Kathleen" occurred on September 10, 1976: 2.66 inches total with 1.80 inches in less than two hours. Very little damage.
- The official certification of Alfalfa variety CUF 101 was done in record time. A field station and perhaps experimental release record was set with the total time from selection in the field to availability to farmers was **36 months**!
- Largest field planting of rice introduction lines was planted in June 1976.
- From the Canadian Province of Alberta, The Alberta Provincial Research Department from Lacombe, Alberta, is new to IVFS. A Wheat, Barley and Triticale seed increase program was started and is ongoing as of the DREC Centennial in 2012. Canadians benefit from two growing seasons per year for improved seed certification.
- Research utilizing Tilapia fish for weed control resulted in a ten-fold savings in canal weed control.
- Donations to Station from twenty sources amounted to a value of $7,608.43.

Station Improvements:

1) August 1977: Paved areas around main office were repaired with chip seal coat.

2) Building 302: new lightweight garage door replaced old heavy wooden door.

3) June 1977: Feed mill remodeling contract let to Hall's Construction Co.: raise original grain tanks, install weigh hopper and new mixer, additional storage bins.

4) Sewage system modification: plans submitted for septic tank and leach field system. Construction completed in fall 1977.

* Above entries from 1975-76 IVFS Annual Report. G.F. Worker, Jr.
Development - A Chronological Timeline

1976-1977 (continued):

- Non-Technical Publications:

  "Non-Technical Publications by Station Personnel."


  Technical Publications:

  "Technical Publications Derived from Research at Imperial Valley Field Station."


  1977-1978:

  - Total visitors to the Station: 3,098.

  - The second fifty year storm hit in less than a year: Tropical Storm "Doreen" caused $17,500 damage to Station and $31 million in Imperial County. Total rainfall at IVFS was 5.12 inches.

  - Michael J. Prokop was new animal science staff specialist. He replaced Dr. Glen P. Lofgreen.
1977-1978 (continued)

- Station Improvements:

1) Roofing repairs: Main office, all residential roofs were repaired and covered with a white reflective covering of "snowcoat". Contractor, K. Hess.

2) Repaired and repainted cattle reference barn: ductwork, roof, exterior walls.

3) Replaced white picket fence along south of Station with 4 foot high green chain link fence: 1,200 feet

4) Feedmill alterations: added more overhead ingredient bins, improved ingredient delivery of existing bins, replaced mixer with one ton capacity. Architect, Ben Beard, city of Industry, contractor, Hall's Construction, Imperial.


6) Unleaded gasoline storage tank (1000 gallons) installed underground. Service Station Maintenance, El Centro.

7) Reservoir sidewall stabilized with hydrated lime and recompacted. Installed overpipe and inlet/outlets were modified. Contractor, Donald Dresselhaus, Vista, CA.

8) Sewage system alteration: additional septic tank, a lift station, 21" PVC pipeline to leach field on east side of station between IID drain No. 4 and Ash Canal Lateral #46 to leach field. B & B Pipeline, Coachella.

9) Painted feedmill exterior, residence interiors.

10) Physically handicapped access to main office: front door and landing, northeast landing entrance and new restrooms.

- Total donations to station valued at $5,500. 95.

- Twenty eight research projects: six completed, twenty one in progress, one initiated.

Non-Technical Publications:

## DEVELOPMENT - A CHRONOLOGICAL TIMELINE

### 1977-1978 (continued)

**Technical Publications (continued):**

- **1978-1979**
  - **Total visitors to Station:** 4,213
  - **Dr. James Welch, lettuce breeding specialist from the Davis campus since 1955, retired from the University of California. Seven new lines of lettuce were set to be released in 1980. The following page has been inserted as a tribute to Dr. Welch’s lettuce research.**
  - **Dr Hauser no longer on IVFS Staff. No information available on his relocation.**
  - **Irrigation water costs now at about $5.73 per acre foot.**
  - **Station Improvements:**
    1. Reservoir overflow pipe replace with cement drop box.
    2. Air conditioning towers replaced with redwood and plastic frames.
    3. Cattle facility roads were covered with gravel.
    4. Sewage plant lift station had a five foot high redwood fence installed.
    5. Corporation Yard (The "Bull Pen") had a ten foot fence installed (included two rows of barbed wire).
    6. Main office had modification to its water system by isolating lab water from rest of water in building (installed separate water heater and lines).**
  - **Fire detection alarms installed in nine service buildings.**


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**1978-1979**

- **Total visitors to Station:** 4,213
- **Dr. James Welch, lettuce breeding specialist from the Davis campus since 1955, retired from the University of California. Seven new lines of lettuce were set to be released in 1980. The following page has been inserted as a tribute to Dr. Welch’s lettuce research.**
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DEVELOPMENT - A CHRONOLOGICAL TIMELINE

The above entry is from the 1978-79 IVFS Annual Report. G.F. Worker, Jr. This progress report is typical of the documentation necessary conducting research at a University of California Research Facility. This particular one is of interest for two reasons: 1) Dr. Welch and his team developed seven new lines of lettuce but he retired just before they were released; 2) Lettuce is a major crop for Imperial Valley. Another interesting aspect of this project as reported on page 72, is the importance of varietal development in order to "stagger the harvest". Date-of-Planting Research has always been an important aspect of DREC research in order to determine when the best date of harvest would occur. Best date of harvest is important in order to coincide with packing shed schedules and shipping to market requirements.

PROJECT LEADER'S ANNUAL PROGRESS REPORT

IMPERIAL VALLEY FIELD STATION

1. Station Identification No.: 61

3. Experiment Station Project Title:
Lettuce Breeding

4. Project Leader:
James E. Welch

5. Period Covered: 7/78 - 6/79
by this Report: mo. yr. mo. yr.

6. Progress Report: (Progress during report period toward reaching objectives of this research)

Two hundred and fifty-six lettuce breeding lines and 45 commercial varieties were included in the 1978-79 planting. The experiment involved 1.8 acres but the overall area needed for early irrigation by sprinklers and subsequent irrigation by furrows was 2.6 acres. Two hundred and fifty-one lines were saved for seed production. The seed crop in each line was produced by about 30 carefully selected plants. The plants were not caged during flowering and the seed produced in each line was mixed. Unfortunately, both seed yields and seed quality were very poor. Germination tests on a large number of randomly chosen lines showed that seed were dead. Poor cultural practices in growing, harvesting, and handling the seed crop undoubtedly were involved in the failure.

Lines that appear to have new cultivar potential, based on their performance at the station, are planted in trials of commercial fields. Three commercial varieties -- 'Calmar UC' ('Calmar 60', 'Calmar W'), 'Calleye', and 'Calrico' -- and 13 breeding lines were chosen for tests in Imperial Valley fields in the 1978-79 season. Trials were conducted at 5 locations. The most promising lines in these experiments were 62032, 640054, 640161, 740199, 740159, 760224, 770135, and 770154. Four of these entries -- 640054, 640161, 740199, and 760224 -- were promising in similar tests in the previous season.

Seven lines -- 62032, 640054, 690115, 730199, 740159, 760205, and 760223 -- have been chosen for release as new cultivars. These lines have been tested in commercial fields in California Central districts -- Salinas-Watsonville-King City, Santa Maria-Guadalupe, and Central San Joaquin Valley -- and Imperial Valley for periods varying from 2 to 16 years. About half the lines are better suited to Central districts and the other half to Imperial Valley. The release notice will give the name, experimental designation, origin, adaptability, description, and outstanding characteristics of each introduction. The announcement will appear early in 1980.

7. Publications Related to Station Project During Report Period:


(This report will be duplicated as submitted for inclusion in Station Annual Report)
1978-1979 (continued)

- Non-Technical Publications (continued): *

- Research Projects: 46 total, 9 completed, 29 underway, 8 initiated.

- Technical Publications: *

1979-1980

Non-Technical Publications Derived from Research at Imperial Valley Field Station


Total visitors to Station: 3,980. Special visitors included James Kendrick, VP Agriculture; Dr. Thomas Rivers, UCR Chancellor; W. Mack Dugger, Jr., Associate Director; Jerome Siebert, Director, Cooperative Extension.

- October 15, 1979: earthquake occurred. Magnitude was 6.4 according to Southern California Earthquake Center and is still talked about today. The aftershocks were sufficient to cause residents to sleep outside. Extensive repairs necessary to eight buildings and structures.

- Two metal frame roof sheds were constructed: one along east side of main office and one on west side of shop building.

- Education and Extension: reports, talks and tours amounted to 119 separate events by the four staff specialists. Additionally, there were 38 news media articles published.

Non-Technical Publications: *

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Non-Technical Publications: *
1979-1980 (continued)

- Research projects: 42 total; 5 completed, 29 underway, 8 new.

- Technical Publications:
  * Above entries are from 1979-80 IVFS Annual Report. G. F. Worker, Jr.

Regarding the release of seven new iceberg lettuce varieties, the 1979-80 IVFS Progress Report for the lettuce project indicated the following:

1) "Alamo" - best for Dec 15 - Mar 1 harvest.

2) "Anza" - best for Jan 15-Mar 10 harvest.

3) "Laguna" - best for Jan 15-Mar 10 harvest.

4) "Ramona" - best for Central Coast harvest Aug 15-Sep 30, and Imperial Valley harvest during Dec 10-Jan 15.

5) "Rita" - best for Central Coast harvest Aug 15-Sep 30 and Imperial Valley harvest Jan 1-Jan 20.

6) "Vega" - Best for Central Coast district harvests Aug 15-Sep 30, Central San Joaquin Valley harvests Oct 15 Oct 30, Imperial Valley harvests Dec 15-Feb 1.

7) "Vista" - best for Central Coast Districts Aug 15-Sep 30 harvest, Imperial Valley harvest Dec 20-Jan 10.

- Succeeding Dr. James Welch's was Larry Rappaport, acting project leader and George Kihara, project administrator. IVFS personnel involved in project were Mr. George Worker, Jr., agronomist and Richard Tamayo, Principal Superintendent of Agriculture.

1980-1981

- Total visitors to Station: 3,399.
- Eight field days: Broccoli, Lettuce (2), Carrot, Alfalfa, Squash, Sudangrass, Melon.
- New Academic Staff Specialist assigned to IVFS: Yi Wu Chen, Associate in the Experiment Station, Department of Agronomy and Range Science, University of California, Davis.
- Station Research Advisory Committee members listed were:

- A private owner furnished a 20' x 20' plant growth chamber to IVFS and it was modified to include a new wall, insulation, cabinets, electrical, plumbing, HVAC. Installed in Building 200.

- Non-Technical Publications:


1981-1982
• Total visitors to the Station; 3,753.
• Academic Staff changes:
  1) Newly assigned; Dr. Richard A. Zinn, Assistant Professor, Department of Animal Science, University of California, Davis.
  2) Transferred: Dr. Michael Prokop, Animal Science.
  3) Transferred: Yi Wu Chen, Agronomy.
• Non-Technical Publications: *
  Biological Publications
  Grain sorghum trials in 1981 at Imperial Valley Field Station, Imperial County Ag. Briefs. May, 1982. G. F. Worker, Jr.
  Breckelt variety trial, Imperial Valley Field Station. Imperial County Ag. Briefs. Apr. 1982. K. S. Maybury.
  Warm wheat 1981, Imperial County, summary of three plant rate studies. Imperial County Extension May 29th. A. F. Van Haren.
  Plant nutrition - wheat. 1982. Order P. Van Haren and Sun Patapoff, MS.
  Marvil, F. P. Harvester and control with granular insecticides. NDF 501. 1982-89.
  Marvil, F. P. Control of annual grasses, prairie weeds, and control, with granular insecticides. NDF 501. 1982-89.
  Research Projects:
  53 total: 4 completed, 39 current, 10 new.
  Plant entomologist Eric Natwick, Cooperative Extension, begins his career in the Imperial Valley.
  Vince Rubatzky first appears as project member in carrots. He still comes to The DREC for the USDA Annual Carrot field day.
  IVFS still producing its own feed: 524.5 tons.
  Irrigation water cost now at about $8.00 per acre foot: $11,287.12 / 1,408 acres = 8.00 per acre foot.
  First reference made to the problem with Whitefly infestations.

Technical Publications: *


1981-1982 (continued)

- Technical Publications (continued):
  - Release of *Helianthus germarii* Pool III (HG 6P118).
  - Release of *Helianthus germarii* Pool IV (HG 4P 71).
  - The botanical description and diagnostic characteristics of *Helianthus*.
  - The botanical description and diagnostic characteristics of *Malus*.
  - The botanical description and diagnostic characteristics of *Fragaria*.

- Total visitors to Station: 3,750

- Station Improvements:
  2) Re-roof Buildings 200, 203.
  3) Laser Levelled fields 31, 32, and part of 21.
  4) Gravel applied on roads around northern roads of Station.
  5) Divided livestock feed pens 40W divided in half. Pens increase from 8 to 16. Improves replication flexibility.

- New Director, Field Stations, visits Station (unable to archive information at time of publication)

- Research Projects at Station: 44 total. *

1982-1983

- Station Improvements:
  2) Re-roof Buildings 200, 203.
  3) Laser Levelled fields 31, 32, and part of 21.

- New Director, Field Stations, visits Station

- Research Projects at Station: 44 total. *

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Current Projects:

- Improving varieties and culture of sorghum, corn, and sudangrass in the low desert valleys. Project No. D-ARS-3317-H. George F. Kowker, Jr.
- Genetics and improvement of cereal crops - emphasis on wheat and triticale. Project No. D-ARS-3116-H. C. Q. Gubler.
- Disease and nematode control in vegetables and melons. Project No. CEFS-0026. Frank Laemmle.

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* Research Projects at Station:

1982-1983 (continued)

- Research Projects (continued):

  Biological control of pink bollworm - parasite release. Project No. R-SCI-2345. E. P. Lengler.
  Frank Laemlein.
  Rosielile.

Projects Initiated:

  Renewable energy production in the low desert. Project No. CES-0008. Keith S. Mayberry.


- Nontechnical Publications:

  MAYCHNICAL PUBLICATIONS

  Worker, George F., Jr. 1982. Earliness trial results of the Imperial Valley Field Station. Imperial County Agr. Brie. October.
  Worker, George F., Jr. 1982. Soil fertility and hybrid yields at Imperial Valley Field Station. Imperial County Agr. Brie. March.

- Technical Publications:


DEVELOPMENT - A CHRONOLOGICAL TIMELINE

1982-1983 (continued)

- Technical Publications (continued): *


Note regarding the reprints of research projects and Technical Publications:

On the previous page a reprint of research projects was presented in order to provide readers a sense of the type of research projects occur at IVFS. That was followed by a reprint of Technical Publications. Those technical publications are the articles that were published in technical journals to provide documentation and dissemination (extension) in written format of the specific research project. In the interest of time and space consideration, titles of research projects have been omitted but readers can be assured that if there is a Technical Publication presented, there was a research project at IVFS on that subject.

1983-1984

- Total Visitors to Station: 3,596.

- Station has new name: Imperial Valley Agricultural Center (IVAC)

- Meetings began with the Agricultural Building Committee for new Cooperative Extension Building at IVAC

- Station Improvements:
  1) Ceiling of Building 103 (The Ittner Reference Barn) was power washed, primed and painted with epoxy paint.
  2) The Lath House (102) beams were replaced with galvanized beams.
  3) The east bank of DREC Irrigation Reservoir was filled, shaped and a slab of concrete was installed (10' x 10' x 8').
  4) The two oldest cattle feed storage tanks were wrapped with steel bars for reinforcement.

- Total Number of Research Projects: 44. 13 completed, 23 were ongoing, 8 were new.

- Nontechnical Publications: *


1983-1984 (continued)

- Nontechnical Publications (continued): *


- Technical Publications:


- Technical Publications:


1984-1985 no report on file

1985-1986

- April 1985 - Mr. Charles Dunn is new director of the Imperial Valley Agricultural Center (IVAC). George Worker remains as Specialist in Agronomy until his retirement on June 30, 1987

- Total visitors to the Center: 2,424.

- First discussions regarding CIMIS Weather Station installation which finally occurred in 1989.
DEVELOPMENT - A CHRONOLOGICAL TIMELINE

- Research Projects: 93 total: 26 completed, 44 ongoing, 23 new.

- Nontechnical Publications: *


Technical Publications: *

DEVELOPMENT - A CHRONOLOGICAL TIMELINE

- Technical Publications (1985-86 continued):*


1986-1992

- Beginning with the 1986-1987 season, annual reports ceased to be written. Information regarding station improvements and operations was no longer being reported. The extension of researchers\' education to the community at large ceased to be documented. The tabulated listings of professional publications, technical and nontechnical was no longer available.

- Research projects were continuing but no reports of Research Advisory Committee Meetings and associated results were found.

- Mr. Worker\'s position as agronomist was not replaced upon his retirement in 1987.

- In 1989, Dr. William F. Lehman sadly passed away and was not replaced by another agronomist.

- In 1992, Dr Frank E. Robinson retired and his position was not replaced at the DREC (he remained on until 1995 in order to finish a project he had started).

- No Vegetable Crop specialist had been assigned to the DREC since Orval McCoy left in 1973.

- Dr. Richard Zinn, Animal Nutritionist, essentially became the only University of California staff specialist remaining who is assigned to the DREC.

- Based on the 1985-1986 Annual Report, DREC research continued with Station researchers, but an increasing number of additional projects were undertaken by as many as twenty one researchers not assigned to the DREC including Imperial County Cooperative Extension Agents utilizing DREC facilities including Eric Natwick, Frank Laemmlen, Alfonso Durazo, III, A.F. Van Maren, Keith Mayberry and Juan Guerrero.

- 1992: Khaled M. Bali, Ph.D. (Soil Science; Soil Physics) is assigned to Imperial County Cooperative Extension as a Farm Advisor, Irrigation & Water Management.

- The Imperial County Cooperative Extension Service moved their Office to the DREC in 1989, a ten year project since the earthquake of \'79 destroyed the Extension Building in El Centro.

1993-1999

- Beginning in 1993, Research Advisory Committee meeting notes are on file at the DREC containing project requests.

- Additionally, it appears that the Industrial Farm Advisory committee had ceased to conduct any meetings.

- It appears that around 1990, Silver Leaf Whitefly infestations of many crops were becoming a very serious problem and alfalfa varieties were being developed that showed improved resistance to whitefly.

- In the 1993-1994 season a major farm improvement project involved the construction of 32 additional pens for livestock nutrition studies; all labor performed with station personnel, graduate students and family members of Dr. R.A. Zinn.
1993 Feedlot Project
Photos courtesy of R.A. Zinn
Photos courtesy R.A. Zinn

2012 AERIAL PHOTO OF FEED LOT AND THE "DREC CENTENNIAL FIELD." (SEE INSET)

PHOTOS COURTESY OF AL ROBERTSON AND BOB DOUTHITT - MAY 2012
2000 - 2012

- Station Improvements:

1) New Science Building.

Approval was received from ANR via Facilities Planning and Management at UC Davis for the construction of a new 5,000 square feet laboratory to replace the one in the main headquarters building and an old mobile home type trailer. Ultimately completed in early 2005, it accommodates animal science, water and soils, plant pathology and entomology.

2) Pressurized Irrigation System.

Renovated and upgraded the DREC Irrigation system in order to conserve and better manage irrigation water. Approval was received in 2001, it was funded in 2003 and completed in 2006. An extensive project, it involved replacing exposed concrete ditches with underground PVC piping and incorporating a pressurized pump and filtration system in order to provide pressure irrigation to 190 acres of the farm. The gravity irrigation was retained and modified for appropriate projects as well. Additionally, the water supply to the five acre foot reservoir was modified to incorporate an underground PVC supply line located at the southwest corner of the DREC proceeding to the reservoir running parallel to the existing Ash Lateral Canal. Not only was the farm better able to manage pressurized irrigation needs, evaporation and silt accumulation issues were greatly mitigated. Imperial County was at a point where dissolved solids in agricultural run-off water were becoming important issues. Referred to as TMDL, or Total Maximum Daily Load, local farmers were asked to voluntarily take measures to be more aware of and control TMDL. The Underground Irrigation Project at the DREC was very significant in reducing TMDL and has drawn praise from local farmers.

In addition to the existing water tank and water storage tanks, an additional 30,000 gallon water storage tank was installed along with a new micron filtration system.

4) Renovation of Building #201 (2007-2009). The building had been converted in 1966 to a dry lab and storage area and was in need of structural renovation before conversion to Farm Smart use; an educational outreach program started in 2001. The renovation included earthquake reinforcement of the entire structure with engineering design provided by UC Davis Facilities and Planning Department. Interior renovation included a 160 person conference room, a small audio-visual/electrical service room, a kitchenette room with sink, cabinet storage, freezers and refrigerators, and a Farm Smart Office. The second floor was remodeled to provide office space for Staff Research Associates.

- Sugarcane Research Project: 1997-2004

An ongoing project since 1997, DREC Director Paul Sebesta conducted research regarding the development of sugarcane as an ethanol source for a gasoline additive which came with the elimination of MTBE as the prevailing additive for cleaner burning gasoline. Production of sugarcane and ethanol in Imperial valley was deemed highly feasible if ethanol production facilities could be located here. That reality never occurred and about 2004 the project ended. However, there were additional benefits realized with sugarcane research. Building products that essentially replaced wallboard and "MDF" sheathing were developed by Canadian researchers. Also, a foundation was established to develop more research into Bio-energy crops.

- Farm Smart Program: 2001-Present

Created by Nancy Caywood- Robertson in October of 2001, Farm Smart is an Agricultural Literacy Program. It came into being as a result of a National Science Foundation Grant for conducting a three year Agricultural Science Educational Program for middle school students. At the same time, Nancy implemented Farm Smart Educational Field trip programs for learners of all ages and the programs proved so popular that the Imperial Irrigation District has donated $50,000.00 annually since 2003 for the continuation of Farm Smart Education. The photos on the left of this page show the current facilities enjoyed by Farm Smart. The early years of Farm Smart Programs had presentations in the conference room of the main headquarters.
DEVELOPMENT - A CHRONOLOGICAL TIMELINE

Farm Smart Program (continued)

The early years of Farm Smart Programs had presentations in the conference room of the main headquarters. During the first year, attendees to Farm Smart Programs numbered 6,493 including elementary school students and a small number of winter visitors. Popularity and enrollment grew rapidly to a point that larger facilities were essential. The move into the renovated "Granary" in 2009 has provided much greater programing flexibility and capacity. Annually, Farm Smart reaches out to about 7,000 students from local and regional schools and about 3,000 winter visitors. The revenue generated from all Farm Smart Programs allows it to be self-sustaining which is a great benefit for programming creativity and flexibility.

The mission of the Farm Smart Program is to educate people of all ages about natural and renewable natural resources, including agriculture, so they can be conserved, managed and available for future generations.

FARM SMART PROGRAM DESCRIPTIONS

October: "Alfalfa Is Ice Cream In The Making"

Utilizing the above phrase authored by UC Davis Agronomist Dan Putnam, this program involves students in understanding cattle nutrition and comparing it to human nutrition. A fun video entitled "From Moo to You" is presented. Students are then shown a cow's diet and actually milk a model cow named "Bessie". A hayride then takes students to see cattle up close and observe actual feedlot operations as well as observing an alfalfa field. Following the hayride students enjoy lunch on the farm before returning to school. Teachers are provided with handouts including a resource guide from "California Ag In The Classroom", activity booklets for students and a music CD with an accompanying booklet containing lyrics to songs on the CD and expansion activities for each subject. Prepared by volunteer Al Robertson, this cd is entitled "AGRILICIOUS FARM SMART MELODIES".

November/December: "Fall Festival"

This program focuses on the fall harvest season of early America and stresses the importance of corn in the diets of our ancestors in early American history as well as our diets today. Students are shown how corn is incorporated in all farm animals diet. They learn how to harvest corn, shuck corn, and how to dry it so it can be shelled by hand and/or by machine. Students then try grinding corn into corn meal hand and by machine. After all that students enjoy delicious "Johnny Cakes" made from a delicious corn meal recipe. They are shown how communities would come together for a "Hoedown" at the end of the harvest time. Then students go on a hayride to the FARM SMART Corn Maze to explore corn plants and learn corn trivia along the trail.
Farm Smart Program (continued)

January-March:

"The Winter Visitor Program".

FARM SMART advertises to all RV Parks in the region and winter visitors then call to make reservations for a visit to the DREC for about five hours of Agricultural Education in a relaxed, fun setting. After registration, coffee and popcorn are served until the program starts. After opening remarks, a food demonstration is presented and guests enjoy samples of the food prepared. Visitors are divided in two groups. One goes for a hayride learning about projects at the DREC then harvest produce from the Farm Smart Garden. The second group goes into the "Granary" and is treated to a "Crops of the Valley" presentation. Groups reconvene for lunch where they are served a large chef salad, sodas or water and dessert. Live music is performed by Nancy and Al for about 45 minutes during lunch (guest musicians even perform from time to time). After lunch groups "flip-flop" and attend the program the other group saw in the morning. At the completion of the afternoon presentations, the entire group convenes for "ice cream on the patio". Numerous door prizes are then raffled off followed by closing remarks. Door prizes are donated by local businesses, organizations and Al Robertson. Seeds for the Farm Smart Garden are donated by Golden Valley Seed Company and transplants are donated by Keithly-Williams Seed Company.

IMAGES OF THE WINTER VISITOR PROGRAM

All Photos Farm Smart Collection

Registration

Coffee & Popcorn: Breakfast of Champions

Food demonstration using California Products.

DREC Farm Tour

Bountiful Harvest!

"A broccoli for my birthday? Thank you honey."

This is how you make a siphon hose irrigate a field

Indoor Gardening display

Another door prize winner

A wonderful field trip... PLUS Ice Cream, Lunch, Produce, Coffee and Popcorn. Great Time. Great price!

Above and right: Preparing Farm Smart Garden with transplants. The work of these General Assistance Helpers is beyond description.

Great Time. Great price!
The Winter Visitor Program has become very successful and popular largely due to the efforts of Winter Visitor Volunteers who actually park their RVs in the DREC parking lot. Numbering at least eight, they assist in every aspect of the program; registration, prepare and serve popcorn, coffee, lunch, package door prizes, collate and handout educational literature associated with the program, clean up after programs and just about anything else that comes up during their stay at the DREC. Some volunteers even stay after the Winter Visitor Program to assist in the spring Farm Smart Program for students.

Throughout the year volunteers contribute significantly to the overall success of Farm Smart. In the 2011-2012 season, total volunteers numbered 37 and their combined service amounted to 4,428 hours.
March/April: "My Agri-Licious Food Pyramid"

This program stresses the relationship between agriculture and nutrition. Students are shown that nutrition starts on the farm with a video titled "Hard Hat Harry, Down on the Farm". A Farm Smart bracelet is made by students which reinforces the essential elements of what makes plants grow. Water conservation is explained then reinforced with a song "Dudley Dew Drop". Soil types are explained. The distinction between fruits and vegetables is explained and reinforced with the "Crunch Munch" song. Nutrition concepts are demonstrated with an adaptation of the story "Stone Soup". Students are then provided with a "Shaker Salad" containing an item from each of the food groups on the food pyramid. Students crawl through a Farm Smart Tunnel to view a display of life under the soil. A hayride follows where students enjoy harvesting from a Farm Smart Garden.

May: "Insects, The Good, The Bad and the Buggly".

Students learn the difference between insects and bugs. The anatomy of a bug is demonstrated with a "Build-A-Bug" Snack made from vanilla wafers, raisins and pretzel sticks. The song "Buggity Bug" reinforces that bugs have a head, thorax, abdomen, six legs and get their food by the use of their proboscis. A very popular video titled "The Honey Bee Files" is shown providing an enjoyable way of learning about the importance of bees. A pheromone activity reinforces methods bees utilize to communicate and swarm. Beeswax candles are then made as a group activity. Chemical safety is introduced as it pertains to agricultural and residential needs then reinforced with the appearance of "Mr. Chemical Man". Harmful insects such as mosquitos are discussed then ecosystems are discussed to complete the understanding of the program. A "Soggy Bottom Punch", complete with a gummy worm is served as a refreshing drink before the hayride. On the hayride students harvest radishes, squash, carrots and witness plenty of bugs in the field. The "Lady Bug Beetle" is very popular.
Farm Smart Program (continued)

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FARM SMART IN THE COMMUNITY
COURTESY OF THE FARM SMART PHOTO COLLECTION
More UC DREC photos
All taken in 2012 except visit from UC President Dynes

Linda Sanchez and Sammie Caywood

Nancy & Al at Yuma Crossing for Western Days

Allison Gunderson and her Centennial Baby Max

Rosie & Mom from Camacho’s

Kay Hamilton, Jr.

Hugh Kittisch

Dr. Saadhi on Sabbatical from Baghdad

2005 Visit from UC President Dynes

Nancy, Al & Laura Fox, 2010

Stephanie Collins, Al & Nancy
CURRENT PROJECTS AT THE DREC

For the current season at the DREC there are 26 projects in various stages: 5 are new projects, 10 are in a three year review stage to determine whether or not they will continue, 11 are continuing or ongoing projects.

- New Projects
  1) The Effect of Hydrogel on Water Use Efficiency: Project leader, Dr. Khaled Bali, (Interim DREC Director, County Advisor UC-CE and Farm Advisor, Irrigation and Water Management
  2) Wheat Fertilization Practices in Imperial Valley.
  3) Castor Beans: Project Leader, Dr. Steve Kafka, UC Davis.
  4) Heat Tolerant Lettuce/Spinach: Project Leader, Dr. Beiguan Mou, USDA, Fresno.
  5) Eco-Agra: Project Leader, Dr. Richard A. Zinn, DREC Academic, Professor/Nutritionist, Animal Science Department, UC Davis.

- Projects Up For Three Year Review
  1) Jatropha for Bio-Diesel: Project Leader, Dr. Sham Goyal, UC Davis.
  2) Sweet Corn: Project Leader, Eric Natwick, UCCE Farm Advisor, Entomology.
  3) Alternative Forage Crops for the Desert: Project Leader, Dr. Dan Putnam, UC Davis.
  4) Insect Management in Cucurbits: Project Leader, Eric Natwick, UCCE Farm Advisor.
  5) Insect Management in Alfalfa: Project Leader, Eric Natwick, UCCE Farm Advisor.
  6) Carrot Germplasm: Project Leader, Joe Nuñez, UCCE Kern County and Dr. Phil Simon, USDA, University of Wisconsin.
  7) Whitefly Alfalfa Resistance: Project Leader: Dr. Larry Teuber, UC Davis.
  8) Agronomic & Genetic: Project Leader, Dr. Larry Teuber, UC Riverside.
  9) IR 4 Projects: Project Leader, Eric Natwick, UCCE Farm Advisor.
  10) Cysnematodes in Sugar beets: Project Leader, Dr. Becky Westerdahl, UC Davis.

- Continuing Projects
  1) Cole Crops Insects: Project Leader, Eric Natwick, UCCE Farm Advisor.
  2) Alfalfa Yield Trials: Project Leader, Dr. Dan Putnam, UC Davis.
  3) Lettuce Insects: Project Leader, Eric Natwick, UCCE Farm Advisor.
  4) Onions: Project Leader, Erick Natwick, UCCE Farm Advisor.
CURRENT PROJECTS AT DREC

Continuing DREC Projects

5) Wheat Breeding for the Imperial Valley: Project Leader, Dr. Jorge Dubcovsky, UC Davis.

6) Farm Smart Educational Outreach Program for Students and Winter Visitors: Project Leader, Nancy Caywood-Robertson.

7) Multisite Evaluation of Sorghum and Other Energy Crops: Project Leader, Dr. David Grantz, UC Riverside.

8) USDA Melons: Project Leader, Dr. Jim McCreight, USDA, Salinas, CA.

9) Automation of Surface Irrigation Systems: Project Leader, Dr. Khaled Bali, Interim DREC Director, County Advisor-UCCE, Farm Advisor, Irrigation and Water Management.

10) Canadian Grain: Project Leader: Dr. Mike Oro, James Helm, Dave Dyson Alberta Agriculture Department, Provincial Research, Lacombe, Alberta, Canada.

11) Feedmill Rate Projects (10 Sub projects): Project Leader, Dr. Richard A. Zinn, DREC Academic, Professor/Nutritionist, Animal Science Department UC Davis.
The heritage of the research at the Desert Research and Extension center is unique in that the property also houses the offices of the Cooperative Extension Service for Imperial County. Since its creation, Cooperative Extension service research has always been a vital part of research conducted at the Desert Research and Extension Center. A strong earthquake in 1979 resulted in the Extension Service Offices eventually relocating to the Desert Research and Extension Center in 1989.

Before the Cooperative Extension Service moved to the Desert Research And Extension Center the center was named Imperial Valley Agricultural Center. As shown in chapter three, and on page xi of the introduction, numerous University of California Academic Staff were assigned to the Center. During the 60s, 70s and 80s, there were as many as five researchers assigned here at one time from the Departments of Agronomy, Animal Science, Irrigation and Water science, Vegetable Crop and Plant Science and Division of Biological Control.

The results of research from 1953 through 1985 have been included in chapter three and were presented as Technical Publications. Since that time the results of research projects have been archived in various technical data base collections accessible by the internet but not here at the Research and Extension Center. This chapter will focus on the technical publications of 1) UC Davis researcher currently assigned at the Desert Research and Extension Center; Richard Zinn, Animal Science Department, UC Davis 2) Cooperative Extension Farm Advisor, Khaled Bali, Irrigation and Water Management 3) Eric Natwick, Entomology.

While the information may not include every publication they've published, the intent is to portray at least a large sampling of publications resulting from their research projects at the Desert Research and Extension Center.

Additionally, the author would be remiss in not acknowledging the efforts of other researchers who, while not assigned here, have performed numerous and significant research projects here as well.

The previous chapter illustrated the current projects in process at the DREC. In addition to researchers assigned to DREC, off - farm researchers listed were:

- Dr. Jorge Dubcovsky, UC Davis
- Dr. Sham Goyal, UC Davis
- Dr. David Grantz, UC Riverside
- Dr. Steve Kafka, UC Davis
- Dr. Jim McCreight, USDA, Salinas
- Dr. Beiguan Mou, USDA, Fresno
- Dr. Joe Nuñez, Kearney REC
- Dr. Dan Putnam, UC Davis
- Dr. Phil Simon, USDA, Madison , WI.
- Dr. Larry Teuber, UC Davis
- Dr. Becky Westerdahl, UC Davis

In addition to researchers previously listed project leaders who have conducted research at the DREC between 1985 and the present include:

- Dr. Richard Bottoms, UC Davis
- Carl Bell, I.C. Cooperative Extension
- Juan Guerrero, I.C. Cooperative Extension
- Donna Henderson, I.C. Cooperative Extension
- Gerald Holmes, I.C. Cooperative Extension
- Frank Laemmlen, I.C. Cooperative Extension
- Keith Mayberry, I.C. Cooperative Extension
- Chris McDonald, I.C. Cooperative Extension
- Herman Meister, I.C. Cooperative Extension
- Dr. Paul Sebesta, UC Davis
- Mark Trent, I.C. Cooperative Extension

The following pages are samplings of publication titles by current researchers stationed at DREC.
KHALED M. BALI
Irrigation/Water Management Advisor
County Director, UC Cooperative Extension-Imperial County
Interim Director, UC Desert Research & Extension Center
University of California Division of Agriculture and Natural Resources
1050 E. Holton Rd. Holtville, CA 92250
E-mail: kmbali@ucdavis.edu
http://ceimperial.ucdavis.edu
http://ucanr.org/sites/desertresearch
Tel: 760-352-9474 Fax: 760-352-0846

EDUCATION
Ph.D. (Soil Science; Soil Physics), University of California, Davis. 1992.
M.S. (Water Science; Irrigation and Drainage), University of California, Davis. 1987.

SPECIALIZATIONS
Water Resources Management and Sustainability of Irrigated Agriculture
Water Use Efficiency and Water Quality
Irrigation Management and Fertigation Practices for Nonpoint Source Pollution Control/TMDL
Reuse of Agricultural Drainage Water and Wastewater for Irrigation
Water Conservation and Deficit Irrigation
Evapotranspiration and Crop Water Use

BACKGROUND AND EXPERIENCE IN:
Leadership and management
Outreach and extension education
Water quality, soil salinity, and soil erosion
Waste management
Irrigation and water management
Spatial variability of soil hydraulic properties
Evapotranspiration and crop coefficients
Multiphase flow in porous media and dual-energy gamma systems
Modeling of transport processes in Soils
Geographic information systems
Computer applications, Internet, and distance learning

HONORS AND AWARDS
- U.S. Fulbright Scholar 2006-2007. Reuse of Wastewater in Jordan
- Received the 2003 Water Conservation Award. USBR- Lower Colorado Region Regional Award- Yuma Area Office October 2003.
- Received the 2003 American Society of Civil Engineers/Environmental & Water Resources Institute Best Practice Paper Award for our ASCE Journal of Irrigation and Drainage paper "Model for Estimating Evaporation and Transpiration from Row Crops. Journal of Irrigation and Drainage Engineering, Nov/Dec 2001”.
- University of California-Office of the Vice President: 2002 Agricultural and Natural Resources Distinguished Service Award for Outstanding Teamwork (Bali, Grismer, and Snyder)
- Volunteers in Overseas Cooperative Assistance (VOCA)- Outstanding Contribution to VOCA. August, 1996.
Khaled M. Bali (continued)

- Practical Training Scholarship at the University of Stuttgart, Germany. Awarded by DADD, Germany. June-September 1984.

EMPLOYMENT RECORD

1992 to date University of California - Division of Agriculture and Natural Resources.
1985 to 1991 University of California, Davis. Department of Land, Air and Water Resources.
1990 to 1991 City of Davis, CA. Public Works Department.

PROFESIONAL EXPERIENCE

Assistant, Associate, and Full Title Cooperative Extension Advisor-Irrigation/Water Management, University of California- Division of Agriculture and Natural Resources, UC Desert Research & Extension Center, Holtville, CA (1992-present). Responsible for designing, implementing, and conducting educational and applied research programs in irrigation, drainage, water management, water quality, soil sciences, salinity, waste management, and nonpoint source pollution. Duties include: Conducting a comprehensive research program to encourage the use of research-based irrigation and water management practices to improve water use efficiency, water quality, and reduce soil salinization. Taught classes at the University of California-Davis, The University of Arizona, Imperial Valley College, and the University of Jordan. Organized conferences, seminars, short courses, and field days. Participated in educational, outreach, coordination and consulting in U.S., China, Egypt, Jordan, Morocco, Mexico, and Saudi Arabia, Syria, United Arab Emirates.

County Director-UCCE- Imperial (July 2009-present): Provides leadership, direction and management oversight of 16 University and County academics and staff and two University volunteers.


SELECTED PUBLICATIONS


Khaled M. Bali (continued)


http://ucce.ucdavis.edu/datastore/detailreport.cfm?usernumber=632&surveynumber=323


RESEARCHERS AT THE DREC

DR. RICHARD A. ZINN, PROFESSOR/NUTRITIONIST, ANIMAL SCIENCE DEPARTMENT, UC DAVIS

Page 1

Feeding value of dried shelled supplements as a partial replacement for steam-flaked corn in finishing diets for feedlot cattle. 


Effect of energy and fat supplementation on digestion of diets for feedlot cattle containing dry or steam-flaked corn. 


Effect of level of dietary zinclactone chloride (L-2 agent) on performance, carcass characteristics, and organ weight and total carcass characteristics of feedlot cattle. 

Researchers at the DREC

Dr. Richard A. Zinn, Professor/Nutritionist, Animal Science Department, UC Davis

Page 6

Influence of trypticase soy broth dilution during the steam-frying of soybean meal on its feeding value for feedlot cattle.


30. Nutritional value of wheat bran, ground corn, and corn gluten meal in grower-finishing diets for feedlot steers and pigs.


31. Influence of defatted soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


32. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


33. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


34. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


35. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


36. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


37. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


38. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.


40. Influence of soybean meal on the feeding value of rice straw for growing-finishing feedlot steers.

RESEARCHERS AT THE DREC

DR. RICHARD A. ZINN, PROFESSOR/NUTRITIONIST, ANIMAL SCIENCE DEPARTMENT, UC DAVIS
The previous five pages were a compilation of "Citations" listing titles of Technical Publications with which Dr. Zinn was involved. Source data for this compilation is The UC Davis Library, Virtual Public Network (VPN). For other source data, contact Dr. Zinn at the Desert Research And Extension Center; 760-356-3060.
RESEARCHERS AT THE DREC
ERIC NATWICK, IMPERIAL COUNTY COOPERATIVE EXTENSION SERVICE; FARM ADVISOR, ENTOMOLOGY

1. Early detection and mass cropping of Frankliniella occidentalis and Thrips tabaci in vegetable crops.
   [Journal article]

2. First report of potato brown mosaic virus infecting tomato (Lycopersicon esculentum) in California.
   [Journal article]

3. First report of Tomato yellow leaf curl virus in Imperial County, California.
   M. C. VanHooser; T. J. Natwick. 2006; 3(3): 221-225. 16 ref.
   [Journal article]

4. A new disease of citrus in Imperial County starting disorder involves citrus tree decline. A new disease of citrus in Imperial County starting disorder involves citrus tree decline.
   [Journal article]

5. Bacterial leaf blight in California yellow mustard and broccoli.
   [Journal article]

6. First report of Tomato yellow leaf curl virus associated with tomato yellow leaf curl virus in Imperial County, California.
   [Journal article]

7. First report of the introduction of whitefly (Trialeurodes vaporariorum) in the Imperial Valley, California, from 1999 to 2002.
   [Journal article]

8. Root health in cotton (Gossypium hirsutum L.) across the Imperial Valley.
   [Journal article]

   [Journal article]

10. Evaluation of cotton pre-plant for resistance to whitefly and cotton leaf curl whitefly (CjCLC and CjCLC) and location of CRT in California's Imperial Valley.
    [Journal article]

11. Trap evaluations for thrips (Thysanoptera: Thripidae) and leafhoppers (Cicadellidae) species.
    [Journal article]

12. Nematode, bacterial, fungal, and insect management of cotton under California's Imperial Valley conditions.
    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

18. Use of EC traps with different light colors to attract silverleaf whitefly (Homoptera: Aleyrodidae) and Thrips (Thysanoptera: Thripidae) in California.
    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

    [Journal article]

24. Use of EC traps with different light colors to attract silverleaf whitefly (Homoptera: Aleyrodidae) and Thrips (Thysanoptera: Thripidae) in California.
    [Journal article]

    [Journal article]
January 1996, Volume 3, 1996. 3401-3403. 7 ref. [Conference paper]  

51. Cotton: root resistance to silveryleaf whitefly as a management tool. 

52. Silveryleaf whitefly infestation levels and percent parasitism in relation to cotton variety and insecticide gridding. 

53. Ovipositional preference of cotton cultivars selected for silveryleaf whitefly resistance. 

RESEARCHERS AT THE DREC  
ERIC NATWICK, IMPERIAL COUNTY COOPERATIVE EXTENSION SERVICE; FARM ADVISOR, ENTOMOLOGY  

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CONCLUSION

The heritage of desert research in Imperial Valley is important. Successful agriculture in this region has created a strong sense of community, in spite of harsh desert conditions. The persistent nature of the early settlers here and the visionary researchers paved the way for us and now we must follow in their footsteps with the resolve that the importance of Imperial County's agricultural heritage must never be diminished. As a part of the overall California population, Imperial County is small and sometimes perceived to be largely ineffective in having its case heard before the larger populations. But Imperial County's reputation as the "Nations' Salad Bowl" speaks to a vital necessity for the continuation of successful agriculture. So much has to happen. First and foremost is water! Without a steady, reliable source of water Imperial County could easily go the way of places like Pinal County, Arizona where the Gila River Watershed at the San Carlos Reservoir is at less than 1% of capacity. There have been no water allocations to farmers relying on that water source for the last two growing seasons. More and more farm land is going fallow. Could another dust bowl be in the making? Imperial County is so very fortunate to have a water delivery system that is unlike anywhere else. Getting that system established was no small task but, it has remained effective with the continuing efforts of the people and businesses in Imperial County.

The Desert Research and Extension has remained for one hundred years largely through the good work and fortuitous efforts of: 1) our predecessor Walter Packard, the first superintendent of the DREC; 2) the University of California; 3) the local population who convinced the state to locate a research farm here; 4) Irving and Fannie Gleason who sold us the land; 5) the local farmers and the Imperial County Board of Supervisors who purchased and donated the farm to the University of California.

The work of the University of California Desert Research and Extension Center in Imperial County has proudly carried out the mandate handed down to us; a mandate to respond to local needs of local farmers and conduct meaningful research that ensures continued agricultural success in Imperial County.

The voice of the Desert Research and Extension Center gets heard in many venues of which we may not be aware. Technical conventions, technical publications, testimonials before state and federal committees, presentations before national, state and local organizations are but a few. Education and extension efforts to disseminate successful research results is a constant effort. But, in order for successful research to occur, the coordinated team effort of those employed at the DREC are paramount. General Assistance Workers, Farm Maintenance Workers, Physical Plant Workers, Administrative Office Technicians, Science Laboratory Specialists, Agricultural Field Technicians, Staff Research Associates and the Academic Faculty Researchers: their teamwork is not only essential, it is something they exhibit daily. Since arriving here in 2001, the author has witnessed a pride in workmanship at the DREC which has never faltered. So, without successful scientific research, it would be difficult to argue for continued operation at the DREC.

It is important to remain mindful of author Ann Foley Scheuring's words regarding causing research station closures in the early years of UC history; 1) excessive costs in maintaining center operations; 2) a shortage and/or lack of qualified and scientifically competent supervision; 3) inadequately small budgets ultimately causing reductions in research projects leading to a center operation akin to little more than "care-taker" status.
The Desert Research and Extension Center has coped with these issues throughout its history but it seems to the author, that coping with these very issues has made the Desert Research and Extension Center a stronger entity. That is probably a major factor in why it has survived for a century of success. It has met budgetary shortfalls head on and endured with a "hunker-down and get it done" mentality that is most impressive.

With regard to shortages of Center Directors, the leadership at the DREC has come from within. There are five people who have worked here for over 30 years each. Their longevity speaks to an admirably proud work ethic. They know this farm in a way that is very unique. From that group and others, there are those who have stepped up to provide a quality of leadership that is without equal during times when fulltime Center Directors are not available. So the shortfall of Center Directors has been turned into a strength by leadership from within.

As funding for agriculture and research continues to decline, innovative ideas that augment or replace more conventional measures can help keep research centers a viable member of the agricultural community. The Farm Smart Program at the DREC seems to be such an innovation. Since its inception in 2001, the DREC has realized a surprising ground swell of local support from everywhere in the Imperial Valley. With the revenues received from winter visitors and school attendees, the Farm Smart Program has remained largely self-sustaining. It's presence in the community is obvious with the attendees to all programs exceeding 87,000 since 2001. That's an average of about 8,000 people per year!

So, these are the reasons why the University of California Desert Research and Extension Center has seemed to prevail. It has been the author's extreme pleasure to engage in the composition of this centennial publication. Best wishes to all who continue to serve and best wishes for another one hundred years of continued success in agricultural research.