



Dr. Robert Eugene Eplee, Sr. Life and Career Highlights - 1933-2013

Randy G. Westbrooks, Ph.D., IVS Prevention Specialist
Invasive Plant Control, Inc., Whiteville, North Carolina.

A. Douglas Worsham, Ph.D., Professor, Emeritus, Weed Science,
North Carolina State University, Raleigh, North Carolina

Lytton Musselman, Ph.D., Mary Payne Hogan Professor Botany,
Department of Biological Sciences, Old Dominion University,
Norfolk, VA

WHITEVILLE, NORTH CAROLINA, USA -- Dr. Robert (Bob) Eugene Eplee Sr., 79, passed away on Wednesday, Jan. 30, 2013, at the New Hanover Regional Medical Center in Wilmington, North Carolina.

Dr. Eplee, born on November 15, 1933, was the son of the late Kelly Eplee and Madeline Price Eplee of Marion, North Carolina. He was preceded in death by one son, David F. Eplee. He is survived by his wife, Mary Mullins Eplee of Whiteville; and one son, Dr. Robert Eugene Eplee Jr. of Laurel, Maryland. A memorial service was held at 2 p.m. on Saturday, Feb. 2, 2013, at Whiteville First Presbyterian Church with Rev. Joshua Bower officiating.

Eplee received his B.S degree in Agronomy from Berea College, Kentucky (1955) and his M.S. Degree in Agronomy from the University of Kentucky (1963). He received his Ph.D. in Crop Science (Weed Science) from North Carolina State University in December, 1965.

After serving in the U.S. Army in France from 1955-1957, Bob served as an Extension Agent with the Kentucky Cooperative Extension Service in Morehead County, Kentucky, from 1957-1961. Upon completing his graduate studies at NCSU in December, 1965, he accepted the position as Director of the Witchweed Laboratory in the Crop Pest Division of the USDA Agricultural Research Service in Whiteville, North Carolina. He held that position until the Whiteville Plant Methods Center was closed by USDA APHIS in August, 1995. From 1995 until his retirement in 2000, he served as the Director of the APHIS Oxford Plant Methods Center (Oxford, North Carolina), and the APHIS Center for Plant Health Science and Technology in Raleigh, North Carolina.



Dr. Bob Eplee with a Corn Plant being Parasitized by Witchweed.

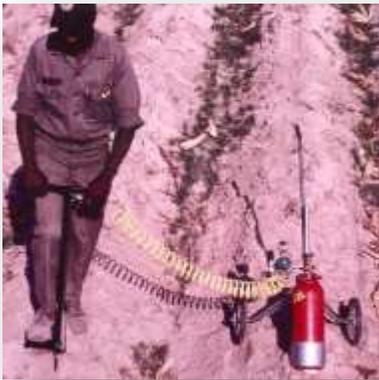


The USDA APHIS Whiteville Plant Methods Center, Whiteville, N.C.

Career Highlights.

Bob is best known and remembered for his research on the biology and control of Witchweed [(*Striga asiatica* (L.) Kuntze)], a parasitic weed that is native to Africa and Asia, that was first discovered in southeastern North Carolina, in July, 1956. Thanks in large part to his 30 year research program to develop methods and equipment for the USDA-Carolinas Witchweed Eradication Program, *the infestation has been reduced from 432,000 acres in the North and South Carolina Coastal Plain (1970) to 1,542 acres (end of 2012).*

Of particular note is the ethylene injection equipment that he designed and developed at the Whiteville Center that made it practical to induce suicidal germination of 99% of viable Witchweed seeds in infested fields and other sites (Figure 1). This is but one of many examples of his ability to take complex problems and develop practical, real world solutions for them.



Handheld Ethylene Injector Probe – Used to Control Witchweed in Africa.



Original Tractor-mounted Ethylene Shank Injector System – 1970.



High Boy Tractor Ethylene Injector System.



Modified Injector System with Cutting Disk and Rear Wheel Furrow Sealer.



'Sewing Machine' Punch Injector for use in Lawns, Gardens, Highway Rights-of-Ways, etc.

Figure 1. Ethylene Injection/Application Equipment that was developed by the USDA APHIS Whiteville Plants Methods Center – 1970-1995.

Another one of Dr. Eplee's outstanding achievements was the development of safe and effective application methods for 2,4-D and dicamba for Witchweed control. Over the years, hundreds of thousands of acres in the Witchweed infested area have been treated by contract applicators around susceptible crops without any damage. If 2,4-D and dicamba tolerant crops reach the marketplace in the near future, these application methods might find new uses in America's farmlands.

Eplee's achievements in the USDA-Carolinas Witchweed Eradication Program led to his involvement with the development of parasitic weed control strategies that were taught and adopted in Sub-Saharan Africa, Egypt, Syria, Israel, and China. His work especially resonated with scientists trying to control Witchweed in Africa. When visiting laboratories in West Africa, local witchweed workers always spoke of Bob Eplee in superlatives. His name is attached to such practical technology for Witchweed research as the "Underflow Elutriator" for separation of microscopic parasitic plant seeds from soil**, fine mesh bags affectionately referred to as "Eplee bags" for testing the long term viability of Witchweed seeds in the soil, and numerous greenhouse and field techniques for growing Witchweed for research, and much more.

**As longtime friend and colleague Dr. Lytton Musselman (Professor, Department of Biological Sciences at Old Dominion University in Norfolk, Virginia) remembers, Dr. Eplee explained that the Underflow Elutriator worked by separating out everything "..... bigger than, smaller than, heavier than, and lighter than Witchweed seeds in a soil sample" which he delivered in his pleasant Appalachian mountain accent.

The principles and practices he developed in the Witchweed Program also contributed greatly to the development of new approaches for invasive species prevention in the U.S. and elsewhere. Some examples include:

- Weed Science Society of America Liaison for Passage of the Federal Noxious Weeds Act of 1974
- Science and Technical Support for Federal-State Weed Eradication Programs (e.g., Goatsrue in Utah, Common Crupina in Idaho, Hydrilla in California and Florida, and Japanese Dodder in South Carolina - 1981-2000)
- Original member - U.S. Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW) (1990)
- Development of Interagency Approaches for Early Detection and Rapid Response to New and Emerging Invasive Plants through State Invasive Species Councils and Committees (e.g., Wyoming Weed Team - 1998) and Invasive Plant Task Forces (North Carolina Giant Salvinia Task Force - 2002)

Professional Recognition: Over the years, Eplee received a number of national and international awards for his professional accomplishments, including:

- Fellow of the Weed Science Society of America - 1993
- Otto Heinreicher Award, International Parasitic Plant Society, 6th International Congress, Cordoba, Spain - 1996

- Legacy Award, International Parasitic Plant Society, 9th International Congress, Charlottesville, Virginia – 2007. (In recognition of extraordinary contributions to understanding the biology, control, and quarantine of witchweed over 30 years)

Public Education and Outreach: In additions to the hundreds of articles and other publications that document his work over the years, Dr. Eplee was very active in efforts to raise public awareness of the invasive species issue. This included hundreds of seminars and presentations on invasive species prevention at meetings and conferences worldwide. Three of his passions included:

- Sustained Federal and State Support for the USDA-Carolinas Witchweed Eradication Program (Currently Funded at \$800,000 per Year)
- The Annual National Invasive Weed Awareness Week in Washington, D.C. (1998–2012)
- Establishment of a U.S. National Invasive Species Council and a U.S. National Invasive Species Management Plan (1999).

Volunteer Consultations.

As a scientist, Eplee devoted a great deal of his personal time to invasive species and land conservation issues – even in retirement. Examples included science and technical support for:

- The Town of Lake Waccamaw and Lake Waccamaw State Park - Control of Alligator weed (*Alternanthera philoxeroides*)
- The Nature Conservancy in NC, SC, VA, and TN - Invasive Species and Environmental Preservation Issues
- North Carolina Giant Salvinia Task Force (2002-2010) and the Carolinas Beach Vitex Task Force (2003-2012)
- Invasive species management in the Clinch, Powell, and Holston River Watersheds in Northeast Tennessee and Southwest Virginia.

Service to the Boy Scouts of America.

Eplee was an active Scouter in the Cape Fear Council from 1967-2013. He served as a member of the Council Executive Board from 1967 until 1999. He was also a member of the Lakes District Committee and of the Troop 512 Committee. Scouting was definitely a family affair in the Eplee family. Both of his sons – Eugene and David, received their Eagle Scout Awards in a double ceremony in 1976. His service to BSA was recognized with the Silver Beaver Award in 1981. He received the BSA Hornaday Award for Conservation in 2012.

Summary.

From a personal standpoint, Bob Eplee will always be remembered for his devotion to the local community through his work in the Boy Scouts of America and the Whiteville Lions Club. As a professional, he will be remembered for his contributions to the United States as a federal weed scientist. According to longtime friend and colleague Dr. Doug Worsham (one of his professors and graduate advisors at NCSU), Bob was a hands-on scientist who could take a complex problem and break it down to find simple solutions that could be applied in the real world. His work

in USDA APHIS made Witchweed Eradication in the Carolinas not only possible, but practical, and economically feasible.

On a broader scale, his influence on parasitic plant research was immense. Although his emphasis was always the applied aspect, he garnered so much information on witchweed that has been used worldwide by other researchers. Perhaps as important is how Bob and his work heightened awareness of these pathogens on a worldwide basis. One way he so effectively did this was by mentoring a number of American and foreign graduate students who spent time working in the Whiteville lab. There they learned how lab science translates into effective field programs, and experienced firsthand the warm hospitality of the Eplees – and such local cuisine as chicken bog and barbecue.

The future savings to American Agriculture because of the success of the Witchweed Eradication Program are enormous. Based on plant growth chamber research by USDA ARS, without this program and the equipment that Bob Eplee designed and built for it, Witchweed could have spread throughout the corn growing regions of the United States and resulted in losses up to 10% annually. In Nebraska alone, a 10% loss of the state corn crop due to Witchweed could have resulted in annual losses of \$915 million per year at current prices. *This is almost 4X the total public funding that was spent on the USDA-Carolinas Witchweed Eradication Program over the past 55 years from 1957-2012.*

Dr. Eplee's legacy will live on in the volunteer work he did at the local level, in his achievements as an internationally recognized weed scientist, and through the work of young professionals he mentored in the field of invasion biology – particularly as it relates to *invasive species prevention, early detection, and rapid response*.

People who worked with Bob Eplee will remember that he had a number of sayings that reflected his wit and wisdom, and joy for life. Some of them were simply 'cute', but some of them represent cold hard facts that people don't want to face at times. In every case – they are TRUE "Eplee-isms". Here are a few of them for your reading pleasure

- ✚ *"Everything that's said to be so, by those who think it to be so, ain't necessarily so....."*
- ✚ *"Boy – don't you know what ASSUME means"????*
- ✚ *"How do you eat a watermelon? One bite at a time"!*
- ✚ *"Smart people solve problems..... Wise people prevent them".*
- ✚ *"Nobody has no right to move a pest (or a plant/critter that might become a pest) from where it is to where might become a problem".*
- ✚ *"The seven steps of project development and management include conceptualization, discussion, planning, research, implementation, evaluation, and modification".*

Dr. Jeff Mullahey, current Head of the Crop Science Department at NCSU, worked with Dr. Eplee on Tropical soda apple in Florida in the early 1990s. On one occasion when they were discussing how new weeds like Tropical soda apple never seemed to receive the government resources and focus that they should, Bob said, *"That's simple.... these agencies don't look at weeds because they don't creep, crawl or fly"* another classic Eplee-ism.

There is no doubt – Bob Eplee lived a happy and productive life. In those short 79 years, he achieved just about everything that he set out to do as a farm boy in the rolling foothills of Marion, North Carolina. He had a loving wife and two very successful sons, he contributed to the community, and he had a very productive career – *he was a respected scientist around the world.*

There is one thing for certain - if there is an equipment shop in Heaven, Bob Eplee is already there, designing, building, and testing a new piece of equipment with a big smile on his face. Just imagine that

In any case, this world is definitely a better place because of the life and work of Dr. Robert Eugene Eplee, Sr. – 1933-2013.



Dr. Robert Eplee – Retirement Celebration
USDA Whiteville Plant Methods Center, January, 2000.