LAND-GRANT QUARTERLY

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The West Virginia Association of Land-Grant Institutions Third Annual Meeting Focuses on Outreach

Contributed by Dr. Orlando McMeans, Dean and Director

The Third Annual West Virginia Association of Land-Grant Institutions (WVALGI) Winter Meeting was held on March 19, 2002, on the campus of West Virginia State College, Institute, WV. WVALGI is a voluntary association comprised of West Virginia State College (WVSC) and West Virginia University (WVU), the state's 1890 and 1862 designated land-grant institutions, respectively. The charge of this association is to address key research and outreach issues which fall under the land-grant mission of each institution. Some of the areas of interest include youth development and education, family and consumer sciences, healthcare and nutrition education, science and technology, and workforce, community, and economic development.

Dr. Larry Cote, the Associate Provost for Outreach and Director of Extension at WVU, and Dr. Orlando F. McMeans, Dean and Director of the Division of Agricultural, Consumer, Environmental and Outreach Programs, facilitated this year's conference. Although in previous years this conference focused on research and extension activities/programming, the leadership at both institutions decided to concentrate on outreach areas, due to emerging and collaborative issues in the extension arena.

The conference format was divided into four sections: extension program presentations/facilitated discussion, President's presentations, group sessions, general recommendations, and next steps.

Drs. Cote and McMeans provided presentations regarding their respective extension programs. They emphasized areas such as organizational structure, strategic staffing, and strategic plans. Both administrators went on to stress the importance of working collaboratively in a seamless manner in order to more effectively deliver meaningful and much needed outreach programs to the citizens we collectively serve. Following the opening remarks and presentations, there was a facilitated question and answer session. The major issues discussed, relevant to the partnership between the programs, were current interaction of WVSC and WVU extension staff members in areas such as 4-H, youth, family and nutrition education, future funding opportunities at the federal, state, and private level, and staffing issues such as appointments and tenure.

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During the annual WVALGI luncheon, Presidents Hazo W. Carter, Jr. and David C. Hardesty, Jr., Chief Executive Officers of West Virginia State College and West Virginia University, respectively, addressed the meeting participants and guests. President Carter commended the leaders and the staff involved who make the association a reality. Dr. Carter opened his presentation defining the word partnership, since it was a key component of the meeting's theme, "Strengthening the Partnership." He stated that a partnership is defined as "A relationship involving close cooperation between parties with specified rights and joint rights and responsibilities." He also addressed that WVALGI is a voluntary association of the state's two land-grant designated institutions, with a common goal, shared responsibility and vision of improving the quality of the communities and lives of the citizens of West Virginia, by way of teaching, research, and extension, the three foundational pillars of the land-grant mission. Dr. Carter noted the state's distinction of having two land-grant institutions. He further commented that such a distinction has benefits such as diversity of individuals, expertise, and federal/non-federal land-grant related financial resources, to name a few. He closed by challenging the association members to develop a seamless statewide extension system with the goal of bettering the lives of the individuals we serve.

President Hardesty stressed the importance of our collaboration. He also commented briefly on the history and importance of outreach/extension, and why extension is such an integral part of the land-grant system. He further commented on the topic of outreach being a component of every faculty member's job, even for those not involved in traditional extension disciplines. President Hardesty stated "Having a passion for community service and caring for others is a necessary quality if is to be associated with any land-grant institution." He also charged the group in working collaboratively for the betterment of all West Virginians.

Following the luncheon, a proposed agenda for breakout sessions was developed. There were three groups identified to discuss and provide recommendations regarding administrative issues (*Group 1)*, 4-H and family development (*Group 2*), and agriculture, workforce, and community resource development (*Group 3*).

The administrative group focused primarily on three issues: plan of work, meetings and communication, and visitation committees. The group as a whole felt both institutions agreed to move toward a combined effort in presenting a federal joint plan of work. Some of the benefits identified by this effort include avoiding program duplication, the efficient use of resources, and above all, the maximization of West Virginian stakeholders' utility. The group also dialogued to improve and keep the association viable and active with regular communication among program leaders. These meetings will take place regularly, either physically or via conference (video or phone). The two main levels of discussion identified were the programmatic and the operational levels. Thus, different group meetings were proposed. The group went on to discuss the need for assessing (via on-site visits) currently established extension models of 1890 and 1862 collaborative programs. The main purpose of these visits is to extract information and learn about the mechanisms of collaboration that other institutions currently use. A model for the association will be proposed in the future. Three states were identified as targets.

The 4-H and family development group discussions included 4-H programs, co-location of WVU and WVSC extension staff, and non-duplication efforts of extension services. Most of the group's effort was spent on discussing the mechanisms for co-location of extension programs/staff. Issues of concern included supervision of staff, such as WVU supervising staff from WVSC and vice-versa. Also, the group emphasized strongly that there should be strategic staffing by the extension programs to avoid duplication of services. The group also concluded that 4-H programs are a natural fit for collaborative efforts between the land-grant institutions, and the respective staff will move toward submitting a joint 4-H report that reflects both WVU and WVSC 4-H activities.

The agriculture, workforce, and community resource development group had programmatic synopses from individuals representing both programs. In addition, the group recommended potential areas of collaboration. Some of these proposed areas of collaboration were a joint Junior Master Gardener Program, collaborations in youth activities in Putnam County, community outreach in the form of community centers, joint participation in the Kanawha County Master Gardener Program, and workforce and economic development research and service.

There were a number of recommendations and action steps proposed by each group. However, there will be a need for a number of follow up meetings of the various groups. Some

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of the general recommendations included: assessing the possibility of co-location, increasing communication/ meetings between administrators and extension faculty, strategic hiring of extension faculty or non-duplication of services, submission of a joint plan of work and other related reports, and continuing extension faculty collaborations at the county level.

This year's conference was definitely a success, and the association feels confident that we are taking the appropriate steps to work collaboratively for the benefit of the individuals we collectively serve. As the WVALGI mission states, *"The West Virginia Association of Land-Grant Institutions, a collaboration of the state's two land-grant institutions, is committed to providing education that will help the citizens of West Virginia improve their lives and communities."*

The next WVALGI annual conference will be in the Winter of 2003 in Morgantown, West Virginia.

West Virginia State College Holds Annual Research Symposium

Contributed by Dr. Katherine Harper, Dean of the School of Natural Sciences and Mathematics at WVSC

On April 26, 2002, the Eighth Annual Research Symposium of West Virginia State College was held in the Thomas R. Cabell Auditorium of Hamblin Hall. This event is held each spring to highlight the research accomplishments of the students, faculty, and staff of West Virginia State College. This year, the School of Natural Sciences and Mathematics, the WVSC Division of Agricultural, Consumer, Environmental, and Outreach Programs, and the WV NASA Space Grant Consortium jointly sponsored the Symposium. The featured speaker was Dr. Hongwei Yu, Assistant Professor of Microbiology, Immunology and Molecular Genetics of the Joan C. Edwards School of Medicine, Marshall University. He spoke on "Developing Novel Antibiotics Against Bacterial Biofilm Infections."

Dr. David Huber, Professor of Biology, speaks at the Research Symposium.

The first such research celebration of this kind at WVSC was held in the spring of 1989 in the Davis Fine Arts Building. It was sponsored by the Division of Natural Sciences and Mathematics, and featured the research and scholarly activities of faculty and students from such academic areas as art, biology, chemistry, electronics engineering, and psychology. In the spring of 1996, the Division of Natural Sciences and Mathematics again sponsored a Spring Research Festival to provide a forum for research presentations of WV NASA Space Grant Consortium Scholarship recipients, other student researchers, and faculty members. It has been held annually since that time, and both faculty and students from various college departments and programs have participated. The guest speakers have included Dr. John Bryant, Professor of Biological Sciences, University of Exeter; Dr. Bruce Dorsey, Department of Medicinal Chemistry, MERCK Research Labs; Dr. Dan Evans, Professor of Biological Science, Marshall University; Dr. Mark Pettenati, Associate Professor of Medicine, Wake Forest University; Dr. Gar Rothwell, Professor of Botany, Ohio University; and Dr. Jorge Serreira, Aventis Crop Science.

This year, the event was re-named the WVSC Research Symposium. The morning session began with a welcome address and a brief history of the Research Symposium given by Dr. Katherine Harper, Dean of the School of Natural Sciences and Mathematics. She introduced Dr. Mark Chatfield, Associate Director of Research for the Division of Agricultural, Consumer, Environmental, and Outreach Programs, who in turn introduced the guest speaker, Dr. Yu. Student presentations followed. The recipients of the WV NASA

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Space Grant Consortium Scholarship who presented were Ben Fisher, faculty sponsor Dr. Tim Ruhnke, Department of Biology; Josh Shepherd, faculty sponsor Dr. Tim Ruhnke; Anna Smith, faculty sponsor Dr. Harold Pinnick, Department of Chemistry; Michelle Green, faculty sponsor Dr. Harold Pinnick; and Freddie Williams, faculty sponsor Dr. Donald Anderson, Department of Chemistry. Other student presenters were Thabo Gcwabaza, faculty sponsor Dr. Ernie Sekabunga, Department of Chemistry; and Heather Hubbard who made presentations on two projects, one sponsored by Dr. Tim Ruhnke and Dr. David Stafford (visiting Professor of Research, University of Exeter), and the other sponsored by Dr. David Huber, Department of Biology.

Dr. Orlando McMeans, Dean and Director of the WVSC Division of Agricultural, Consumer, Environmental, and Outreach Programs kicked off the afternoon session with a short talk on the ACEOP-sponsored research projects. Dr. Chatfield chaired the afternoon proceedings. Dr. Gary Greer, Department of Biology, spoke on the effects of the invasive species *Ailanthus altissima* on West Virginia's native hardwood forests. Dr. Thomas Guetzloff, Department of Chemistry gave two presentations on research projects he is jointly conducting with Dr. James Mayhugh, also of the Department of Chemistry. One project involves determining the interaction of metals such as copper, with organic compounds in the soil. The other project deals with the creation of a rapid spectroscopic diagnostic system to assess soil conditions and crop health. Dr. Harold Pinnick, Department of Chemistry, reported on progress he has made toward the organic synthesis of pyoluteorin and related analogs. Pyoluteorin is a compound produced by common soil-borne microorganisms; it has anti-biotic properties against certain crop pathogens. Dr. David Huber, Department of Biology, presented a study he designed to determine the nature of the microbial communities associated with thermophilic anaerobic bioreactors used to treat agricultural animal wastes. Dr. Jonathan Eya, Department of Biology, reported on trout yield verification trials he is conducting and proposed a new project using proteins recovered from poultry wastes as an alternative for animal proteins in aquaculture diets.

The Eighth Annual Research Symposium was well attended by students, faculty, and staff of the college, as well as invited stakeholders of the ACEOP research projects. Planning has already begun for the next Symposium, which will be held in late April or early May of 2003.

The Baby Think It Over Program

Contributed by Ms Nicki Bentley-Colthart, Family Development Extension Specialist

Babies stop for nothing, not even dinner! April is changing the baby's diaper during dinner while Kimmie juggles the baby and her pizza.

It's 4:00 am, and the baby is crying again. Fifteen-year-old Jessie wakes up and stumbles across his messy bedroom to care for the infant. He tries feeding the baby, and it still cries. He tries to burp the baby, and it still cries. After several frustrating moments, he changes the baby's diaper, and the crying stops. He puts the baby back to bed and stumbles back across his room. Thirty minutes later, the crying begins again. This time, the baby needs fed, and Jessie sets up with the baby 25 minutes until it has finished eating. When the baby goes back to sleep, it is almost time for Jessie to get ready for school.

No, Jessie is not a teenage father. He is a participant in the Baby Think It Over Program sponsored by West Virginia State College's Cooperative Extension Programs.

The Baby Think It Over Program is not a typical pregnancy prevention activity. The program is designed to provide an experience for teens and pre-teens that simulates the parenting of an infant. The program explores the emotional, financial, and social

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Baby Think It Over Participants

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consequences of parenting. The Baby Think It Over Program is intended to help youth understand three important facts: 1) Infant's demands are unpredictable, but must be met promptly; 2) Infants require a great deal of time and attention; and 3) Parenting responsibilities change one's life profoundly.

The program works through the use of infant simulators. These infant simulators, or "Babies," are designed to simulate actual needs of infants. Teens are assigned a Baby for a specified amount of time (hours, days or weeks). The baby cries at random, unpredictable times 24 hours a day and requires the student to care for it by identifying the it's needs. The baby requires real care on the part of the teen, including feeding, burping, rocking and diapering.

Prior to receiving a baby, each student is exposed to the many facets of responsible parenthood. The program provides an opportunity for male and female students to experience the stresses and strains of pregnancy through the use of an empathy belly. Students learn how to care for an infant's needs, learn about infant physical and mental development, as well as infant health concerns such as Sudden Infant Death Syndrome, Fetal Alcohol Syndrome and Shaken Baby Syndrome. Students learn about car seat safety and child proofing a home, in addition to how having a baby will change their lifestyles financially, socially, and emotionally. The simulation activity is the grand finale of the Baby Think It Over Program.

To date, 185 teens from across the state of West Virginia have participated in this program. Comments of participating students indicate the successful impact this simulation has had on their views of teenage parenthood. One 17-year-old male student stated shortly after caring for an infant, "The school system should hand these simulators out instead of condoms. I am never having sex again!" A 17-year-old female student stated, "I wasn't planning on having children soon anyway, but I know now that it would be very time consuming." A 14-year-old female student stated, "I don't want to think about having a baby within the next 10-15 years!" An 18-year-old female stated, "Babies take a lot more care than I thought. My boyfriend and I thought we were ready for kids, but now we've decided to wait."

Parents agree this program is beneficial. When asked, "What do you think your son/daughter learned from this experience?" Parents responded, "It's tougher to be a parent than it looks," and "Having a child isn't always fun." One parent responded that the most memorable moment from this experience was, "Watching my daughter put the baby's needs ahead of her own." Most parents indicated that the Baby Think It Over Program opened conversations in their households that were beneficial between a parent and child. One mother of a 12-year-old even provided her daughter's baby clothes for use with the simulator, and they talked about what the mother's experiences were with parenting for the first time.

The Baby Think It Over Program is offered by the WVSC Cooperative Extension Programs at no cost to male and female students over the age of 12 with parental consent. Train-the-trainer sessions are also available for teachers and community leaders who would like to borrow the simulators and offer the program to youth in their area.

For more information on the Baby Think It Over Program, contact the Family Education Office at 304-766-5745 or curtisam@mail.wvsc.edu.

While Travis experiences the weight and stress of being pregnant, Brad tries to figure out what his baby needs.

You say tomato, I say "toMAto"?

Contributed by Dr. Mark Chatfield, Associate Director of 1890 Research

The "Bioplex" project at West Virginia State College (WVSC) has a new project involving tomatoes. "Bioplex" is a multifaceted research program with several projects addressing the utilization of agricultural waste (crop & livestock) and thermophilic anaerobic digestion. Bioplex scientists are developing novel biological ways to utilize organic wastes. A common theme to all projects is that microbes are used to metabolize (digest) wastes, and then scientists are testing new ways to use these materials. Ongoing projects are demonstrating the efficacy of digested poultry litter liquids and solids as replacements for commercial fertilizers for vegetable and fruit crops.

The new tomato project is an offshoot of the fertilizer work and uses a greenhouse hydroponic system. Hydroponics is just growing plants in a soil-less liquid media and is widely used in commercial greenhouse vegetable production. Why greenhouse tomatoes? North American greenhouse tomato consumption has increased 90 percent (Ontario Greenhouse Vegetable Producers Marketing Board, 1999). In the US, greenhouse tomatoes now represent 10% of the total tomato production, and many industry experts expect it to increase to 30-40%. Part of this increased production could reduce our imports from other countries. In the four-year period from 1993 to 1997, the amount of greenhouse tomato imports from Canada increased 7-fold, and from the Netherlands, they increased 4-fold (Johnson 1999). We hope to develop superior hydroponic tomatoes for growers in the Mid Appalachian region.

The project goal is to identify tomato cultivars that grow well on digested liquids in a greenhouse hydroponic system. The above statement simplifies the tomato project greatly. One doesn't want tomato plants that just grow well under these conditions. Consumers want tomatoes, year round, that are inexpensive and most importantly taste good. Producers want tomatoes that perform well in the greenhouse hydroponic environment, more precisely, the tomatoes should have resistance to most known diseases, insects and other pests; grow robustly; and lastly, fruit abundantly on as little fertilizer as possible. Such a long wish list for the "ultimate greenhouse tomato" will require a specialized greenhouse, a sophisticated screen of known tomato germplasm and a capable scientist.

Fortunately, the Bioplex project has developed the resources to build this new greenhouse facility, and the good luck to acquire an interested tomato breeder – Dr. Barbara Liedl. Liedl received her bachelor's degree from Perdue University and her master's and doctorate in horticulture from the University of Minnesota. She received additional botanical training from Cornell University. In her words, "Modern breeding projects utilize the latest plant biotechnology. I will be using molecular gene markers to facilitate identification of desired traits." Most vegetable consumers probably don't think about the molecular basis of desired tomato traits, but Dr. Liedl will be tracking the genes for desired flavor, taste and disease resistance properties. Once identified, these traits will be moved into selected tomato cultivars by traditional breeding techniques.

Construction of a second greenhouse will begin in August 2002, and the house should be functional by October. Once the infrastructure is in place and the systems have been tested, research will start. The first stage of experiments will evaluate the entire range of current greenhouse tomato varieties.

If you are interested in hydroponic tomato production or just like tomatoes, please come visit us on the southeast corner of the beautiful West Virginia State College campus. Oh, and don't forget to bring a saltshaker.

Focus on Community Partnerships–WVSC–ACEOP and HUD work together to open Neighborhood Networks

Contributed by Mrs. Dana Glenn, Associate Director of Community Resources & Economic Development

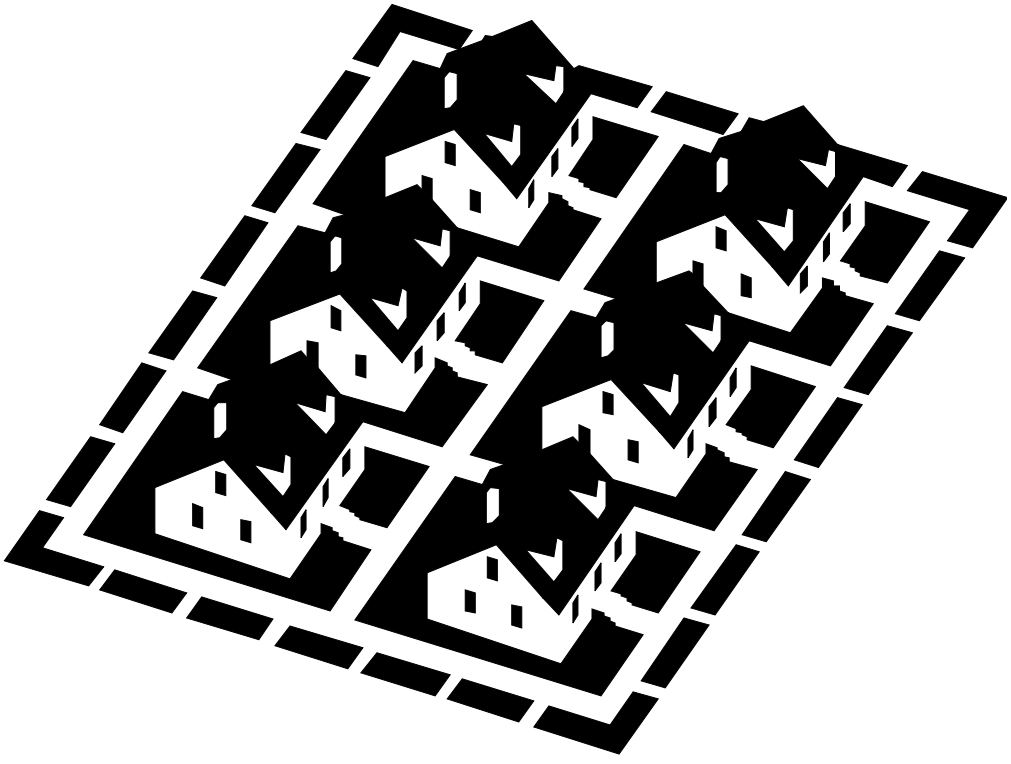
Attention paid to infants and young children provides a foundation that can yield powerful, positive, and lasting results. When youth and adults are equipped with essential skills, they have a foundation that enables them to develop into productive individuals. What is the foundation? It is skills in technology, education, and job training. It is good health. It is the kinds of services that strengthen families and promote economic independence, and it is access to technology and information. These foundations grow every day for residents of HUD housing where there is a Neighborhood Networks center.

This national Housing and Urban Development initiative works to build self-sustaining communities that serve the needs of low-income families and seniors where they live. Neighborhood Networks is a community-based initiative launched by HUD in 1995. It encourages the development of resource and computer centers in HUD-assisted and/or insured housing. There are more than 650 centers in operation nationally, working with thousands of business, community, and government partners.

To help develop human potential, Neighborhood Networks may provide GED classes, literacy programs, youth and senior educational and recreational programs, health and wellness activities, and job-training. Each center is different because each one is created to respond to the individual needs of the community.

Three Neighborhood Networks have been opened in the Kanawha Valley since January 1, 2002, and two are coming on line soon. The centers opened by HUD are currently located in low-income senior housing facilities, including the South Charleston Unity, Cross Lanes Unity, and Dunbar Towers. The ACEOP Community Connection Center located at the Switzer Center in Charleston will be dedicated as a Neighborhood Networks site in June, as will Spring Hill Apartments, which is currently an ACEOP after-school site. ACEOP provided the computers and the Internet connections at both locations. ACEOP staff has been involved in providing nutrition and gardening education at the senior centers. Introductory computer and Internet education classes will begin in the summer of 2002.

The partnership between HUD and ACEOP is mutually beneficial. The goals and objectives of the Neighborhood Networks initiative and ACEOP are similar – to empower individuals to move toward economic independence.



4-H Programs Resume

Contributed by Ms. Sarah Lee, 4-H/Volunteer Extension Agent

Teen Leadership Connection/4-H Community Cycling Club at the Family Enrichment Center.

Nationally, 4-H is celebrating its Centennial in 2002, and on February 19, 2002, the House of Delegates of the West Virginia Legislature recognized West Virginia State College and West Virginia University for one hundred years of dedicated 4-H service.

WVSC is pleased to resume providing 4-H programs during this Centennial year. The 4-H Program involves group activities, club meetings, camps, fairs and contests for its members. The 4-H emblem is recognized all over the world. It is a four-leaf clover with an "H" on each leaf. The letters on the emblem, (that is the "H" on each leaf), stand for Head, Heart, Hands, and Health, and are the foundation of all 4-H programs. Dunbar Intermediate School was the first to form a 4-H group with their 3rd, 4th, and 5th grade students. The students were introduced to 4-H during the 21st Century Learning after school program. The Character Counts Curriculum was presented to students and focused on the six pillars of character: responsibility, respect, fairness, caring, citizenship, and trustworthiness. The curriculum provides a practical means of character development, while accommodating a variety of lifestyles and belief systems.

The Teen Leadership Connection 4-H Program is being presented at the Family Enrichment Center located on the west side of Charleston. This 4-H program is different because it involves urban youth and teaches life skills such as diversity, conflict resolution, social skills, the arts, leadership, and even offers a biking education program. Regular class sessions are held weekly, and the students participate in biking classes every other Saturday. West Virginia State College's Campus Police Officer, Corporal Joseph Saunders and the Charleston Police Department Bike Unit are teaching the biking safety component. WVSC students Emory Finklea, Nicholas Meekins, and Anya Valdes volunteered to work with the students as mentors. Students who fully participate in the classroom sessions and weekend cycling activities will be allowed to keep the bicycle and helmet upon completion of the program.

The introduction of the 4-H Program has given WVSC ACEOP an excellent opportunity to partner with West Virginia University, Dunbar Intermediate School, Family Enrichment Center, Stonewall Jackson Jr. High School, Charleston Police Department Bike Unit, and Hope Community Center. ACEOP is pleased to offer these exciting 4-H programs as part of its outreach mission.

For more information, please contact Ms. Sarah Lee, 4-H/Volunteer Extension Agent at 304-766-4275 or at leesm@mail.wvsc.edu.

What is Community Engagement? "A Bridge over Troubled Water"

Contributed by Mr. Kenneth Williams, Community Outreach Agent

As a Community Outreach Agent, it is my job to engage communities and develop partnerships. One of many goals of the Department of Educational Services and Life-long Learning (DESLL), is to build programs that will empower the community through organizational development and revitalization of their neighborhoods. In this endeavor, I plan to create new community partnerships for this institution of higher learning. This will consist of developing vehicles for immediate access to community education issues, according to the needs of our service areas. Other goals of this office are to enhance the knowledge base of communities regarding strategic plans for the revitalization of urban areas. Engaging people to become leaders in their respective communities will continue to be a long-term goal. This can help residents to have pride in creating an environment where children can grow up in a positive community.

Frequently, many decisions are made under constraints with a limited understanding of information needed to solve problems. Often many communities find themselves feeling as if their community has fallen behind the rest of the world due to a lack of jobs and economic prosperity. To avoid this issue in the future, individuals must begin to ask themselves what they can do to improve the quality of life for all. The answer is to take the first step by participating in community development programs. A toolbox must be created to assist members in understanding the process of strategic planning. In addition, to help define problem areas, programs must be reviewed to analyze the best potential solution. West Virginia State College must continue to build a strong bridge with local community members to carry them over troubled waters.

This bridge can be navigated by using key foundation programs that will lead the charge in building community engagement and economic development. The bridge over troubled waters can be constructed by developing these key initiatives: **community education, building community partnerships, business retention and expansion**, **and sustainable development**. More educational choices that would allow for better career opportunities must also be explored. This exposure should begin as early as the first grade to assist students in career planning and to reveal true career opportunity. Career planning must include entrepreneurial programs, which create a new direction of discovering a career applicable for the 21st century job market.

The final phase of engagement for a bridge over troubled water can be concluded by quoting Booker T. Washington, "I have learned that success is to be measured not so much by the position that one has reached in life, but the obstacles which he or she has overcome while trying to succeed."

THE HORT CORNER

The Origin(s) of Agriculture

Contributed by Dr. Orlando McMeans, Dean and Director

What is the origin of traditional agriculture as we know it? In order for us to understand and appreciate the views of agricultural origin, we must first gain some view of life before agriculture. In other words, what was the condition or lifestyle of human kind before we began growing plants for the purpose of food and subsistence?

It has been well documented that early man survived through the hunter-gatherer lifestyle. The hunter-gatherer culture refers to ancient man surviving on what they attained from the wild via hunting of game, gathering of crops, and fishing. Lee and Devore (1968) researched this cultural lifestyle and way of life thoroughly. One striking observation made by Lee and Devore is the fact that cultural man has been on earth for 2,000,000 years; and for 99% of this period, he lived as a hunter-gatherer. Only in the past 10,000 years has man begun to domesticate (grow/breed/cultivate) plants and animals for the purpose of food. Of the estimated 80 billion humans who have lived on earth, more than 90% have lived as hunters and gatherers, while only 6% have lived by agricultural means; the remainder have lived in industrial societies.

There is much evidence to show that the diet of the hunter-gatherer civilization was better than that of the cultivator (agricultural civilizations); starvation was rare; the overall health was superior; there was a lower incidence of chronic diseases, and not nearly as many cavities in their teeth. So the questions abound. Why farm? Why work a 20 plus hour week and exchange the fun of hunting for the laborious cultivation tasks in the hot sun? Why work harder for less nutritious foods and invite famine, plague, and pestilent living conditions? In the following passage, we will examine some views on the origin of agriculture and why man became agriculturally based as a way of life and for survival.

There are numerous views on the origin of agriculture as we know it. For the purpose of this article, I will discuss the following models or views: agriculture as a divine gift, domestication for religious reasons, domestication by crowding, agriculture as discovery, agriculture by stress, agriculture as an extension of gathering, and a no-model model.

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Agriculture as a divine gift. In many classical mythologies of nearly all civilizations, agriculture is essentially of divine origins. In other words, plants and animals for the purpose of agricultural/food usage are viewed as a gift from the Gods or deities. There have been many gods and goddesses credited with the divine gift of agriculture to a particular civilization or culture. In Egypt, there is "Isis"; "Demeter" in Greece; "Ceres" in Rome; "Shên-nung" in China; "Quetzalcoatl" in Mexico; and "Viracocha" in Peru. These deities were worshiped by these civilizations, and many cultures offered sacrifices to them in exchange for rain and abundant harvests. Some cultures, such as the Incas, went as far as to view people who did not practice agriculture as savages and not worthy of divine interaction or instruction from a higher deity.

Domestication for religious reasons. It has been proposed that plants and animals may have been first domesticated because of religious concerns rather than for economic or agricultural reasons. Hahn (1896 and 1909) argued that it would have been impossible to predict the agricultural usefulness of domestic cattle before they were actually domesticated. That is, wild cattle are large fierce beasts; therefore, no one would have foreseen their utility for milk production and intensive labor. Instead, many felt that the domestication of cattle was for the purpose of ritual sacrifices to gods and goddesses. We know that diverse cultures from Europe to India have held similar special religious feelings regarding cattle. Other animals associated with sacrificial offering for spiritual purposes include chickens, goats, pigs, and a variety of other fowl. It has also been determined that plants were also used for religious reasons by a number of spiritual cultures throughout history. Archeologists have evidence that a variety of plants were used for religious rituals and ceremonies, mostly associated with sacrifices to gods and goddesses. Many Pakistani and Indian tribes used flower petals with a variety of colors for ritual purposes, while other cultures extracted the dye for ritualistic facial and body painting. The Aztecs used grains in their rituals of human sacrifice. Of course, the most documented use of plants for religious practices dealt with the hallucinogenic and narcotic effects of some plants. Some of these drug/ritual plants are still being used for religious purposes even today.

Domestication by crowding. There has been some evidence to support the origin of agriculture as a result of crowding, that is, the coming together or forced interaction of a large array of living organisms in a confined space. Historians have documented the fact that many of the climates of North Africa and parts of the Near East became increasingly desiccated over a period of several millennia B.C. They went on to give a visualization of the rangelands drying up, forcing the herd animals, as well as man, to withdraw to the banks of perennial rivers and to the oases, where water was present year- round. This brought man and animal into contact more often than any other time in history and eventually induced man to domesticate many animal species. But what about plant domestication as a result of crowding? Due to the disturbance of the virgin soil and vegetation by the livestock, along with manuring (excretion of seeds and fertilizing), plants would be encouraged to grow. These plants were the first to be taken into the domestic fold. This lifestyle eventually moved from the gathering phase to the sowing of seed phase.

Agriculture as discovery. One of the more extensively supported models for the origins of agriculture is that cultivation was an invention or discovery. Basically, early civilizations used trial and error to determine the usefulness of a plant, how to grow and care for the plant, and the edible portion of plants. This was said to be the case for animals as well. Darwin (1896) alluded to the fact that early inhabitants determined which plants were edible by "many hard trials and by various cooking processes." Unfortunately, these trial and error type experiments and discoveries also led to a number of casualties. We know that certain plant and plant organs and/or flowers carry toxins or compounds that are deadly even in small concentrations. He also added that these civilizations also performed primitive research in the areas of determining the best sowing or planting processes and soil and animal and human waste (fertilizer) requirements. Although this is a widely accepted model, many however, still dispute the origin of agriculture via the discovery theory.

Agriculture by stress. A number of individuals argue that agriculture was brought on or adopted as a result of a stress due to an increase in the population and the depletion of forest ranges. There is evidence to support this model in a book titled "*The Food Crisis In Prehistory*" written by Mark N. Cohen (1977). In his book, Cohen cites evidence, of an archaeological basis, that led to the depletion of local resources, a change in diet from preferred foods to those less preferred and less nutritious. In support of this model and argument, archaeologists were able to provide evidence that pre-agricultural societies had excellent health and little to no evidence of endemic diseases.

Agriculture as extension of gathering. Some have suggested that the origins of agriculture may have been associated with the gathering system of obtaining resources. There is evidence that gatherers were sophisticated, applied

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botanists. These skills were developed over an extensive period of time. That is, they knew the growth cycles, harvest times and parts of the plant that could, or even more importantly, that could not be eaten. As with any evolutionary process, and with each new generation, there were advances in the gathering process, to the point of even positively manipulating the plants growing in the wild, thus yielding a larger crop. Doesn't that sound a lot like agriculture? As a matter of fact, one noted agriculturalist stated that there is little difference between intensive gathering and agriculture/ cultivation. It is believed that this intensive gathering led to the origin of agriculture. This is a widely respected model, but it does not deal with the domestication of animals.

A no-model model. The author of this article supports the "no-model model", or what I would like to call the ***multi-model view*** on the origins of agriculture. This view establishes that there are just too many independent cultures and beginnings for one model to hold up. Thus, it is quite likely that some plants and animals were domesticated for religious reasons; as divine gifts; due to crowding and stress; by discovery; and even as an offspring of the hunter-gathering society. In other words, it is highly unlikely that one model can completely explain the origin of agriculture.

Literature Cited

Cohen, M. 1977. The food crisis in prehistory. Yale University Press, New Haven, CT.

Cohen, M. and G. J. Armelagos (ed). 1984. Paleopathology at the origins of agriculture. Academic Press, New York.

Darwin, C. 1896. The variation of animals and plants under domestication. 2nd ed. Hafner, New York. Vol. 1.

Darwin, C. 1896. The decent of man and selection in relation to sex. 2nd ed. D. Appleton and Co., New York.

Hahn, E. 1896. Die Haustiere und ihre Beziehungen zur Wirtschaft des Menschen. Duncker und Humbolt, Leipzig.

Hahn, Eduard. 1909. Die Entstehung der Pflugkultur. C. Winter, Heidelberg.

Lee, R.B. and I. Devore. 1968. Problems in the study of hunters and gatherers. P. 3-12. *In* R.B. Lee and I. Devore (ed.) Man the hunter. Adine, Chicago.

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