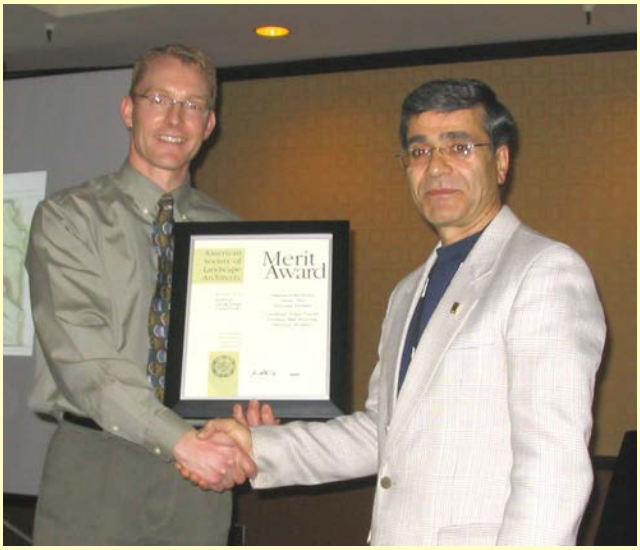
Plant Science Says

May, 2007

Yousef Zadegan receives ASLA award for planning and design of the Museum of the Rockies landscape

I volunteered to do a master plan for the Museum in 2003 and I am glad that the plan I did was recognized and nominated for award this year. I treasure this recognition as, 'a pat on the back every once in a while keeps one going'!



For this project, the theme that I based my design philosophy on was, "Landscape as a Vehicle for Interpreting Cultural & Natural History". I believe that public landscapes such as museum grounds should be a mimetic representation of the regional landscape and assert the importance of the landscape in the continuing dialogue between Man and Nature, a landscape that symbolizes the processes of conceptualization and transformation of land to landscape in a specific culture. I also believe that if a museum aims to function as an educational institution beyond the attitude of mere collectorship, it should serve as a host for educational programs, art exhibits, and community interaction. The Museum of the Rockies and its adjacency to MSU forms Bozeman's most significant educational and cultural district and an excellent opportunity to serve such functions. Therefore, a comprehensive plan to reflect the educational role of these institutions in Montana and the state's contemporary culture and past history seemed appropriate. The plan aims to combine historical, contemporary, and ecological elements in a place that is both a living memorial to Montana's recent past and a vibrant part of everyday life in southwest Montana. The purpose of this plan is to strongly link the interior activities to the exterior landscape creating appropriate visual and spatial experiences and a sense of unity between the two.

This plan relies heavily on symbolism to develop the experientially-rich archetypal places and paths for the Museum grounds. For this, circular and spiral motifs were introduced at certain key points on the plan. Transforming these forms into walkways, plazas, and gardens, the organization of spaces, design elaboration, and ordering of the programmatic elements within the confines of the site was followed accordingly. "Theme" gardens such as "Water Garden", "Xeric Garden", "Sculpture Garden", etc. are designed to showcase native and naturalized plants representative of the Southwest Montana Region. The plan also includes a space devoted to "The Garden of Montana Dreams" attempting to foster an understanding of the importance of Nature and the collective social responsibility to preserve and protect it for future generations.

The awards ceremony took place on April 14, 2007 in Missoula, Montana, where the Idaho-Montana Chapter of the American Society of Landscape Architects (ASLA) held its meeting from April 13 to April 14. April, 2007 is the National Landscape Architecture Month celebrated by ASLA members across the country.

Wheat CAP
By Jamie Sherman

Wheat CAP is a Coordinated Agricultural Project

funded by USDA-CSREES NRI. It is a multi-state, multi-institution project dedicated to the genetic improvement of U.S. wheat through research, education and outreach. Please check out our renovated website http://maswheat.ucdavis.edu. The website describes the **marker assisted selection projects as well as the 18 mapping projects that are occurring around the country**. Please take particular note of the educational and outreach page. On it, you will find educational animations about marker assisted selection, DNA extraction, PCR, gel electrophoresis and the wheat stem sawfly. You will also find Fact Sheets that describe problems addressed by the Wheat CAP like stripe rust and pre-harvest sprouting. Feel free to use any of these materials. Also, please **give me ideas for new materials and other feedback through** e-mail at jsherman@montana.edu.

AOSCA Western Regional Annual Meeting (April 17-18, 2007)
By Susan Johnston

The Montana Seed Growers Association hosted the annual meeting for the Western Region of AOSCA. The meeting was held at the Wingate Inn in Bozeman. The **Association of Official Seed Certifying Agencies**, (AOSCA) is dedicated to assisting clients in the production, identification, distribution and promotion of certified classes of seed and other crop propagation materials. Established in 1919 as the International Crop Improvement Association, AOSCA now has a number of International member countries located in North and South America, Australia and New Zealand.

The mission of AOSCA is to promote and facilitate the movement of seed or plant products in local, national, and international markets through the coordinated efforts of official seed certification agencies acting to evaluate, document, and verify that a seed or plant product meets certain accepted standards.

The major purposes of AOSCA are:

- To establish minimum standards for genetic purity and identity and recommend minimum standards for seed quality for the classes of certified seed.
- To standardize seed certification regulations and procedures, and operational procedures in inter-agency seed certification.
- To periodically review agency genetic standards and procedures to assure compliance with the Federal Seed Act.
- To cooperate with seed regulatory agencies in the determination of policy, regulations, definitions or any procedures relating to the labeling and distribution of seed moving in intra-state, inter-state or international commerce.
- To cooperate with the Organization of Economic Cooperation and Development (OECD) and international organizations involved in the development of standards, regulations, procedures, and policies to expedite movement of seed and encourage international commerce in improved varieties.
- To assist member agencies in promotion, production, identification, distribution and use of the certified classes of seed and other propagating materials of crop varieties.

Representatives from California, Arizona, Wyoming, Oregon, Utah, New Mexico, Kansas, Washington, Colorado, Idaho and Montana gathered to discuss issues related to the certification of seed and movement of seed which has been evaluated and verified to be of acceptable standards.

Stan Young of Utah presented information on pre-variety germplasm development and certification; and the definition of generations and activities of the Great Basin Native Plant Seed Increase Project to provide seed of native species which would be certified for use in reclamation projects. Native plants are not like traditional agricultural crops, are not reviewed by variety release boards, and Stan and his group in Utah are working diligently to establish criteria for verifying these species for certification.

Bill Grey presented an update on the Montana Foundation Seed Program including a case study in the development of the semi-solid stem variety Choteau spring wheat. Bill gave a brief history of golden triangle agriculture and the development of semi-solid/solid stem varieties (Choteau, Genou) in response to increasing sawfly infestations. Bill talked about the variety Yellowstone and its value as having great winter survival rates. Bill also briefly explained Montana's current system of collecting research fees on MSU varieties by the Office of the Dean of Agriculture/AES with the idea of generating some money for return to the MSU breeding programs.

Chet Boruff (AOSCA CEO) presented an overall view of industry issues such as the "liberty link" rice and roundup-ready alfalfa; Insect Resistance Management (IRM) program required by the USDA for use with GMO products; and business

development such as the "Quality Plus" Management Standard. Chet presented seed certification as being an example of process certification such as the "Quality Plus" Management Standard complete with quality control manual of procedural protocols. A discussion followed with many feeling that field inspection was more a product verification in states like Montana where each and every field is examined for genetic off-types. Others argued that the whole process of seed certification is a verification of the method used for quality management throughout the entire process of certification rather than a step by step product evaluation. Seed certification as it works in most western states is a blend of both.

The Western State Regional AOSCA banquet took place on Tuesday evening at the Wingate, beginning with a social hour. Ron Cook, head of Oregon Seed Certification Service was honored with a plaque for longtime service and in honor of Ron's official retirement in June. The food was very good!

The session Wednesday morning included a presentation by Greg Lowry (Idaho) for a uniform system in bringing varieties into certification. This process is currently under subcommittee review, but most members agreed that here are three recognized authorities for bringing a variety into certification per AOSCA rules: the National Variety Review Board; USDA Plant Variety Protection Office; and the Organization for Economic Co-operation and Development (OECD) which is an international agency dedicated to international seed standards and facilitating markets. A member agency may accept varieties into seed certification after favorable action by one of the above three agencies.

Larry Teuber (CA Crop Improvement Association) proposed production and inspection of the parent lines for hybrid alfalfa seed production to clarify classes of Breeder, Foundation, and Certified seed. This presentation and set of proposed standards suited to hybrid alfalfa production were referred to the Alfalfa Committee of AOSCA for review.

Mike Moore (Wyoming Seed Certification) presented alfalfa seed standard recommendations in response to grower and industry need for clarification of isolation distances and seed quality related to GMO alfalfa. Mike suggested that instead of adjusting the isolation distances, it might make more sense to change the level of seed from other varieties allowed in the standards for alfalfa. Isolation distances of 900 feet have been demonstrated to be effective with GMO and regular alfalfa growing adjacent; but, in practice, growers find this allotment of land for isolation to be excessive. Alfalfa quality is influenced and driven profoundly by private companies and there is a judicial ruling pending on the subject of GMO alfalfa, seed standards and isolation requirements. After discussion, this matter was referred to the AOSCA Alfalfa Committee for review. It is clear that this issue of GMO products has not been resolved and will continue to be a subject for discussion for the near future.

Dan Curry (OR) announced the 2007 AOSA-SCSJ (certified seed labs and commercial seed technologists) meeting in Cody, WY. The Montana State Seed Testing Laboratory is a co-host with Wyoming Seed Analysis. Call the MT Seed Testing Lab (994-2141) for details on that meeting.

In other action, the Western Regional members elected Mike Moore (WY) as the Western Regional representative to the AOSCA Board of Directors. The Western Regional membership elected Brad Erker (CO) as the Western Regional vice-chair to AOSCA Certification Requirements and Standards Council. The Western Regional Annual meeting schedule indicated Colorado in 2008, Kansas for 2009, California in 2010, and Utah in 2011. The next national/international meeting for AOSCA will be in Canada in 2007. Want more information? The AOSCA website is available at AOSCA.org. There is much more to seed quality and the seed business than you might think! Check it out!

Mali Night! 2007
By Florence Dunkel

One hundred guests gathered one lovely evening in April (April 21) for a most amazing event, probably not to be duplicated again in Bozeman MT. Guests began arriving a 6 p.m. in the Great Hall of Christus Collegium decorated vertically and horizontally with Malian textiles. Guests visited Mali boutiques, enjoyed textile, research poster, and photo exhibits, and shared one of two national drinks of Mali, hibiscus tea or gingembre (ginger, mint, fruit). The evening opened with a greeting by Dr. Florence Dunkel, University Mali Projects Director. Guests from Brigham Young University (Provo, Utah), Chief Dull Knife College (Lame Deer MT), and Belgrade Public Schools were introduced. Dinner was served to guests at 6:30pm with the assistance of former Mali externs and their families. The traditional Malian dinner with two main entrees took all day to prepare, and was orchestrated by the Malian scientists from l'Institut d'Economie Rurale, Aissata Thera and

Assa Kante, graduate students in PSPP and Agricultural Education, respectively. They were assisted by some of the other Malians here at Montana State in the graduate program, including Adama Berthe and Keriba Coulibaly in PSPP, and by undergraduate students from PSPP, Geography, Engineering and Media and Theater Arts who were former Mali externs (Ashley Lehman, Ashley Williams, Sam Magro, Stacey Hellekson, and Anna Volkersz).

With a Malian drum roll at 7 p.m., the program began by MSU Vice Provost Dr. Norman Peterson explaining and presenting the first place award for best exhibit at the 2007 International Food Bazaar to the Malians. Thank you certificates were awarded to all major professors, including PSPP faculty Dr. Norm Weeden, Dr. Barry Jacobsen (in absentia), and Dr. Mike Sun (accepted by one of his technicians) and to special Malian mentors Dr. Dean Drenk and Robert Diggs, retired from MSU College of Business.

Special Recognition was given to the guest of honor for the evening, Senior Vice Provost, Dr. Joseph Fedock. Dr. Dunkel gave a summary of the Americans and Malians gratitude to MSU and to Dr. Fedock specifically. She then presented him with an appreciation certificate and with a letter written by the Directors of the national agricultural university of Mali (Institut Polytechnique Rurale/IFRA) and the national agricultural research institute of Mali (Institute d'Economie Rurale). Malians presented Dr. Fedock with a carved wooden chiwara symbol of IER and of hard work. In gratitude from the MSU undergraduates to Dr. Fedock a photobook was created and written by Anna Volkersz.

A special one hour cultural presentation by the Malians followed. This included: geography by Sidy Ba; history by Abdoulaye Camara; festivals and celebrations by Aissata Thera; religions by Adama Berthe; and economics by Keriba Coulibaly. We learned about joking cousins and conflict resolution and many other facts-that-you always wanted to know about Mali but could not find references describing. Luckily all of this is now on our projects website at www.montana.edu/mali . Check it out by going to the "about Mali" section and load the PowerPoint presentation you wish to review from Mali Night!

The next hour included presentations by Americans just returned from Mali. A photo review was presented by Denise Dahl, 7th grade social studies teacher, Belgrade MT Public Schools Chief Dull Knife College students (Bob Madsen faculty mentor) presented observations from their work in Mali. The audience "stood still" when one of the students, Gloria Zerber shared her comparison of Northern Cheyenne culture, Malian village culture, and Euro-American culture. Their Malian mentor, Assa Kante, added a summary statement of the importance of Malian shea butter, culturally and economically (you may also check out her PowerPoint presentation on our website www.montana.edu/mali). MSU undergraduate students (2007 Mali externs and Undergraduate Scholars), Becca Cooper, Eva Mends, and Amy Druse, presented their research in poster format and a photo exhibit. In the interest of time, it was decided that two MSU presentations would be made available in other venues. A PowerPoint presentation by Undergraduate Scholar, Amy Druse, is available on the website www.montana.edu/mali . A 10 minute video summary by Dr. Dunkel of the MSU 2007 Mali research/visit is available at cost from Image Factory in the Main Mall. The formal part of the evening ended with a reflective essay by Dr. Dean Drenk. With the leader of the Mali Agribusiness Network, Belco Tamboura, Dean described how they initiated the first rotating, micro-loan to a Malian village association.

To complete the amazing evening, there was Malian drumming and dancing by Jenny Watts and her family of Bozeman MT. It was a collaborative event, the food was great, and we all learned a lot and enjoyed ourselves. Coordinator for the event was Ashley Williams.

Montana State University is the initiator of three university programs for undergrads and graduate students with programs adopted at partner schools across the U.S., University of California-Davis, Chief Dull Knife College, University of St. Thomas (St. Paul MN), and Virginia Tech. The first project grant was awarded in 1999. Dr. Dunkel is the Principal Investigator for the university projects and the chief consultant for the Secondary School programs (Dr. Walter Woolbaugh is the P.I. of the secondary program). Dr. Cliff Montagne is the co-PI for the university programs.

Funding from:
USDA-CSREES Higher Education Challenge Grant Program. "Discovery-Based Undergraduate Opportunities: Facilitating Farmer-to-Farmer Teaching and Learning" (F. Dunkel P.I., C. Montagne, Co-P.I.)

USDA-CSREES Secondary Education Challenge Grant Program. "Discovery-Based Undergraduate Opportunities: Facilitating Global Student-to-Student, Local Teacher-to-Scientist Teaching and Learning" (W. Woolbaugh P.I., F. Dunkel, advisor)

US Agency for International Development through

the Higher Education for Development. "Linking Mali Agribusiness with Sustainable Engineering and Biotechnology for Health, Safety, and Exports." (F. Dunkel P.I., C. Montagne, Co-P.I.)

Montana State University Office of the Provost

Montana State University Undergraduate Scholars Program

A.C.E. Language Institute

P.E.O., a 137 year old international philanthropic organization for the higher education of women.

Dr. Dean Drenk, MSU College of Business, retired professor.

Assistant Mali Night Organizer: Ashley Williams
Videographer: Amy Druse
Special Thank you for sharing special talents:

- **Aissata Thera -** culinary skills
- **Assa Kante.** - culinary skills
- **Robert Diggs** - information systems

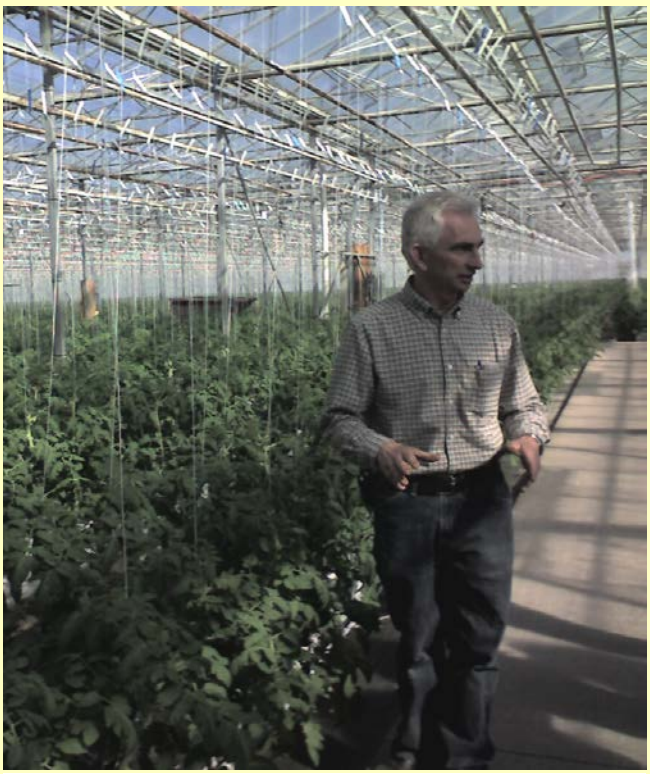
Undergraduate Scholars and 2007 Mali externs Eva Mends, Biomed and French major; Becca Cooper, Nursing and French Major; and Amy Druse, media and theater arts and French business major, conducted research in Mali and gave presentations at Mali Night, April 21, 2007, and at the Undergrad Scholars Conference, April 10, 2007. Their mentors were Aissata Thera (grad student in PSPP), Assa Kante (grad student in Ag Tech), Dr. Florence Dunkel (PSPP), Dr. David Sands (PSPP), and Dr. Michael White (VMB). Aissata and Assa are also scientists at l'Institut d'Economie Rurale in Mali and leaders in the Mali Agribusiness Network.

Contemporary Issues Debate

Contemporary Issues in Science Students are continuing an 11 year tradition of debates. The debate this year will be concern United States funding for genetically modified organisms. The debate will take place Wednesday, May 2 at 7:00 p.m. in SUB Ballroom D.

Great Plains Diagnostic Network Greenhouse Pest and Disease Diagnostic Workshop
By Mary Burrows and Nina Zidack

The Great Plains Diagnostic Network (GPDN) met in Denver from April 2-4th, 2007 to learn more about diagnostics of disease and in greenhouse situations. Plant disease and insect diagnosticians and extension personnel from the 9 states in the GPDN met to discuss emerging disease and insect pests, discuss ways to recognize and identify routine (and not-so-routine) diseases and insects, and to take tours of greenhouse operations in the area. We visited three separate greenhouses. The first was BrushCO Greenhouse in Brush, CO. This



Leo DeGroof, head grower at BrushCo Greenhouse, Brush, CO.

is a 37-acre hydroponic tomato facility. Leo DeGroof, the head grower, showed us around. This extensive facility is composed of two sections, each of which can be heated by the neighboring power plant's waste heat. It was incredible to see acres and acres of tomatoes, and disappointing that no ripe fruit was in site! We discussed pathological challenges in this monoculture, hydroponic situation. One of the most important diseases he faces is bacterial canker caused by *Clavibacter michiganensis.* He described the cultural controls for foliar diseases, such as fans for increased air movement and the scouting regime in place to nip disease and insect problems in the bud. Speaking of buds, he also showed us the hives of bumble bees and how

these are managed to pollinate the tomatoes. Much more efficient than hand labor!

We also visited Center Greenhouse and Welby Gardens in Denver, CO. They grow and market perennials and annuals, respectively, for the wholesale market. They discussed how their family-run businesses have become more focused over the years to remain competitive. Center Greenhouses are known for their 'Power Flowers,' and Welby Gardens for 'Hardy Boy Plants.' Dan Gerace with Welby Gardens received his masters in entomology from Colorado State, so he was very informative on the cultural and chemical control options they use. He also works extensively with the university to test new techniques such as unique soil media formulations and biological controls to increase health and productivity of his plants. One particularly interesting fact was that there is so much *Pythium* in the Denver water supply that they need to treat their water with bleach before using it to water the plants. If the equipment breaks down and isn't noticed for a few days, they can tell due to the decreased plant vigor.

The meeting provided a great opportunity for us to interact with other members of the GPDN. We also learned what methods other labs routinely use to diagnose disease and insect problems. In addition, we were given a "heads up" on new diseases and insects we should be looking for, and new techniques and databases available to identify them. We also discussed the future of diagnostics and the role of the GPDN in facilitating communication and cooperation. For early April, it was a great opportunity to see a diverse array of plants and pests, which helped prime us for the busy growing season ahead.

Cindy Morris Returns

Our roving affiliate professor, Cindy Morris based at INRA in Avignon, France, has received a grant from the American Philosophical Society's Franklin Research Grant Program that will bring her back to our department this summer. The grant is for field and lab work for a project on 'New paradigms for life histories of plant pathogens'. The work will involve isolating the plant pathogenic and ice nucleation-active bacterium *Pseudomonas syringae* from source waters of the Snake and Yellowstone rivers. These strains will be compared to others from France and New Zealand to understand the role of the water cycle in disseminating this bacterium and how it adapts to habitats other than plants. This work is being conducted in collaboration with Dave Sands. Anyone interested in getting their feet wet is welcome to come along on field trips in August."

New Employees
Osama Moseilhy (Sherwood lab)

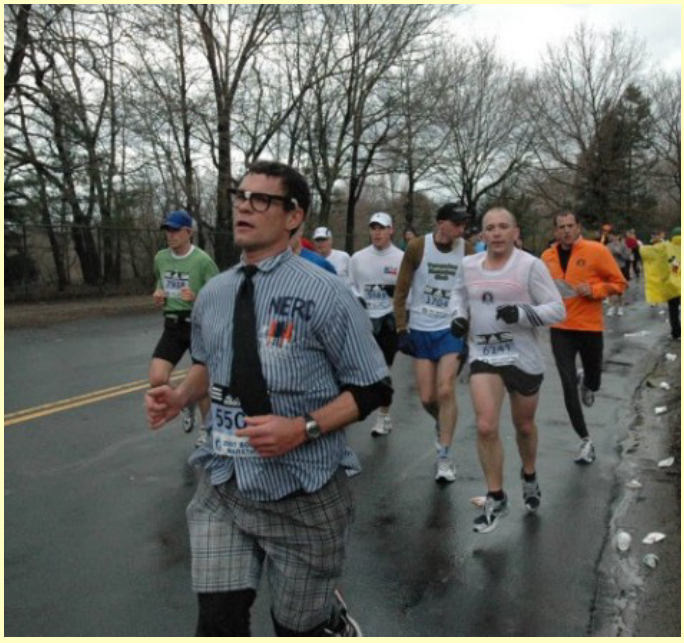
I am Dr. Osama Moseilhy, a visiting research scientist from the Agricultural Genetic Engineering Research Institute (AGERI) at the Agricultural Research Centre in Cairo, Egypt.

I am on sabbatical for six months to conduct research in Dr. John Sherwood's laboratory. I am doing my research project under the supervision of Dr. Thamir Alniemi, Dr. Mareike Johnston and Dr. John Sherwood. During my stay in this Department, I will make SAGE libraries and use them in isolating genes of stripe rust (yellow rust) resistance in bread wheat.

Coming from Cairo, with a population of around fifteen million, to Bozeman, I feel like I have too much empty space around me. Except for missing my wife and two children, I am enjoying every thing in this visit to the United States and especially the natural beauty of the state of Montana.

John Dudas Runs Boston Marathon

For John Dudas, once a wide-eyed spectator of the Boston Marathon for fourteen years, running his sixth Boston in April was another chance to



John running late for work

relive what once seemed to be an impossible dream. John explains, “Running 26 miles was unfathomable back then. But these amazing people of all ages, shapes and sizes proved it can be done. I always felt unsettled as a Bostonian until I finally ran the hometown classic.”
In 2001, John joined the Leukemia & Lymphoma Society’s ‘Team In Training’ (TNT) program to train for the 2002 Boston Marathon. “TNT is a wonderful support system that nicely blends training tutorship, camaraderie and respectful consideration for the gift of health through fundraising, awareness and friendship. And, they taught me how to become a marathoner. The experience influenced me immeasurably.” He has not missed a Boston Marathon since.

In recent years, John has taken a lighter approach at Boston by running in costume. “I built my career years ago as a nerdy accountant, so that is an easy costume to wear and far less uncomfortable than it looks. The spectators love costumed runners and I really feed off their energy.”

Despite dire weather forecasts and the threat of unprecedented cancellation of the 2007 event, John hung on to finish the race in 3:27. “Once I settled in to a groove, the weather was manageable. The spectators are wonderful and always pull me through. I struggled during the last 9 miles, but overall I had so much fun. Boston is a terrific homecoming and I’ll never grow tired of it.”

Soon, John plans to initiate a marathon training/fundraising program in Gallatin Valley. “Bozeman has an incredibly strong running community with so many people who would like to complete a marathon. I can help them by leading a training program that supports worthy causes in our community.” John spoke with TNT’s national headquarters about starting a local chapter, which he would organize and direct. “When I discussed my idea with TNT, they said we’re too small for their efforts. I would need to work through regional headquarters in Boise, which is unrealistic. Now, I'm exploring other channels in which to base this program – perhaps with Bozeman Deaconess Hospital’s new Cancer Center.”

Also, John has a new Thanksgiving Day tradition on Bozeman's calendar this year. The *'Huffing For Stuffing Thanksgiving Day Run*' is a fundraiser event to benefit the Gallatin Valley Food Bank. “As community oriented as Bozeman is, our town is ripe for an event like this. Thanksgiving Day is the most popular day of the year for road races. I’m confident people will come out in large numbers to enjoy healthy recreation and socializing and to support those less fortunate among our community.” Registration for the event is on Active.com. Check the race website for details: huffingforstuffing.com (coming soon). John invites volunteers, sponsors and participants to contact him about getting involved.

Jackie Campbell receives MS

Jackie received her M.S. in Plant Sciences on April 20. She will begin a Ph.D. program in the Molecular BioSciences at MSU which is an ujmbrella program containing faculty from multiples disciplines. Congratulations Jackie!

Jeremy Jewell receives MS

Jeremy Jewell received his M.S. in Plant Sciences on April 18. He plans to begin his Ph.D. studies in Molecular Plant Sciences at Washington State University this fall. Congratulations Jeremy!

Assa Kante receives MS

First to graduate in the USAID Higher Education for Development program at Montana State, Assa Kante completes her thesis defense in Ag and Technical Education and prepares for graduation May 2007. Shown here with her graduate committee: Dr. Martin Frick, chair; Dr. Florence

Dunkel, PSPP: Dr. Arthur Bangert, Ed; Dr. Carl Igo, Ag Tech. Congratulations Assa!

Publications

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Dyer, A.T., Windels, C.E., Cook, R.D., and K.J. Leonard. 2007. Survival Dynamics of Aphanomyces cochlioides' oospores exposed to heat stress. Phytopathology 97:484-491.

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Patent

US Patent 7,070,985 issued for the novel antioxidants - pestacin and isopestacin, Strobel, Harper and Ford.

Bob's Byte
By Bob Johnston
Out of office replies

What is the difference between DVD-R and DVD+R?

As DVD recording comes of age and the prices come down, more of us will likely be adding DVD writers to our computers. But what gives with these dueling formats?

Anyone who was around twenty years ago might remember the battle between the two video tape formats: VHS (Victor Home System) and Betamax (Sony). Fast forward to the twenty-first century and we have a similar battle of the formats with DVD.

The disks are pretty much the same, but the writing process is different. DVD+R is a bit more advanced, but the disks often cost more than the older DVD-R format.

Another thing to consider is what format your DVD recording software works best in. I had a friend that couldn't get his software to work and it turned out he needed to use DVD-R. My suggestion? Pay the extra bucks for a writer that supports both formats or wait until the dust settles.

Is There a Trick to Growing Clematis?
By Cheryl Moore Gough

No, but they have a reputation for being finicky. First, start with a clematis cultivar that produces flowers on new wood to avoid winter kill problems. These are typified by *Clematis x jackmanii*, or Jackman clematis. Plant them in full sun or dappled shade. Shade is particularly important for the red and blue large-flowered hybrids and the bicolors because the colors fade if the plants are set in full sun. The soil should be rich and well drained and close to neutral pH. You may have to acidify your soil to lower it into the correct range. Roots do best in a cool, moist environment and do not compete well with other plants. Keep them mulched with wood chips. Until the plant is established fertilize it each year with a 3:1:2 ratio fertilizer. Once it has become established it may not need any fertilizer.

May Birthdays

Chaofu Lu	16
Ian Foley	21
Mareike Johnston	22
Aravind Jukanti	23
Tom Blake	24
Zhitan Sun	26
Gene Ford	29
Bob Johnston	29
Yerlan Turuspekov	31
Deanna Nash	31

Recipe of the Month

Bran Flax Muffins

Contributed by Tracy Dougher

1½ c unbleached flour
¾ c flaxseed meal
¾ c oat bran
1 c brown sugar
2 t baking soda
2 t baking powder
½ t salt
2 t cinnamon
1½ c carrots, shredded
2 apples, peeled & shredded
½ c raisins
1 c walnuts, chopped
¾ c milk
2 eggs, beaten
1 t vanilla

1) Mix dry ingredients
2) Mix in carrots, apples, raisins, & nuts
3) Add milk, eggs, & vanilla
4) Stir until moist
5) Fill muffin cups ¾ full (makes roughly 15 medium muffins but can be easily stretched to 24 small muffins)
6) Bake at 350°F for 15-20 min (convection oven 325°F for 15 min)

The following were contributed by Rich Stout

From the April 16 issue of the New Yorker:

"Cheetah more than friend. Cheetah dependent."

Bagel to Go