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IS-MPMI REPORTER
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items for the next issue
is February 15, 2002.**

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For more information on submitting electronic images contact Kayleen Larson at klarson@uslink.net.

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**Feeding Ten Billion People.
Three Views**

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Recent issues of *Plant Physiology* have contained a marvelous series of essays dealing with issues and controversies that surround the introduction and use of crops developed through the application of recombinant DNA technologies and genetically modified organisms (GMOs). These articles have provided considerable insight and thoughtful analysis of some of the major issues related to this timely topic. Among the points raised throughout these essays is the important role that GMOs will play as one of the components needed to enhance future agricultural productivity. Continued improvements in crop quality and productivity are crucial if we are to be in a position to feed the world of 10 billion people that will come into existence sometime after the middle of the current century.

In the first essay in this series, Chris Somerville admonished plant biologists to make their voices heard in the ongoing GMO debate. However, plant biologists who make their voices heard on this issue need to be knowledgeable on many aspects relating to GMOs, a number of which go beyond the science involved. One difficulty with many plant biologists in this regard is that we know a lot about the biology but often much less about the agricultural, sociopolitical, and economic issues that bear on the discussions surrounding GMOs. This is particularly true when talking about GMOs in terms of world agriculture. I will admit to having been relatively ignorant of agriculture worldwide myself until several years ago when I first read the book written by **M.J. Chrispeels** and **D.E. Sadava**, *Plants, Genes and Agriculture*, which remains an excellent primer on the topic. Recognizing this general deficiency, I would like to recommend three books to anyone interested in the larger topic of feeding the world's population and in particular to those of you who are publicly engaged in the GMO debate.

The first book, *Feeding the Ten Billion: Plants and Population Growth*, is written by **Lloyd T. Evans**. Evans is a crop physiologist from Australia and takes the interesting tack of following the progressive development of agriculture through time, going from a population of five million about 10,000 years ago, to the six billion reached a couple of years ago. Evans notes at the outset that the book is not meant to be an all-inclusive history of agriculture, and it is not. However, much agricultural history is woven throughout the fabric of the text in a very readable fashion. Evans also does a good job of illustrating how advances in our understanding of plant biology have been incorporated into agricultural practices. It is interesting that although plant physiology began to be applied to agriculture in a knowledgeable manner in the first half of the 19th century, until the advent of the Green Revolution after 1960, the major contributor to increases in the world food supply was the extension of arable land. Increased production since then has been obtained through rising yields, a feature that is beginning to show some signs of slowing down.

Feeding 10 Billion People *continued on page 2*

The subject of arable land provides an illustration of why Evan's book is worth reading. I have often seen it stated that most, or even all, of the arable land on the earth is already under cultivation, suggesting there is no more land available for that purpose. Worldwide, this is not true, but the actual situation is complex. There is a lot of potentially arable land that is currently not under cultivation but much of it is undisturbed forest and wetland, whereas other land is arable but marginal. Arable land is being lost all the time to urbanization and replaced with previously uncultivated land, keeping the total roughly constant. The book is filled with topics like this that will help the reader better understand the complexities of the issues related to producing enough food to keep up with population growth. Most plant biologists should come away from reading this book with a better sense of world agriculture in terms of where we are today, how we got there, and the constraints that will drive its development over the next 50 years.

In a more philosophical vein, Evans begins the book by juxtaposing two views of the relationship between food production and population growth. The one view of Thomas Malthus has the supply of food being the driving variable and population growth dependent upon it and the other view is of Ester Boserup, who sees it the other way around, with population growth being the driver of agricultural development. Evans makes no attempt to resolve this issue, but keeps it front and center throughout the book and leaves it to the reader to ascertain which view might be closer to the truth. I would note that the correct answer, if one truly exists, would have a large bearing on the eventual acceptance of genetically modified crops, particularly in developing countries.

The second book I recommend reading is *Feeding the World: A Challenge for the Twenty-First Century* by **Vaclav Smil**. Although the title is similar to that of Evans' book, the approach is quite different. Smil brings more of an ecological perspective to the topic and treats the subject from the standpoint of where we are now and where we need to go in the future. Smil has long addressed issues of sustainability. The often-quoted limit of four billion people that can be sustained if nitrogen were only applied following the principles of organic farming can be traced to him, although others have made similar calculations. Smil's book makes for good reading because he regularly searches for practical approaches (or as he calls it, "truth") to achieving a sustainable agriculture that can support 10 billion people. It is interesting that he does this in part by appropriating the most legitimate points of both those who see only catastrophe on our present course and those who effectively see no limits to the number of people that the earth can sustain long term. As he does this, Smil also points out fallacies associated with many of the numbers that both of these camps regularly cite.

As noted, Smil's goal is how to achieve long-term agricultural sustainability. To do that, he works his way up the food chain, from crop productivity through postharvest losses and onto food production, consumption, and human nutrition. In the process, he continually presents a message that there is considerable slack in the current system and that the prospects for more efficient use of existing resources at all levels are very real. Smil's background in ecology and his understanding of food chains shows up well in his discussion of nutrition and how an omnivorous world can be sustainable, but only if done in an intelligent way, which means more chicken and much less beef. It is equally important that the efficiencies Smil envisions are achieved with existing technologies and knowledge bases, although some of his approaches to optimizing plant physiological parameters are based on more ideal control of plant functioning than is presently attainable. The use of GMOs, pro or con, garners little mention. Far from being a drawback, this omission makes the book all the more important to read. It serves to remind us not only that GMOs are just one part of the solution to feeding a 10 billion-person world but also identifies what other components of the solution are likely to be.

Smil's movement from Evans' primary focus on agriculture onto issues of ecological sustainability and nutrition represents a good segue into the third book, *The Doubly Green Revolution: Food for All in the 21st Century* by **Gordon Conway**. Conway is currently president of the Rockefeller Foundation and was the recipient of the American Society of Plant Physiologists' (ASPP) Leadership in Science Public Service Award last year. Although Conway is cited as being an agricultural ecologist, there is clearly a lot of economist in him. This makes for tough sledding in some parts of the book. On the other hand, this also leads to a wealth of interesting and useful data presented throughout the book. Conway has spent much of his career working with the international agricultural research centers, and he provides a more detailed picture of the world agricultural scene than either of the other two books. He also understands poverty and the many socioeconomic factors that contribute to the existence of significant numbers of underfed people in a world of sufficient food supplies. Opponents of GMOs often use this fact and point to poverty as the problem, not a lack of food. Conway makes it clear that, however true the latter is, alleviating poverty is not a practical or workable solution and does not address the future need to feed 60% to 70% more people than exist at present.

Conway sympathizes with Smil's goal of achieving a more sustainable form of agriculture than that he sees associated with the first green revolution; hence, the notion of the next one being "doubly green." He approaches this goal with several themes that appear

regularly throughout the book. One is that he is much more supportive than Smil of the need to include new technologies in the mix needed to feed a world of 10 billion people. In that regard, GMOs (plants and animals) are addressed specifically, with Conway seeing the potential gains from the application of GMOs as far outweighing their perceived risks at this point. This is especially true when he talks of pest and disease management, where Conway envisions GMOs as being an important way out of the cycle of large-scale application of pesticides associated with the first green revolution. Conway also sees the need for far more broad-ranging partnerships than currently exist. He cites several examples envisions and another recurring theme is the need to empower and include local farmers in the new partnerships. He feels there is much to be learned on the ground from people who have spent decades or even centuries growing crops and surviving on a particular plot of land. In the end, Conway is calling for a comprehensive agricultural revolution, one that includes the technological, the ecological, and the sociological. He recognizes this will not be an easy task to accomplish but sees the cost of a failure to act as being extremely high. This book is the most difficult of the three to read, but I believe the reward is worth the effort to those who persevere.

In summary, all three books are built around the same general theme: feeding the world in the middle of this century. Although there is much overlap in what they have to say, each tends to emphasize a different area when looking to the future. Evans looks more to the capabilities inherent in the biology of plants, Smil stresses a more environmentally based approach and the need to optimize our use of resources to achieve agricultural sustainability, and Conway brings the socioeconomic and cultural dimensions of the world food supply more to the fore. In total, these three books make for informative and important reading for any plant biologist.

Before ending this essay, I would like to add a couple of my own thoughts related to the GMO debate and why the information provided in these three books is important for any plant biologist participating in that debate to know. First, in spite of their different outlooks, all three would agree that feeding a world of 10 billion inhabitants cannot be accomplished without making significant changes, particularly in the developing world, that run throughout the food chain, from agricultural quality and productivity to socioeconomics. However, the battle over the application of GMO technology to help feed the earth's growing population currently rests in the hands of the developed countries, whereas most of the people that will need to be fed are located in developing nations. The irony of this situation rests on the fact that thanks to modern agricultural prac-

tices, the population of the developed world has access to the most abundant, healthiest, and cheapest supply of food in the history of the human race. Simply stated, people in the developed world are spoiled when it comes to food, and they are in a position to be picky about what they chose to, or choose not to, eat. Opponents of GMOs do not need to prove whether any claim about the possible dangers of GMOs is true or not. Just raising the specter of a possible risk associated with GMOs in many people's minds is enough to make them say they do not want to eat any food containing GMOs. This decision is easily made because it comes with no apparent consequence for the cost, availability, or quality of the food they subsequently eat. That luxury is not afforded to someone in a country where food is nowhere near as cheap and available, as all three books make abundantly clear.

Second, as a long-time member and recent Chair of ASPP's Public Affairs Committee, I believe the Society can justifiably be proud of the extent to which members of the Public Affairs Committee and the Society as a whole have been willing to participate in the public debate on GMOs. In doing so, we have attempted to behave as honest brokers, ensuring that the scientific issues underlying the GMO debate are presented in as fair and objective a manner as possible. This is not always an easy thing to do when it comes to GMOs, given how polarizing the issue is. It has become difficult to take a position that remotely feigns in the direction of one side of the GMO issue without immediately being seen as some sort of mindless lackey by people on the other side. The best way I know of to counter the latter charge is to develop support for one's arguments (pro or con) based on a thorough understanding of the subject. Knowledge truly is power in this case, and one can never be too knowledgeable on this most controversial, current, and important of topics. Just as Chris Somerville opened this series of essays with a call for plant biologists to make their voices heard, I would like to end the series with a second important recommendation: "Go read a book (or three)."

LITERATURE CITED

- Chrispeels MJ, Sadava DE** (1994) *Plant, Genes and Agriculture*. Jones and Bartlett, London
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- Evans LT** (1998) *Feeding the Ten Billion*. Cambridge University Press, Cambridge, UK
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- Somerville C** (2000) The genetically modified organism conflict. *Plant Physiol* 123: 1201–1202

Oomycete Researchers Gather Following IS-MPMI Meeting

Following the Madison IS-MPMI meeting, a conference titled Oomycete Genetics 2001 was held in the campus of the Ohio State University, Ohio Agriculture Research and Development Center (OARDC), Wooster, Ohio, USA, on 16-17 July 2001. This conference was the second of a series following a similar event that also was held at the OARDC campus in Wooster in November 1999. The scientific program covered various aspects of the molecular genetics of Phytophthora and related oomycete pathogens. A total of 21 oral presentations were offered in five sessions titled Resistance, Virulence and Avirulence I and II, Functional Genomics, and Genomics: Present and Future. A total of 40 participants attended, and included US participants from Bowling Green State University, College of Wooster, Cornell University, Michigan State University, Ohio State University, University of California-Davis, and Syngenta, as well as international participants from Canada, England, France, Germany, The Netherlands, and Scotland. The full program and list of participants can be downloaded from <http://www.oardc.ohio-state.edu/phytophthora> (follow Oomycete Genetics 2001 link). The event was sponsored by the International Potato Center (CIP) Global Initiative on Late Blight (GILB) and the Ohio State University.

Open discussions and spirited question-answer sessions characterized the conference. There were numerous opportunities for informal discussions and net-

working among participants during a 10-hour van drive from Madison to Wooster, a hike at Mohican State Park, and two group dinners. One recurrent theme in the presentations and discussions was the impact of genomics on Phytophthora research and on the development of novel strategies for management of late blight and other economically important oomycete diseases. Participants also discussed the need to coordinate efforts in securing funding for a full genome sequence of a Phytophthora species and additional sequence data to allow comparative genomics of oomycetes.

In recent years, there has been increased awareness of the evolutionary history of oomycetes as unique eukaryotic microbes distinct from fungi. A community of researchers has naturally evolved driven by the unique biological properties of oomycetes (diploid at the vegetative stage, unique transcriptional machinery, etc.) that require specific methodologies often unlike those used in the study of fungi. This community has emerged as a vibrant and forward-looking group, as illustrated by early involvement in genomics. The distinct nature of oomycetes and the oomycete research community has been recently recognized through the establishment of a Senior Editor position in the society journal MPMI devoted to oomycete-plant interactions. Oomycete researchers hope that the trend will continue and that future IS-MPMI meetings will include sessions on oomycete-plant interactions.

UPCOMING MEETINGS

40th Congress of the Southern African Society for Plant Pathology

January 20-23, 2002, Dikhololo, (near Pretoria) South Africa Contact: Prof. Teresa Coutinho: Chair, Conference Organizing Committee, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria 0002, Tel: 012-420 3934 Fax: 012-420 3960 E-mail: Teresa.Coutinho@fabi.up.ac.za <http://www.saspp.co.za/>

3rd International Bacterial Wilt Symposium

February 4-8, 2002, Nelspruit, South Africa <http://ibws.nexenservices.com>

4th Plant Breeding Symposium

March 11-14, 2002, Gordon's Bay, Cape Town South Africa Contact: Jody Terblanche, Private Bag X82075, Rustenburg 0300 South Africa, Tel: 2714 536 3151 Fax: 2714 536 3113 E-mail: Jody@nitk1.AGRIC.ZA <http://www.uovs.ac.za/faculties/agric/pteelt/sapba/>

Sixth European Conference on Fungal Genetics

April 6-9, 2002, Pisa Italy www.agr.unipi.it/ECFG6

Advances in Plant Virology

April 17-19, 2002 Homerton College, Cambridge, England www.plantsci.cam.ac.uk/plantsci/news/homerton.html

International Union of Microbiological Societies Congress (joint meeting of the Xth International Congress of Bacteriology and Applied Microbiology, Xth International Congress of Mycology, and XIIth International Congress of Virology)

July 27-August 1, 2002, Paris, France www.iums-paris-2002.com

XXVIth International Horticultural Congress.

August 11-17, 2002, Toronto, Canada www.ihc2002.org

13th Australian Nitrogen Fixation Conference

September 24-27, 2002, Adelaide, South Australia, Australia Theme: Fixed nitrogen in sustainable farming systems. The program will cover a broad range of aspects of biological nitrogen fixation. For details contact: Dr. Peter Murphy, Department of Plant Science, Waite Campus, The University of Adelaide, PB 1 Glen

Osmond, South Australia 5064, AUSTRALIA,
Tel: +61 8 8303 7262 Fax: +61 8 8303 7109
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**3rd Asia-Pacific International Mycological
Conference on Biodiversity and Biotechnology
(AMC 2002)**

November 4-8, 2002, Kunming, China
Contact: amc2002@china.com

**8th International Congress of Plant Pathology
(ICPP2003)**

February 2-8, 2003, Christchurch, New Zealand
"Solving Problems in the Real World"; Contact: Helen
Shrewsbury, Professional Development Group, PO Box
84, Lincoln University, Canterbury, New Zealand
(shrewsbh@lincoln.ac.nz). Registration details and
other information is available on the ICPP2003 website
<http://www.lincoln.ac.nz/icpp2003/>). The Final Circular
for ICPP2003 will be released in December 2001, and
will be distributed to those who have completed
Registration of Interest details.

Our Sincere Thanks!

A special thank you to outgoing President **Jan Leach**
for three years of leadership, inspiration and service to
IS-MPMI. Without the willingness of members like Jan
to commit their time and talent there would be no IS-
MPMI. Our sincerest appreciation!

The members of IS-MPMI

IS-MPMI Europe Office Moving

Beginning January 1, 2002, the IS-MPMI Europe Office
will have a new address. For the convenience of IS-
MPMI members in Europe and surrounding countries,
membership questions, or other IS-MPMI business can
be handled from this office.

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Welcome New Members

The following members joined IS-MPMI between September through November 2001.
Please join us in welcoming them to the Society!

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Position Openings

Postdoctoral Research Associate

A position for a postdoctoral researcher will be available to study *hrp* gene regulation in *Pantoea stewartii*, which causes Stewart's wilt of corn. The *hrp* genes in this species are regulated in response to environmental, nutritional and plant signals by a signal transduction cascade that includes a two component system (HrpX/Y), a transcriptional enhancer (HrpS), and an alternate sigma factor. This system has a number of unusual features: HrpX may sense the energy state of the bacterium; a novel methylated receptor protein may modulate HrpX activity in response to host cell contact; and *hrpS* expression appears to be regulated by population density. The immediate goals of this project are to genetically and biochemically characterize the regulation of the *hrpS* promoter, which is a key point in integrating many different signals, and to determine how the HrpX/Y two component system functions in pathogenesis. This will be a full-time position, with fringe benefits starting on or after Dec. 1, 2001 and lasting for at least two years. Research experience in molecular biology or microbiology are required and expertise in biochemistry is desired. Individuals interested in this position should send a resume and names of three references to Dr. David Coplin (coplin.3@osu.edu), Department of Plant Pathology, 201 Kottman Hall, 2021 Coffey Rd., The Ohio State University, Columbus, OH 43210-1087. OSU is an Equal Opportunity/Affirmative Action employer.

Research Position

A permanent research position will be opened in our laboratory to participate in a research project oriented towards the molecular analysis of pathogenicity determinants in the plant pathogenic bacterium *Ralstonia solanacearum*, whose complete genome sequence is now available. The person to be hired will be responsible for the characterization of the effects of various pathogenicity effectors on host plant cells and on the identification of the corresponding molecular targets in the plant. Attention will be focused on a set of effector proteins translocated through the type III secretion pathway encoded by *hrp* genes. This research project will be developed in a team comprising three researchers with long experience in the molecular genetics of the bacterial partner. Candidates are expected to have experience in plant or animal cell biology and should fulfill the administrative requirements for Chargé de Recherche INRA. For additional information, please contact: Dr. Christian Boucher, Laboratoire de Biologie Moléculaire des Relations Plantes Microorganismes, INRA-CNRS, BP 27, F-31326 Castanet-Tolosan France, Tel: (33) 561 28 54 16 E-mail: boucher@toulouse.inra.fr

Post Doctoral Position: Lipoxygenase pathway in plant-pathogen interactions.

The lipoxygenase pathway in plants generates an array of oxygenated derivatives of fatty acids, the so-called oxylipins. These compounds are involved in plant

development and in plant defense responses to pest and pathogen attack. Our group is involved in a European project aimed at understanding the nature and the role of oxylipins in *Arabidopsis thaliana*. A post doctoral position is available in our team to create and analyze transgenic *Arabidopsis* plants in which the constitutive amounts of specific enzymes involved in the oxylipin pathway have been altered. Characterization of the transgenic plants, carried out in collaboration with partner laboratories, will include oxylipin profiles, gene expression, and resistance to pests and fungal pathogens. The applicant must have a PhD in a relevant discipline. Training in basic molecular biology techniques is required. Experience in transgenic plant analysis and/or handling of *Arabidopsis* pathogens would be strongly appreciated. Previous experience in plant transformation or in biochemistry of lipids is not essential, nor is knowledge of French. Our group has long-term experience in the study of plant-pathogen interactions and of the lipoxygenase pathway (Rancé et al., PNAS, 1998, 95, 6554-59 and references herein). Our laboratory (<http://www.smcv.ups-tlse.fr>) is located in Toulouse in the South of France. It is part of a well-equipped Federative Research Institute (<http://ifr40.smcv.ups-tlse.fr>) which comprises about 200 plant and microbe scientists. The position will be available in November/December, 2001, and 3-year funding is available. There is no particular requirement concerning the citizenship of candidates. Net salary will be around 19,600 per year. To apply, send a CV and the names, phone numbers and e-mail addresses of 3 referees to: Joëlle Fournier or Marie-Thérèse Esquerré-Tugayé, UMR 5546 CNRS-UPS, Université Paul Sabatier, Pôle de Biotechnologies Végétales, 24 chemin de Borde-Rouge, BP 17 Auzeville, 31326 Castanet-Tolosan, France Tel: +33 (0)5 62 19 35 14 Fax: +33 (0)5 62 19 35 02 E-mail: fournier@smcv.ups-tlse.fr, or esquerre@smcv.ups-tlse.fr

Postdoctoral Position on Fungal Signal Transduction and Pathogenesis

A postdoctoral position is available at the Department of Genetics, University of Cordoba, Spain to study signal transduction in the pathogenic fungus *Fusarium oxysporum* (see Mol Microbiol 39:1140-1152). The successful candidate will participate in an effort to identify key signalling components required for fungal pathogenesis. We are looking for a highly motivated PhD scientist with a strong background in molecular and cell biology. Experience with fungal or yeast systems will be an asset. The position is available immediately or as agreed. The salary corresponds to the standard for academic postdocs in Spain. Appointment duration is up to three years, renewed on a yearly basis. Informal enquiries and applications in the form of a CV and the names and e-mail-addresses of three referees should be sent to: Dr. Antonio Di Pietro, Departamento de Genética, Universidad de Córdoba, Edificio Mendel C5, Campus de Rabanales, 14071 Córdoba Spain, Tel./Fax: 34 957 218981 E-mail: ge2dipia@uco.es

Postdoctoral Research Scientist

Applications are invited for a three-year BBSRC-funded postdoctoral position in the laboratory of Dr Anne Osbourn to characterize glycosyltransferases from diploid oat (*Avena strigosa*) that are required for the synthesis and biological activity of antimicrobial saponins (avenacins). Saponins are important plant secondary metabolites that are determinants of disease resistance in oat and that are also exploited for drug use and other commercial purposes. Tools available in the laboratory include saponin-deficient (*sad*) mutants that are defective in avenacin glycosylation and an EST resource of over 12,000 sequences from oat roots that includes a number of candidate glucosyl transferase sequences [PNAS 96,12923, 1999; PNAS 98, 13431, 2001]. This project is part of a multi-faceted programme that involves the application of molecular and classical genetics, microarrays, proteomics, protein and small molecule biochemistry to the dissection of a secondary metabolite pathway that is essential for plant defense in cereals. Although many dicotyledonous plants produce saponins, cereals and grasses are generally saponin deficient with the exception of oat. The evolution and regulation of saponin biosynthesis within the monocots is therefore of particular interest to us and has important implications for the development of new sources of disease resistance in crops of major economic importance. Candidates should have a PhD together with a strong background in molecular genetics and/or biochemistry. Experience in the area of plant secondary metabolite biosynthesis (especially glycosyltransferases) may be advantageous but is not essential. The position will receive part-time technical support. Salary on appointment will be within the RA1A range of £17,451 to £26,229 depending on qualifications and experience. Please quote post reference number 1081 in all correspondence. To apply please send a full CV together with the name of two referees to the Personnel Officer, John Innes Centre, Colney, Norwich, NR4 7UH, UK quoting the appropriate post reference number. The closing date for applications is January 16, 2002.

Technical Position

A technical position is available to support the previously mentioned Postdoctoral Research Scientist (left column this page) and other related projects in the laboratory. This position is available for one year in the first instance with the possibility of extension for a further two years, subject to funding and will involve the establishment and application of methods for testing gene function in monocots. Experience with stable and transient plant transformation procedures would be advantageous but is not essential. Candidates should have a BSc in molecular genetics or biochemistry. Salary on appointment will be within the RA1B range of £17,451 to £19,486 depending on qualifications and experience. Please quote post reference number 1027 in all correspondence. To apply please send a full CV together with the name of two referees to the Personnel Officer, John Innes Centre, Colney, Norwich, NR4 7UH, UK quoting the appropriate post reference number. The closing date for applications is January 16, 2002.

Position Wanted

Post Doctoral Position Wanted

Scientist currently working for a regional research laboratory in the department of soil Microbiology on a research program involving the utilization of beneficial soil microorganisms (PGPR strain) for improvement of plant health and soil conditions, and the characterization of bioactive compound responsible for plant growth and disease control along with induced disease resistance seeks Post Doctoral position. Contact: Dr Hari Prasanna Deka Boruah, Soil Microbiology, Regional Research Laboratory, Jorah 785 006, Assam, India, Phone:+91 0376 370121(O), 370658 Fax:+91 0376 370011 E-mail: dekaboruah@yahoo.com



IS-MPMI Membership Reaches 500!

IS-MPMI is growing. As of October 2001 IS-MPMI reached the 500 member mark. Keep the momentum going. If you know someone who may be interested in joining, make sure to refer them to the IS-MPMI website. Membership information and an application are always available at <http://www.scisoc.org/ismpmi/info/appl.htm>.

President

(Term 7/16/01 - 7/15/03)

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