



The International Centre for Underutilised Crops

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# ICUC-News #60

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Dear colleagues,

A Happy New Year to all of you.

This issue is a 'bumper issue' with lots of information that accumulated over the past 3 weeks. We have several entries about climate change this time. This is evidence of the increased interest in the topic worldwide, but I also post them specifically because of the important contributions underutilized plants can make to combating climate change – not by changing the climate back to what it was, but by helping poor people to be more prepared for the changing conditions.

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With best wishes,  
Hannah

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**1. Funding & Job opportunities**

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**1.1 Fellowships in Sustainability Science**

Center for International Development, Harvard University  
Due date for applications: 1 February 2008

The Sustainability Science Program at Harvard University's Center for International Development invites applications for resident fellowships in sustainability science for the University's academic year beginning in September 2008. The fellowship competition is open to advanced doctoral and post-

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doctoral students, and to professionals engaged in the practice of harnessing science and technology to promote sustainable development. Applicants should describe how their work would contribute to "sustainability science," the emerging field of use-inspired research seeking understanding of the interactions between human and environmental systems as well as the application of such knowledge to sustainability challenges relating to advancing development of agriculture, habitation, energy and materials, health and water while conserving the earth's life support systems. This year we will give some preference to applicants who address the challenges related to meeting human needs for water in the context of sustainable development. In addition to general funds available to support this fellowship offering, special funding for the Giorgio Ruffolo Fellowships in Sustainability Science is available to support citizens of Italy or developing countries who are therefore especially encouraged to apply. For more information on the fellowships application process, see [http://www.cid.harvard.edu/sustsci/grants/fellows/08ellows\\_RFP.htm](http://www.cid.harvard.edu/sustsci/grants/fellows/08ellows_RFP.htm)

William C. Clark  
Harvey Brooks Professor of International Science, Public Policy and Human Development  
Co-Director, Sustainability Science Program  
Center for International Development, Harvard University

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**1.2 Director, School for Environment Research, Darwin, Australia**

[http://www.cdu.edu.au/pmd/documents/CandidateBooklet\\_SER-301107.pdf](http://www.cdu.edu.au/pmd/documents/CandidateBooklet_SER-301107.pdf)

The Director will be a research leader with an international reputation who can consolidate and extend the profile of the School for Environmental Research. The Director will inspire, extend and expand the school's team of researchers. The researchers investigate natural resource management in northern Australia and the Asia-Pacific Region, the livelihoods of Indigenous peoples the environment supports, the threats to the region's marine and terrestrial biota, the sustainability of uses, particularly in the face of climate change and the most effective ways of providing research-based evidence for public policy formulation.

Deadline for application: 7 January 2008. Please obtain an application package by accessing the Charles Darwin University, People Management and development Home page at <http://www.cdu.edu.au/pmd> or email [recruitment@cdu.edu.au](mailto:recruitment@cdu.edu.au).

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**1.3 NEPAD-Spanish Fund for Empowerment of Women**

[http://www.womenforabetterworld.org/portals/0/Fondo\\_Spain\\_NEPAD/tabid/245/Default.aspx](http://www.womenforabetterworld.org/portals/0/Fondo_Spain_NEPAD/tabid/245/Default.aspx)

On behalf of the NEPAD/AECI Steering Committee, the Secretariat is inviting proposals from institutions involved in implementing programs that have the potential to unlock women's economic potential, fight poverty, close gender gaps, empower women, are contributing to the achievement of MDGs and the attainment of sustainable development. The application format should contain characteristics such as the Purpose, Beneficiaries, Duration of the projects to be financed (up to 6 months), proposed Budget, Geographical location and thematic priority. The application should be in a prescribed format and be will be subjected to selection criteria.

More information at [www.nepad.org](http://www.nepad.org) and [www.mujeresporunmundomejor.org](http://www.mujeresporunmundomejor.org).

All the Applications should be addressed to the Steering Committee and be submitted electronically to the NEPAD Secretariat by 1PM 15th January 2008.

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**1.4 Studying Complex Systems (James S. McDonnell's Foundation)**

<http://www.jsmf.org/programs/cs/index.htm>

The James S. McDonnell's Foundation (JSMF)'s 21st Century Science Award supports research projects with a high probability of contributing new knowledge. Projects submitted for funding consideration should represent ideas early in their conception, intending to break new ground, or challenge commonly-held assumptions not sufficiently supported by data. Projects submitted should be

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sufficiently novel, cross-disciplinary, or heterodox so that they have a strong likelihood of influencing the development of new ways of thinking about important problems. A maximum of \$450,000 total costs can be requested and the funds can be expended over a minimum of 3 years or a maximum of 6 years.

Please read the application guidelines carefully at <http://www.jsmf.org/programs/cs/index.htm>. A PDF file must be directly uploaded to the JSMF server before the deadline on March 12, 2008 at 3:59 PM CST.

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### **1.5 Two posts at the SHL**

The Swiss College of Agriculture (SHL) is a faculty of the Bern University of Applied Sciences. It is a leading Swiss centre of competence in Agriculture, Forestry and Food Science & Management. It offers BSc courses in these three fields, is preparing MSc courses to start by 2008 and is known as an innovative and flexible research and service institution. It works in Switzerland and more than 20 countries in Europe, Africa, Asia and Latin America.

Position 1: To strengthen SHL's competence center in sustainable agricultural production and forestry, we are looking for a

Senior scientist/lecturer in sustainability (80 - 100%)

You will lead an applied R&D program aiming at the holistic assessment and improvement of the sustainability of agricultural production ('Response-Inducing Sustainability Evaluation', RISE). You will develop and implement RISE projects and ensure their funding to further improve the RISE tool and spread its application. You will bring together and coordinate SHL internal and external expertise in the domain of sustainable agricultural production and forestry. You will collaborate in other research and development activities, conduct your own field research in Switzerland and abroad and collaborate in mandates related to agricultural R&D.

With your expertise and experience you will enrich SHL's educational program by developing and delivering teaching modules for BSc and MSc courses in the fields of ecology, sustainable resources management and international agriculture. Your national and international project work will allow students to undertake professional training and provide the basis for BSc and MSc theses you will supervise.

Ideally, you have the following qualifications and skills:

- a PhD, preferably in natural or life sciences, with proven scientific expertise;
- a track record in research management and fundraising as well as an extensive network of national and international contacts in relevant R&D organizations;
- proven experience of working in multi-disciplinary teams, multiregional experience in agricultural R&D;
- holistic thinking, integrative skills, strategic focus; modeling experience and profound understanding of ecological principles would be an asset;
- excellent writing and speaking ability in English; fluent in German and/or French; Spanish and other language skills will be an asset.

We offer a collegial and gender-sensitive working environment in innovative, dynamic teams and a small, attractive campus in Zollikofen near the city of Bern. The contract is for continuing appointment. The terms of employment correspond to Swiss federal employment regulations.

Position 2: Due to retirement of present staff and re-organization, we are looking for a

Senior lecturer/scientist in rural development (80 - 100 %)

In a multi-disciplinary team, you will design learning elements in the context of a program of Problem-Based-Learning in international agriculture (developing and transition countries) and participate in respective coaching. You will develop and deliver teaching modules and supervise thesis work of students in the BSc and MSc courses, covering the aspects of rural development and development policy (development theories, international organizations etc.).

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You will coordinate and further strengthen the Center of Competence on international agriculture within SHL, bundling the existing expertise (presently about 30 staff involved in research for development in developing and transition countries). You will head SHL's service for knowledge management on natural resources in international cooperation and you will be in charge of acquisition of mandates.

Ideally, you possess:

- a PhD, preferably in agricultural economy
- working experience in development cooperation or in the private sector in developing countries
- a track record of work and research in rural development (livelihood approach, public-private partnerships, value chain management, policy dialogue)
- experience in organization development, project cycle management and team leadership
- excellence in conceptual work and strong analytical thinking
- an extensive network of contacts in relevant research and development organizations
- interest in teaching and experimenting with innovative learning models
- excellent writing and speaking ability in English; fluent in German and/or French; Spanish or Russian will be an asset

For both positions, women are particularly encouraged to apply. Job sharing is possible. Ideally, employment should start by June 2008, but this date is negotiable.

For further information, please contact Prof. Dr. Christoph Studer, tel. +41 31 910 21 63, or learn more about SHL under <http://www.shl.bfh.ch>. Please send your application with detailed curriculum vitae and relevant certificates to Brigitte Josi, Head of Human Resources, SHL, Laenggasse 85, 3052 Zollikofen, Switzerland ([brigitte.josi@shl.bfh.ch](mailto:brigitte.josi@shl.bfh.ch)) to arrive before January 16, 2008.

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## 2. Workshops & Training Courses

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### 2.1 4th International Symposium on Tropical and Subtropical Fruits

Bogor – Indonesia, 3-7 November 2008

Dear Colleagues:

IV International Symposium on Tropical and Subtropical Fruits, November 3-7, 2008 – Bogor, Indonesia

Second announcement

On behalf of the Organizing Committees and ISHS, we are pleased to send to you this Second Announcement on the organization of the IV International Symposium on Tropical and Subtropical Fruits which will be held in Bogor, Indonesia on November 3-7, 2008 under the auspices of the International Society for Horticultural Sciences.

The Theme of the Symposium is "Fruits for better life". The Symposium will review current progress and explore potential application in the research of tropical and subtropical fruits. The aims of the symposium are to facilitate discussion and exchange of scientific and technical information and to promote international cooperation in all aspect of tropical and subtropical fruits, including both fundamental and applied aspects of research, extension, education, production and supply-chain management. The program will include a range of activities, including: (1) Oral Presentation; (2) Poster Presentation; (3) Workshops; (4) Professional Tours to Fruit Orchard, Tropical Fruits Garden and Botanical Garden; (5) Concurrent horticulture product exhibition; (6) Excursion for accompanying person; (6) Beside the main programs, additional pre and post symposium tours could be arranged.

It is not necessary to present a paper or poster to attend the symposium. We extend an invitation to researchers, educators, government officials, students, growers, companies and all who are interested in tropical and subtropical fruits.

Further information and circulars including the registration form, hotel reservation form and payment instructions will be periodically sent to you and upgraded on the website ([www.ifs2008.info](http://www.ifs2008.info)). We warmly encourage all interested people to visit this web site now and in the coming months for news and deadlines.

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The success of our Symposium depends upon your participation. I hope you will make a special effort to attend. We kindly request you to forward it or to pass the information to other possible interested persons dealing with tropical and subtropical fruits.

Looking forward to seeing you at the Symposium.

Bogor, December 2007

Roedhy Poerwanto  
Convenor  
4th International Symposium on Tropical and Subtropical Fruits

Secretariat:  
More information on Scientific Matters :  
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### 3. Publications & Information

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#### 3.1 Forests are not green

The Amazon may not help in the battle against rising temperatures.  
By Mac Margolis. Newsweek Dec 10, 2007 Issue (<http://www.newsweek.com/id/73243>)

Think of global warming and the usual set of apocalyptic images comes to mind, from glaciers crashing into the sea to Biblical deluges. But what does climate change sound like? "Usually when you walk through the rain forest you hear a squishy sound from all the moist leaves and organic debris on the forest floor," says ecologist Daniel Nepstad, a researcher at the Woods Hole Research Center and longtime scholar of the Amazon rain forest. "Now we increasingly get rustle and crunch. That's the sound of a dying forest."

Predictions of the collapse of the tropical rain forests have been around for years. Yet until recently the worst forecasts were almost exclusively linked to direct human predation, such as clear-cutting and burning for pastures or farms. Left alone, it was assumed, the world's rain forests would not only flourish but might even rescue us from greater folly by sopping up the excess carbon dioxide and other planet-warming greenhouse gases. Now it turns out that may be wishful thinking. Some scientists believe that the rise in carbon levels means that the Amazon and other rain forests in Asia and Africa may go from being assets in the battle against rising temperatures to liabilities. Amazon flora, for instance, holds more than 100 billion metric tons of carbon, equal to 15 years of tailpipe and smokestack emissions. If the collapse of the rain forests speeds up dramatically, it could eventually release 3.5 billion to 5 billion metric tons of carbon into the atmosphere each year - making forests the leading source of greenhouse gases.

The issue casts a pall over the United Nations' climate talks in Bali this week, where experts are discussing how to cut emissions after the Kyoto Protocol winds down in 2012. The evidence is worrisome. Uncommonly severe droughts brought on by global climate change have led to forest-eating wildfires from Australia to Indonesia, but nowhere more acutely than in the Amazon. Some experts say that the rain forest is already at the brink of collapse. The direst predictions come from the British meteorological office's Hadley Center, where a team led by Peter Cox forecast a massive "dieback" of plants, killing the rain forest by 2100. Critics dismissed these claims as too pessimistic, but Hadley's

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scientists went beyond the research norm by plotting not only temperature and rainfall but how carbon from the forest - say from fires or rotting trees - feeds back into the atmosphere.

Because the "carbon cycle" is vexing to plot, most meteorologists leave it out of their computer models. Yet extreme weather and rogue development are conspiring against the rain forest in ways that scientists have never seen. Trees need more water as temperatures rise, but the prolonged droughts have robbed them of moisture, making whole forests easy marks for the pioneers' cocktail of chainsaws and kerosene. The picture worsens with each round of El Niño, the unusually warm currents in the Pacific Ocean that drive up temperatures and invariably presage droughts and fires in the rain forest. Runaway fires pour even more carbon into the air, which jacks up temperatures, starting the whole vicious cycle all over again. Understanding the Amazon now means tracking the assault on the ground and from the air, and the view isn't pretty. "With the synergy between climate change and deforestation, you don't have to invent any numbers to show that over half the Amazon will be cleared or crippled by 2030," Nepstad says.

More than paradise lost, a perishing rain forest could trigger a domino effect - sending winds and rains kilometers off course and loading the skies with even greater levels of greenhouse gases - that will be felt far beyond the Amazon basin. In a sense, we are already getting a glimpse of what's to come. Each burning season in the Amazon, fires deliberately set by frontier settlers, ranchers and developers hurl up almost half a billion metric tons of carbon a year, placing Brazil among the top five contributors to greenhouse gases.

The prospect of collapse is forcing a profound change in environmental thinking. Not long ago, those who lobbied for the rain forests did so on the earnest but limited argument that biodiversity was at risk. Conservation groups raised funds to rescue imperiled species, like the jaguar or the blue macaw, and pressured governments to stop razing ecological "hot spots." Climate change has widened the focus. The ecological hot spot today is the biosphere. "The loss of biodiversity and the composition of landscapes are important, but as symptoms, not determinants of life on this planet," says Nepstad. "It's the big cycles that are running the show, and that's where the rain forests come in."

Not everyone believes the rain forests are fated to desiccate and die. Among the two dozen computer climate models, some say the Amazon will hold its own, and a few predict even more rainfall. Arizona State University ecologist Scott Saleska found that the Amazon bounced back impressively after the withering 2005 drought, "greening up" as intense sunlight penetrated through to the normally shadowy understory. But a greener canopy is not the same thing as a flourishing forest. "Greening comes from the leaves, not the big trees," says Philip Fearnside, a scholar at the Brazilian Institute for Amazon Research. "Drought kills the big trees first."

Too much carbon in the air could also pose a double threat. At first, the forests may flourish; since plants need carbon to grow, processing it into life-giving sugars and chemicals through photosynthesis, the extra dose of CO<sub>2</sub> will jolt them into overdrive. "But the forest cannot expand forever," says Scott Lewis, a scientist at Leeds University. Eventually, the overworked machinery of trees will fail, along with the nutrients in the soils. Trees sated with carbon also tend to shut down their stomates, tiny pores on the leaves that take in CO<sub>2</sub> and exhale oxygen and water vapor - leading to even drier forests.

The best-case scenario for the Amazon shows temperatures rising 3 to 5 degrees Celsius this century, well above world averages, with rainfall dropping by as much as 15 percent, according to Brazilian climate expert Jose Antonio Marengo. That means even more blistering droughts, and with every drought, the forest's talent for pumping vapor into the air grows feebler, opening the door to the next drought.

The experts will surely continue to quibble over the details, but no one doubts anymore that keeping the planet habitable will be a lot easier with the rain forests than without them.

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### **3.2 Pacific People Hard Hit by Climate Change**

Sent by Tevita Kete

[Suva, December 19] - UNDP's Human Development Report seeks to add a new dimension to the global climate change debate - climate change will compound poverty and vulnerability. It is estimated that a rise in global temperature in excess of 2 degree centigrade will cause irreversible damage, and

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may well reverse recent gains in Human Development. The Human Development Report, *Fighting Climate Change: Human Solidarity in a Divided World*, estimates that the world will have to cut emissions of greenhouse gases by half by 2050, relative to 1990 levels, in order to avoid dangerous and irreversible climate change. This will require rich countries to cut emissions by at least 80 per cent by 2050, with cuts of 30 per cent by 2020. Emissions from developing countries are expected to peak around 2020, and thereafter will need to effect reductions of 20 per cent by 2050. Since the Kyoto Protocol, such targets and their relation to economic growth have been hotly debated. When climate change will affect rainfall patterns, it is estimated that poorer nations will see a 15 percent decline in agricultural productivity. As these are countries where people eat what they grow, this will affect their nutritional status, economic resilience and the future of their children. UNDP not only calls for urgent international action to cut emissions and to ensure that these vulnerabilities are addressed, they also express unambiguous concerns with the long term global progress in human development and the Millennium Development Goals, which have not yet been achieved. Climate change may lead to a slow down if not a reversal of progress and it is estimated that the Pacific will be amongst the regions most strongly affected. Pacific people face the greatest risk of becoming poorer, getting displaced from their homes and regressing in their development as a result of climate change. While the Small Islands Developing States in the Pacific are amongst the lowest carbon emitters, they will be the first to suffer from climate change. In the next ten years if the average temperature were to increase beyond two degrees Celsius sea level rises will see a number of Pacific islands disappear from the face of the map, the United Nations Development Programme's Human Development Report 2007/2008 warns. The report that was launched by the United Nations Resident Coordinator and UNDP Resident Representative Richard Dictus, in Suva today warns that climate change can result in annual damage costs of up to seven percent of the gross domestic product (GDP) of Fiji, Samoa and Vanuatu. "Many coastal communities in the Pacific could be seriously affected by rising sea levels and flooding caused by global temperature increases of 3-4 degrees Celsius could result the permanent or temporary displacement of people living in low-lying areas," said Mr. Dictus. Pacific Island Countries are already susceptible to a range of natural hazards such as cyclones, storm surges, droughts and flooding. Climate change will see extreme events happen both more frequently and more intensely. The Pacific is already experiencing the impact of more extreme events such as tropical cyclones and storm surges. Coupled with projected rates of sea-level rise and flooding, critical infrastructure such as airports, port facilities, roads, vital utilities such as power and water, coastal protection structures and tourism facilities as well as social services such as health and education are being exposed to increased risk. Some examples include:

- More than 50% of Pacific islanders live within 1.5 km of the shoreline and are particularly exposed to accelerated coastal erosion, saline intrusion, coral reef bleaching and flooding.
- In Fiji, half of the population lives within 60 kilometres of the shore with 90% of villages located on the coast. Sea level rise may threaten village livelihoods, and traditional settlement patterns, as people may have to move away from their customary land, to higher ground.
- Many island people rely on fisheries as a source of food and income from coral reef and mangrove habitats that are threatened by warming ocean temperatures and sea level rise.
- Tropical cyclones amplify the threat from sea-level rise to vital infrastructure in Pacific Island Countries. For example, a 0.5 m rise in sea level, combined with a 1- in-50 year cyclone would cause major damage to port facilities in Fiji and Samoa.
- A high island such as Viti Levu could experience average annual economic losses from disruption to social services and infrastructure of \$US23 to 52 million by 2050, equivalent to 2 to 4% of Fiji's GDP. A low group of islands, such as Tarawa atoll, could face average annual damages of \$US8 to 16 million by 2050, as compared to a current gross domestic product (GDP) of \$US47 million.

Climate change has been recognized as one of the largest threats to development, this century. For the Pacific Island Countries, limited land size and resources, isolation and vulnerability to natural disasters exacerbate this threat. In the Pacific, carbon dioxide emission has annually changed from between 1990 to 2004 by 2.3% in Fiji, 0.1% in Papua New Guinea, 1.5% in Samoa, 0.6% in Solomon Islands, 3.7% in Tonga and 2.4% in Vanuatu. On the global scale, Pacific Islands are negligible polluters however they will be the first to suffer from the effects of climate change and need to put in place climate change adaptation strategies. "It is therefore very hard to accept that these will be the same countries that will be so hard hit if the world does not significantly cut the emission of greenhouse gases," said Mr. Dictus. "The proof that climate change is happening as we speak is based now on hard scientific evidence. We can observe the changes ourselves and the consequences are inescapable. The world community needs to take action and the UN agencies in the Pacific are committing themselves to provide support and assistance in any way they can," he concluded. Meanwhile, the Human development Index ranking of Pacific Islands countries that

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measures the development in countries broadly through progress in health, wealth and knowledge, remains relatively unchanged for 2007. The report ranks the following Pacific Islands Countries as follows: Tonga 55 (unchanged when compared to 2006), Fiji 92, Samoa 77 (both have moved up by two ranks), Solomon Islands 129, Vanuatu (both moved up by one rank) and Papua New Guinea 145, representing an upward movement of six ranks. [Ends]

**ABOUT THIS REPORT:** The Human Development Report continues to frame debates on some of the most pressing challenges facing humanity. It is an independent report commissioned by the United Nations Development Programme (UNDP). Kevin Watkins is the Lead Author of the 2007/2008 report, which includes special contributions from UN Secretary-General Ban Ki-moon, President Luiz Inácio Lula da Silva of Brazil, Mayor of the City of New York Michael R. Bloomberg, Advocate for Arctic climate change Sheila Watt-Cloutier, Chair of the World Commission on Sustainable Development and former Prime Minister of Norway Gro Harlem Brundtland, Archbishop Emeritus of Cape Town Desmond Tutu, and the Director of the Centre for Science and Environment Sunita Narain. The Report is translated into more than a dozen languages and launched in more than 100 countries annually. Further information can be found at <http://hdr.undp.org/en/reports/global/hdr2007-2008/>. The 2007/2008 Human Development Report is published in English by Palgrave Macmillan.

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### **3.3 Getting Ready for Changing Climates**

Posted by Jeremy in the [agro.biodiver.se](http://agro.biodiver.se) blog: <http://agro.biodiver.se/2007/12/getting-ready-for-changing-climates/>

Four papers together give an insight into what global warming promises for agriculture and agriculturalists, and how to deal with it.

Some people will tell you that global warming is something we can cope with because it won't actually create any new climates, just shift the old ones around a bit on the the surface of the Earth. They're wrong. John Williams and his colleagues published an article in PNAS in the spring that shows conclusively that even the IPCC's B1 scenario, in which modest reduction sees CO2 stabilized at 550 parts per million by 2100 AD, creates considerable risk of completely novel climates.

Williams and colleagues used the climate models to predict four variable within grid cells of about 2.8 degrees square. In each, they calculated an index that integrated four variables: mean rainfall and temperature for summer and winter. Then they asked whether the climate in that grid cell was novel, by measuring how different it was from the most similar modern climate, anywhere at all on earth. Given business as usual, "novel climates are likely to develop in lowland Amazonia, the southeastern US, the African Sahara and Sahel, the eastern Arabian Peninsula, southeast India and China, the IndoPacific, and northern Australia". The same areas are affected under the B1 scenario, but at lower levels. That's the tropics and sub-tropics, where the poor people live, and where they depend on agriculture, which depends on climate. How much?

Andy Jarvis and Annie Lane, of Bioversity International and CIAT, used the same climate models to ask how the areas suitable for different crops will change. This one hasn't been peer-reviewed yet, so I cannot really say too much about it. The idea was to plug the climates into FAO's ECOCROP model of the growing conditions required by more than 1800 crop species. There are winners and losers. Geographically, northern temperate areas do OK, while the tropics suffer the biggest changes in areas suitable for agriculture. The greatest losses of suitable growing areas are predicted for sub-Saharan Africa and the Caribbean, regions least able to cope. Gains will be seen in Europe and North America, which perhaps need them least.

Among species, the biggest losers are cold-weather crops such as strawberry (-32% in areas suitable for cultivation), wheat (-18%), rye (-16%), apple (-12%) and oats (-12%). Among the winners are pearl millet (+31%), sunflower (+18%), common millet (+16%), chick pea (+15%) and soybean (+14%). Quite often, however, the gains occur in places that have no cultural history to making use of those species. Land suitable for pearl millet is predicted to increase by more than 10% in Europe and the Caribbean, where it is an insignificant food, but not in Africa, where it is widely cultivated and an important element in food security. It is going to be small comfort to know that one can grow a crop that one has no idea how to cultivate, process or eat.

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Ah, but people and their crops can move, can't they? Back to Williams et al. As well as asking whether there is an analogous climate somewhere on Earth, they also asked whether there is an analogous climate less than 500 km away from the target grid cell. That makes things a whole lot worse, with "no-analog" climates right across the tropics and way into the polar regions. And 500 kilometres is quite a distance for agricultural systems to migrate in less than 100 years.

Will that make itself felt? You bet it will. John F. Morton, of the Natural Resources Institute in the United Kingdom, has a paper in PNAS entitled "The impact of climate change on smallholder and subsistence agriculture". You might expect there to be a clear answer, but Morton's main point is that we don't really know enough about smallholder and subsistence agriculture to plug it into climate change models.

Morton concludes:

"Smallholder and subsistence farmers will suffer impacts of climate change that will be locally specific and hard to predict. The variety of crop and livestock species produced by any one household and their interactions, and the importance of nonmarket relations in production and marketing, will increase the complexity both of the impacts and of subsequent adaptations, relative to commercial farms with more restricted ranges of crops. Small farm sizes, low technology, low capitalization, and diverse nonclimate stressors will tend to increase vulnerability, but the resilience factors—family labor, existing patterns of diversification away from agriculture, and possession of a store of indigenous knowledge—should not be underestimated."

Which is a kind of we know what we don't know plea for more research.

How, then, might one best help smallholder and subsistence farmers to weather the changes ahead? Perhaps predictably, the big boys are all in favour of setting their talented breeders to work to come up with varieties that are resistant to climate change. But there may be a better way. Give farmers access to a far greater range of diversity and improve their ability to select populations that will be adapted and adaptable.

This gets to the heart of one of the big questions of theoretical biology: which is faster, evolution based on new mutations arising, or evolution based on selection from existing variability. Rowan Barrett and Dolph Schluter, of the University of British Columbia, have a review in *Trends in Ecology and Evolution* that makes a convincing case for the superiority, in many cases, of adaptation from standing genetic variation. To cut a long (and very interesting) story short, there is every reason to believe that standing variation has played a role in the adaptation of some wild populations in the recent past. Would that be true in an agricultural setting, with artificial rather than natural selection? Probably even more so, given the very strong selection pressure that people can exercise over their crops and livestock.

To summarize: global warming will create entirely new climates; these will put enormous strains on agriculture, changing where crops grow best and what crops and animals people will be able to cultivate; and farmers may do better to find as much genetic variation as they can and select from that, rather than waiting for breeders to supply them with varieties that will be at best only narrowly adapted.

#### References

Williams, J. W., Jackson, S. T., & Kutzbach, J. E. (2007). Projected distributions of novel and disappearing climates by 2100 AD. *Proceedings of the National Academy of Sciences of the United States of America*, 104(14), 5738-5742.

Morton, J. F. (2007). The impact of climate change on smallholder and subsistence agriculture. *Proceedings of the National Academy of Sciences of the United States of America*, 104(50), 19680-19685.

Barrett, R. D. & Schluter, D. (2007). Adaptation from standing genetic variation. *Trends Ecol Evol*.

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### **3.4 Climate change 'boosts plant health in China'**

Wang Shu and Jia Hepeng, 14 December 2007, Source: SciDev.Net [BEIJING]

Climate change has helped plants in China become more robust, according to a study by Chinese scientists.

Scientists at the Beijing Normal University studied the link between climate factors and changes in plants' net primary productivity - a term used to evaluate the net reserve energy plants need during growth - between 1982 and 1999.

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"If the net primary productivity of a plant is high, it means the plant grows more healthily," says lead author Zhu Wenquan of the College of Resources at the university.

Zhu and colleagues analysed climate-observation data for the period alongside remote- sensing data on plantations in different regions in China. They then determined the specific climate factors - sunshine, temperature and precipitation - that had the biggest impact on plant growth in these regions. They found that low temperatures in northeast China and the Tibet-Qinghai highlands contribute most to poor plant growth. In northwestern China it is reduced precipitation. And in southern and eastern China it is lack of sunshine that hinders growth.

But over the period studied, temperature, precipitation or sunshine increased markedly in these respective regions - effects that the scientists attribute to global warming.

"We are not denying the role of other factors, but the three factors (sunshine, temperature and precipitation) have played a much more important role than others," Zhu told SciDev.Net. As a result, the net primary productivity of land plants in China grew by 11.5 per cent because of climate change, which the authors say is consistent with the global trend of an increase of about six per cent worldwide.

Zhu says this does not contradict the widely believed negative impacts of global warming.

"For crops, for example, the growth in net primary productivity does not necessarily translate into increased output. The plant stem may grow more than fruits, for example."

He adds that climate change could cause severe disasters in individual regions, which would not be offset by increased plant productivity.

A previous study, published in 2004 by Gao Zhiqiang and colleagues from the Institute of Geographical Sciences and Nature Resources Research at the Chinese Academy of Sciences, concluded that climate change between 1978 and 1998 had caused a decrease in plant productivity in northeast China. Referring to Zhu's studies, Gao says various aspects of climate change could combine to complicate the impact on plant growth, and it is difficult to associate a change in net primary productivity with variation of a single "major" climate factor.

Reference: Chinese Science Bulletin 52, 2535 (2007) and Acta Geographica

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### **3.5 Proceedings available**

IUFRO RG5.11 with the Asia Pacific Association of Forestry Research Institutions recently published the proceedings of the Technical sessions organized by RG5.11 for the XII IUFRO World Congress held in Brisbane, Australia in 2005. The papers presented were all double-blind peer reviewed. To expand the coverage of information regarding Non-Timber Forest Products the abstracts for the sessions were included, as they were accepted.

Copies are available by contacting the Coordinator of 5.11 or by contacting the Asia Pacific Association of Forestry Research Institutions, c/o FRIM, Kepong 52109 Kuala Lumpur Malaysia.

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URL: <http://iufro.boku.ac.at/iufro/iufro.net/d5/hp51100.htm>

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### 3.6 PaDIL: on-line library of plant pests and diseases

From Colin Hanbury

Check out this on-line library (PaDIL— <http://www.padil.gov.au/>) of high quality images of plant pests and diseases (and summaries), initially begun for Australia. However, it is now going more international and is open access. People can add to it by contacting Dr Ken Walker ([kwalker@museum.vic.gov.au](mailto:kwalker@museum.vic.gov.au)). It is an excellent source of information for field recognition and other uses. It is compiled by recognised authorities so is reliable as well.

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### 3.7. NWFP-Digest-L No. 12/07

Tina Etherington has sent in the latest Non-wood forest product newsletter. It's available on [www.fao.org/forestry/site/12980/en](http://www.fao.org/forestry/site/12980/en).

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**3.8 Request for post-doctoral fellowship**

Ms Nimisha Tripathi is looking for a challenging post-doc position. If you have an opening for her, please contact her directly at email: [nymphaea7@yahoo.com](mailto:nymphaea7@yahoo.com).

My research interests concern the study on impact of different land use patterns on seasonal changes of plant available nutrient, nitrogen transformation rates, soil microbial biomass, and plant biomass including fine root biomass in tropical dry deciduous forest ecosystems of India. The conversion of forest into grassland or cropland due to forest harvesting, fertilization, atmospheric depositions and climate change results into significant alterations in soil nitrogen cycling.

My broad research aim is to improve understanding of how changes in forest structure and dynamics, under changing environmental conditions and anthropogenic pressure, will affect the available nitrogen status in soil and dynamics of microbial C, N and P, which directly affect the rates of nitrification and N-mineralization of tropical forests.

I have also worked, and presently working, in the field of restoration ecological studies of wastelands and degraded forest ecosystems due to mining. In this connection, I am working as a Project Leader on the project "Rejuvenation of contaminated mine wastelands". This project aims to reclaim the mine wasteland by the plantation of medicinal and aromatic plants on mine spoil dump, quantification of alterations in dump characteristics after plantation and finally the extraction of aromatic oils from the plants grown over the dump, for socio-economic gains.

My research has been based on fieldwork in dry deciduous tropical forests located in Chhota Nagpur Plateau, North-East and Southern regions of India, which includes Topchachi forest and sanctuary (Jharkhand, India), Similipal Biosphere Tiger Reserve (Orissa, India) and North Godavari Valley Dry Deciduous Tropical forests (Andhra Pradesh, South India).

I am also involved in other projects studying the biodesulfurization of petroleum waste, utilization of fly ash in agriculture sector, *Ex situ* conservation of ethnobotanically interesting plants, Impact of underground mine subsidence on forest cover.

Although I am working on forest and restoration ecology in tropical ecosystems, like forest, cropland and grassland, I am interested to extend my knowledge and research experience in the field of structure and function of the forests of different climatic regions of the world. This study will provide a comprehensive picture of the changes occurring in soil due to forest degradation and alternate land uses in different climatic conditions. Such a comparison will be of immense use in the estimation of nitrogen budget and carbon storage in soil, and thereby suggesting the management strategies for depleting forest ecosystems.

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**4. ICUC-related information**

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#### 4.1 Publications available

ICUC publications are available upon request. Please check our website <http://www.icuc-iwmi.org/Publications/index.htm> for more information.

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#### 5. ICUC network

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**In this section we introduce new and old subscribers to ICUC-News to encourage greater interaction and benefit from the great diversity of readers. If you haven't done so, please send a brief introduction of yourself and your interest in underutilised crops to [h.jaenicke@cgiar.org](mailto:h.jaenicke@cgiar.org). We will not publish your email or phone contacts and if anyone is interested to establish direct contact, please write an email to me.**

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Felipe Luis Beck: a Brazilian national, currently working in Business Development in Canada, for SNC-Lavalin Inc. Holder of a Master's Degree in Electrical Engineering, has general interest in learning more on economic viability of underutilized crops.

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Championing underutilised plant species for food, nutrition and sustainable development