

PolicyPennings by Daryll E. Ray & Harwood D. Schaffer

Research needed to improve crop adaptation to changing global climates

At the last minute—actually during an extension of time—the 17th United Nations Framework Convention on Climate Change (Conference of Parties or COP17) in Durban South Africa, November 28-December 6, came to an agreement under which the participating nations committed themselves to extend the Kyoto Protocols and work toward adopting a new agreement by 2015. The 2015 agreement would likely not go into effect until 2020 but would be legally binding on all signatories. Given the difficulty over the last 17 years in coming to an agreement, there are those who are skeptical that an agreement will be reached by 2015.

At the same time, there was an agreement to establish a \$100 billion a year Green Climate Fund to help developing nations to deal with the consequences of increasing global temperatures. It was suggested that it be funded by a tax on bunker fuel on oceangoing ships. That was rejected by the US and some other countries. As a result, what the delegates did not agree to was any specific method of funding the fund.

Countries in Africa and southern Asia face serious consequences as global temperatures rise even though they are only very minimally responsible for contributing to the problem of climate change.

As reported by Mel Frykberg in South Africa's "The New Age," Sylvester Earl Hanciles, the head of Sierra Leone's delegation to the climate change meeting told him, "Sierra Leone, like many other countries in the world, is suffering the consequences of climate change. We have had very erratic weather patterns. When I left Freetown last week we were experiencing torrential rains, which have caused floods and mudslides....Our agricultural production has suffered as a result of previous dramatic weather changes and this could cause food shortages (http://www.thenewage.co.za/37326-1061-53-Climate_change_deadlier_than_terrorism)."

This concern for agricultural production in an era of changing global climates was echoed in an article in the "Wall Street Journal" written by Peter Guest. In that article he writes, "Cary Fowler, Executive Director of the Global Crop Diversity Trust [(<http://www.croptrust.org/main/>)], says: 'I don't think that people have begun to grapple with the enormity of the problem [of climate change]...agricultural crop adaptation really isn't even on the agenda. All our efforts at the macro-level are clearly going to fail as the crops die in the field.'"

Guest writes that Dr. Fowler, a Memphis, Tennessee native and Executive Director of the Global Crop Diversity Trust, a Global Seed Vault in Svalbard, Norway, believes that "without sufficient focus on these micro-level issues, however, there is a danger...that real crops in real fields don't get adapted. 'I'm sorry to say but we're really going to have to get our hands dirty,' [Fowler] says. 'This is getting us out of the realm of policy and big intergovernmental meetings, we're going to have to...figure out what it's going to take to help the crops adapt....I guess what we find alarming is the assumption that that's just going to happen by itself, without planning and without investment,'...Fowler says. 'That doesn't happen overnight. It's a 10-year process.'"

Participants in the DTN/The Progressive Farm Summit echoed similar concerns. A DTN article by Chris Clayton writes that "Charles Walthall, national program leader for climate change at the USDA Agricultural Research Service....told farmers about some of the issues USDA is examining as part of an updated national study on climate change set to be released in 2013. Changes in temperature, precipitation and carbon dioxide will lead to adjustments in crop production, cropping patterns and raising of livestock, USDA research shows....'that puts a lot of stress on human beings, crops, animals, equipment,' Walthall said.

"Other problems can come from additional carbon dioxide in the air leading to more invasive species, insects and pathogens. Weeds respond aggressively to higher carbon dioxide levels.

"'We have not bred the variety of crops to take advantage of higher carbon dioxide in the atmosphere,' Walthall said. 'Weeds, in their genetic freedom, for a large part have. That's why we are seeing larger, stronger weeds and vines.'"

The concern for heavy rainfall events noted by Hanciles of Sierra Leone was discussed by South Dakota Climatologist Dennis Todey who told the Ag Summit audience, "'More [precipitation] is occurring in heavier rainfall events, which, from a production standpoint is not a good thing....More soil erosion, more soil loss, it doesn't improve your bottom line by adding more moisture if it's running off.'

"Walthall also touched on the lack of emphasis on erosion. 'This is something that does not get enough attention from my perspective,' Walthall said. 'The high-intensity, short-duration events as we know have massive implications for erosion.'"

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While farmers in the US have more resources to deal with the impact of climate change, the problems and challenges they face are shared with farmers around the world. Given that, it appears that meeting these challenges will take a global response as well.

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