



*Proceedings of 2014 Summit on Seeds & Breeds for 21<sup>st</sup> Century Agriculture*

**EXECUTIVE SUMMARY**

***Background***

Agricultural biodiversity and site-specific plant and animal adaptation have sustained and nurtured communities around the world since the dawn of farming. The diversity of crop varieties and breeds that we enjoy today come from the combination of art and science of public plant breeding with keen field-based observations and selections. Never before have these cultural and biological resources been needed so much, nor have they ever been under such stress and threat.

As part of their long-term work to address seed and breed biodiversity and democracy, RAFI-USA organized the Coalition for Seeds and Breeds for 21<sup>st</sup> Century Agriculture in 2003.

Since its inception, the coalition has worked to:

- Reinvigorate our public plant and animal breeding capacity,
- Ensure that regionally adapted public cultivars are readily available to provide greater choice to farmers,
- Prioritize support and training for the next generation of public cultivar developers, and
- Protect, enhance and utilize our agricultural diversity to address the key challenges of 21st century agriculture.



RAFI and the Coalition for Seeds and Breeds for 21st Century Agriculture organized the [\*2014 Summit on Seeds and Breeds for 21st Century Agriculture\*](#). The summit builds upon work accomplished during two previous Seeds & Breeds summits and through information gathered from stakeholders and breeders around the country.

The summit was convened to address both the growing crisis in seed biodiversity and our global capacity to develop diverse seed and breed varieties. The purpose of the event, and key to this renaissance of resilience, was to address the need for more public cultivars and breeds that are regionally adapted, readily accessible to both breeders and farmers, and housed in the public domain.

Held in Washington, DC in March of 2014, the gathering brought together plant breeders, seed industry experts, farmers, activists, academics representing ten universities, twelve civil society organizations and four seed collections. This diverse group of experts came together to discuss the state of our global seed supply and develop recommendations for reinvigorating public breeding research and increasing seed availability in the country.

These proceedings provide a compilation of the summit's keynote papers, response papers, presentations and findings. It also provides a summary of the recommendations developed by participants during summit discussions, including short, medium and long-range recommendations and positive goals for reversing this crisis. Summit keynote papers were authored by well-known breeders and researchers in the field including:

- William Tracy, a sweet corn breeder with the University of Wisconsin;
- Major Goodman, a corn breeder and professor of crop science at North Carolina State University;
- Tommy Carter, a research geneticist and professor of crop science at North Carolina State University;
- David Ellis, the head of the Genebank Unit at the International Potato Center in Peru;
- Kathy Jo Wetter, Research Director of ETC Group's Action Group on Erosion, Technology & Concentration;
- Michael Mazourek, a vegetable breeder and professor of plant breeding and genetics at Cornell University; and
- Charles Brummer, Senior V.P. Director of Forage Improvement at the Samuel Roberts Noble Foundation.

### ***Summit Findings***

Based on keynote papers, response papers and discussion, summit participants identified the most critical challenges threatening the future of plant breeding. Key summit findings can be summed up as seven major challenges:

1. Our current agricultural systems are increasingly vulnerable to weather and pest disruptions due to the decline of agro-biodiversity in our commercial seed choices. This vulnerability is especially important as we face shifting and unpredictable climatic conditions.
2. Public cultivars developed through classical breeding techniques are an extremely successful and powerful public asset and critical to addressing the increasing vulnerability of our agricultural systems. The lack of adequate funding and loss of institutional capacity have significantly reduced our ability for this critical public cultivar development.
3. Consolidation and concentration in the ownership of seeds have caused negative impacts on cultivar development, genetic diversity and farmer choice.

4. The adoption of utility patents has caused a decline of farmer and researcher access to and innovation in the development and adaptation of elite cultivars.
5. The number of public cultivar developers continues its decades-long decline, increasing the urgency for renewed institutional capacity to support the next generation of public plant breeders.
6. New and innovative partnerships and models for collaboration are critical to address more regionalized and participatory approaches to public cultivar development.
7. Public germplasm collections and the genetic resource conservation system lack adequate funding to steward our genetic heritage, and facilitate democratic access.

### ***Summit Recommendations***

Summit participants developed the following recommendations to address these challenges:

1. Develop a comprehensive national plan to restore funding and institutional capacity for the development of public plant and animal varieties.
2. Encourage and reward agricultural biodiversity on farms and in our commercial seed choices in order to increase resilience against shifting and unpredictable climatic conditions.
3. Address the negative impacts of consolidation and concentration in the ownership of seeds by empowering farmers to save and own seeds and encouraging more independent regional seed companies.
4. Increase farmer and researcher access to innovation in the development of elite cultivars, and confront the negative impacts of utility patents and restrictive licenses.
5. Increase the number of public cultivar developers in each of the seven US climatic regions with a focus on renewing institutional capacity to support future public plant breeders.
6. Create new, innovative partnerships and models to address regionalized and participatory approaches to public cultivar development.
7. Strengthen and democratize public germplasm collection systems and address germplasm access and sharing at an international level.
8. Commit adequate resources to determine critically missing data, budgets and baseline information to better articulate both the challenges and the solutions ahead.

9. Build greater public awareness of the importance of public cultivar development and of the positive solutions mapped out by this national summit. We can do this best by expanding our regional communities of seed advocates and identifying on-the-ground regional priorities and challenges to ensure that our solutions meet the needs of stakeholders in each region.

### ***A Call to Action***

This summit marks yet another call for greater action and is aimed at resetting our priorities with increased urgency and vigor. Public plant breeding is a critical tool to foster greater seed choices, longer cropping system rotations and much greater public utilization of our collective germplasm collections. These effects are crucial to increasing agricultural resilience to withstand and adapt to the coming challenges.

Unless action is taken quickly, we stand to lose both agricultural diversity of seeds and breeds and our capacity for public variety development. The future will be shaped by the magnitude of our response now. We must be clear and honest that we are not prepared. We are behind and must pick up the pace, especially as global conditions force us from more proactive to reactive responses.

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