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Biodiversity Congress 2018: Strengthening indigenous informal seed systems in Southeast Asia

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Abstract

Seed may be a fundamental agriculture input and access to locally adapted, quality seed is an important component of sustainable crop production. In much of the developing world, informal seed systems, like farmer-to-farmer exchanges and farmer self-saved seed, are critical components of resource poor farming systems. Indeed, planted seed from this informal system comprise the bulk of planted acreage in many regions of the planet . This local seed production and distribution facilitates maintenance of crop biodiversity by preserving in situ locally adapted varieties and by broadening the genetic base of production with multiple varieties adapted to specific production systems and micro-climates. These informal seed systems are also critical for seed and food security during periods of instability or natural disaster, including changing environmental conditions. A rich diversity of underutilized species functions within informal seed systems in Southeast Asia and represents a valuable resource for the development and improvement of crop species. Current efforts to conserve, improve and disseminate indigenous species are failing or insufficient. To optimize these informal seed systems, research has been conducted to better understand their germplasm characteristics, distribution pathways and gatekeepers and to improve local stakeholder access to seed information and value chains.

In 2011, the number of hungry people in the world surpassed one billion for the first time (Food and Agriculture Organization of the United Nations [FAO], 2011). Disasters such as the famine in the Horn of Africa and a mega-typhoon scything through the Philippines, in conjunction with rapidly rising food prices worldwide, have further reduced food security for millions of people. Despite a declining trend in the proportion of hungry people in the world in the last 30 years of the 20th century, since 2004 there has been a reversal of this trend (FAO, 2011). With the world's population forecast to rise to 9 billion by 2050, Malthusian speculation has once again emerged with concerns that the number of hungry and malnourished people will continue to rise and outpace food production increases, resulting in a food insecure world. Food security was first defined at the 1974 World Food Summit as "availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" (United Nations, 2003, "Official concepts of food security," para. 2), reflecting the main supply-side concerns at the time in the context of repeated famines, hunger, and food crises around the world. Since then, the concept has been re-defined numerous times, and generally accepted definitions of food security have adopted a threefold axis of availability, accessibility, and utilization of food (FAO, 2008). More recently, concerns about the stability of the food system and its relation to the environment have also been incorporated. Food security concerns rose rapidly to the forefront of the global agenda beginning with the food price crisis of 2007–2008. Food riots from Haiti to Mozambique brought the realization that the world hunger problem had not yet been solved. At the 2009 L'Aquila summit, the G8 nations acknowledged the need to tackle food insecurity head on, and pledged $22bn to set up the Global Agriculture and Food Security Program (GAFSP), administered jointly by the World Bank, International Monetary Fund, and G8 governments (United States Treasury, 2011). Renewed emphasis thus is now being placed on addressing food security at its roots — in regions and locales where undernourishment is king and many households live daily on the edge. Arguably the most important focus of present-day food security concerns is resource-poor smallholder farmers in developing or emerging economies. The vast majority of the world's one billion undernourished people resides in Asia or sub-Saharan Africa and depends daily on small farm output for their livelihood and/or their food. This farm output is dependent upon many inputs, of which seed is one of the most critical. Without available or accessible seed, many households in developing nations are exposed to the potential of becoming food insecure. The informal seed system contrasts with the formal seed system, which involves governmental, institutional, or private control of the whole gamut of seed activities, including but not limited to breeding, multiplication, processing, and storage. Such formal systems are typically vertically organized with specific structures in place for production and distribution of seed and operate on generally strict and similar principles across the globe (Almekinders, Louwaars & de Bruijn, 1994). These

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formal systems are the source of modern varieties and certified seed (Sperling & McGuire, 2010), usually developed through modern breeding technologies and often tested on research farms. Research and extension projects to conserve and promote neglected and underutilized species within these informal seed systems have resulted in: (1) surveys of key indigenous crops and collection of local crop knowledge, (2) training and development of regional community-based seed banking enterprises, (3) seed quality conferences including seed exchange activities and (4) improved human and institutional capacity, strategically focused on entrepreneurial women.

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