



EIAR, Ethiopia



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Protecting Ethiopia's farmers from the threat of Stripe Rust

ICARDA supports Ethiopia research and development partners for rapid roll-out of rust resistant wheat varieties

Addis Ababa, April 14. A fast-track crop research and extension partnership is successfully tackling Ethiopia's wheat stripe rust epidemic – a highly destructive crop disease that threatens national wheat production and is spreading more rapidly due to climate change. This USAID-funded initiative, which supports the rapid deployment and distribution of rust resistant wheat varieties, is protecting Ethiopian farmers from crop losses and helping them to raise their production, achieve high incomes, and strengthen national food security.

This partnership – between the Ethiopian Institute of Agricultural Research (EIAR) and the International Center for Agricultural Research in the Dry Areas (ICARDA), with regional research institutes, government bureaus and seed enterprises – strengthens the country's national wheat breeding program and assists in the development, testing, and release of rust-resistant varieties. It adopts a novel participatory on-farm seed multiplication strategy that significantly cuts the delivery time between the development and distribution of quality seeds. The approach is strategic, placing seed directly in the hands of farmers, and enabling fact-track delivery of rust resistant varieties to villages to combat the rapidly evolving stripe rust.

The partnership is a response to the 2010 epidemic of an aggressive new strain of the disease which swept across the country, devastating some 400,000 hectares of wheat harvest. Climate change was identified as the culprit. That year's uncharacteristically cool temperatures and above-average rainfall left the country with little protection, as the majority of farmers depended on highly susceptible wheat varieties, and had limited access to inputs that could resist the disease and sustain production.

While wheat rust diseases are well known, the situation and threat today is fundamentally different from the past, says Dr. Mahmoud Solh, Director General of ICARDA. "Climate change has changed the rules of the game. Differences in temperature and rainfall patterns are bringing stripe rust and other diseases to locations where it has not previously existed," he explains. New races of rust are emerging that can overcome resistant wheat varieties in many wheat-producing countries.

The partnership rolled-out resistant seed in 45 Ethiopian districts, distributing some 618 tons to over 13,000 farmers in affected areas. A further 19,000 tons were produced and shared through informal

exchange or formal sale, and 15.7 tons were delivered to small-scale seed producer associations. In total, an estimated 400,000 ha of land are now covered with new stripe rust-resistant wheat varieties, benefiting over 67,000 households.

Average yields of improved wheat varieties reached 3.7 tons/ha in the 2011-12 season and 3.3 tons/ha in 2012-13 – a significant improvement over the national annual average productivity of 2 tons/ha. Regional variations demonstrate average yields of 4 tons/ha in Oromia and 4.2 tons/ha in the Southern Nations, Nationalities and People's region. The new stripe rust resistant varieties are developed from material from ICARDA and the International Maize and Wheat Improvement Center (CIMMYT). They promoted at farmer field days and farmer-to-farmer demonstrations where smallholders can see first-hand the positive impacts of their adoption. A marketing strategy is also in place to promote wider adoption.

Despite these positive developments, the partners are fully aware that 'rust never sleeps' and that continued vigilance and research efforts are needed to confront future strains of stripe rust. Says Dr. Zewdie Bishaw, Head of ICARDA's Seed Section: "Our research is ongoing: looking for resistant genes and lines, crossing them to combine diverse and durable resistance sources, and making them available to national research centers so new varieties can be released as needed. This requires continuous investment and support. Stripe rust will continue to evolve and some of today's resistant varieties will become susceptible in the future."

This national initiative is one component of ICARDA's global efforts to support countries to contain the continued threat of wheat stripe rust. The Center is a leading expert on the disease and works with partners in wheat-producing countries to ensure they are fully prepared to counter a potential outbreak. The upcoming international conference – *the 2nd International Wheat Stripe Rust Symposium* – will bring together the world's leading rust researchers and policymakers in a dialogue to assess the current state of research and surveillance. A new online resource – [Wheat Stripe Rust: Scientific solutions for countries](#) – also provides new perspectives, shares country experiences, and highlights potential solutions.

NOTES TO EDITORS:

About ICARDA:

The International Center for Agricultural Research in the Dry Areas (ICARDA) is the global agricultural research center working with countries in the world's dry areas, supporting them for the sustainable productivity of their agricultural production systems; increased income for smallholder farmers living on dry lands and in fragile ecosystems; and nutrition and national food security strategies. With partners in more than 40 countries, ICARDA produces science based-solutions that include new crop varieties (barley, wheat, durum wheat, lentil, faba bean, kabuli chickpea, pasture and forage legumes); improved practices for farming and natural resources management; socio-economic and policy options to support countries to improve their food security. ICARDA works closely with national agricultural research programs and other partners worldwide – in Central Asia, South Asia, West Asia, North Africa, and sub-Saharan Africa. www.icarda.org

About EIAR:

EIAR's mission is to conduct research that will provide market competitive agricultural technologies that will contribute to increased agricultural productivity and nutrition quality, sustainable food security, economic development, and conservation of the integrity of natural resources and the environment. As an apex body, EIAR provides strong leadership in coordinating research within the Ethiopian Agricultural Research System (EARS), by taking a leading role in influencing agricultural policy development. <http://www.eiar.gov.et/>

2nd International Wheat Stripe Rust Symposium

The Second International Wheat Stripe Rust Symposium in Izmir, is co-organized by the Turkish Ministry of Food, Agriculture and Livestock, ICARDA, CIMMYT (the Wheat and Maize Improvement Center), The Borlaug Global Rust Initiative and FAO. The meeting brings together the world's leading stripe rust researchers to interact with decision makers from rust-affected countries and assess the current state of research and regional cooperation on rust surveillance. As a platform to encourage sustained international collaboration on wheat stripe rust, the meeting will update participants on the latest research innovations: rust surveillance and disease monitoring, population dynamics, conventional and molecular approaches to breeding for durable stripe rust resistance, genetics of resistance to stripe rust, and seed delivery systems. The event is hosted by the Regional Cereal Rust Research Center at the Aegean Agricultural Research Institute (AARI) in Izmir, Turkey.

http://www.icarda.org/striperust2014/?page_id=80

Wheat Stripe Rust: Scientific solutions for countries

This website provides new perspectives, shares country experiences, and highlights potential solutions to the wheat rust diseases that are re-emerging today, threatening livelihoods and productivity growth in many low-income countries. Practical solutions and strategies that can be scaled-up and applied worldwide include: Surveillance and information exchange between countries; planning awareness and preparedness to rapidly deliver appropriate seeds and fungicides; enhancing capacity and skills in ministries, extension services, and at the farm level to develop effective strategies for managing rust diseases; and crop research for continued, long-term efforts to develop new varieties that are resistant to emerging races of wheat rust.

<http://www.icarda.org/striperust2014/>

National partners

This initiative was implemented through a broad coalition of national and regional partners: the Ethiopian Institute of Agricultural Research (EIAR), the Regional Agricultural Research Institutes of Amhara, Oromia, Southern and Tigray Regional States, the District Bureaus of Agriculture in 45 target districts, and the Federal and Regional Seed Enterprises of Amhara, Oromia, and SNNP Regional States.