

Combining Genomics with Farmers' Traditional Knowledge to Improve Wheat Production

For the first time, scientists demonstrate that the indigenous knowledge of smallholder farming communities may yield genomic targets useful for wheat breeding for local agriculture. Researchers in Italy and Ethiopia conducted research that demonstrates the indigenous knowledge of traditional farmers, passed on from one generation to the next for hundreds of years, can be measured in a quantitative way and used with advanced genomic and statistical methods to identify genes responsible for farmers' preferences of wheat. As reported by the *EurekAlert!* publication, Matteo Dell'Acqua, geneticist at the Scuola Sant'Anna and coordinator of the research, said, "This study is a milestone in modern crop breeding as it is the first in demonstrating that the traditional knowledge of smallholder farmers has a genetic basis that can be extracted with methods already available to the scientific community. These farmers can teach us how to produce crop varieties adapted to local agriculture, fighting food insecurity in farming systems most exposed to climate change."

The result of this original research, conducted by scientists from the Institute of Life Sciences of Scuola Superiore Sant'Anna in Pisa and from Bioversity International, and also with participation by the University of Bologna, the Amhara Agricultural Research Center, and the Mekelle University in Ethiopia, was published in an article in the *Frontiers in Plant Science* journal.