

ISOFAST - Mastering agronomic decisions through interactive on-line summaries of on-farm replicated strip trials

Fernando E. Miguez (ISU) Peter Kyveryga (ISA)

“I don’t have 50 years of experience. I have one year of experience 50 times” – A farmer

The interaction of genetics, management and environment result in a unique outcome every time we grow a soybean crop, but we still need to develop more effective ways of making decisions. How do we learn from the past? How can we harness the data from on-farm trials and turn it into actual decision making? Our goal is to develop a web-based resource to answer questions about performance of different products and practices based on the Iowa Soybean Association (ISA) on-farm replicated strip trials. These trials have evaluated different practices and products in plant nutrition, disease management, weed and pest control, and crop management such as plant population, tillage or row spacing.

New Tool: ISOFAST: Interactive Summaries of On-Farm Strip Trials

(<https://analytics.iasoybeans.com/cool-apps/ISOFAST/>). Our project is aimed at expanding an analytics platform based on the ISA on-farm soybean trials that allows for transparent translation of this overwhelming amount of data into actionable information.

Objective 1: Develop statistical analyses and explain variability

Using statistical models, we have estimated the *overall effectiveness* of each practice or product and the *specific effectiveness* at the trial level. In practical terms, this answers the question: Is a given practice or product effective, on average, across all trials?

Objective 2: Develop predictions for unknown environments

Objective 2 builds directly on the first objective. Before we can develop predictions for unknown environments (i.e. farms not part of the trials or, more importantly, future years) accurate statistical models from Obj. 1 are necessary.

Objective 3: Incorporate costs and break-even prices

Ultimately, agronomic decisions need to be anchored in economic considerations. An agronomic practice might provide an almost guaranteed increase in yield, but this increase might (or might not) offset the costs.

Objective 4: Disseminate ISOFAST and evaluate its effectiveness

We believe that the usefulness of ISOFAST will depend critically on the reception among agronomists, farmers and researchers. We plan to organize outreach activities where we will present this approach to analyzing data from on-farm data to other potential users especially from neighboring states. Our specific methodology has and will be presented at scientific meetings.