IPNI REGIONAL REVIEW

Brazil Program

Key Issues & Needs

- **Major education gaps exist** for most agronomic practitioners in the nutrient use and supply chain.
- **High quality agronomic research** underway, but inadequate knowledge transfer to the field.
- **Negative nutrient budgets** drain soil reserves for many regions and crops, threatening sustainability.
- Some regions and crops have **low nutrient efficiency**, with negative economic and environmental consequences.
- **Additional regulations** on nutrient use are likely, but should be based on sound science
- **Fertilizer companies need scientific guidance** for market development and planning for appropriate nutrient use.
- **General public needs greater awareness** of the benefits that fertilizers provide.

TACTICAL PLAN highlights & priorities

4R Stewardship

We are implementing 4R activities targeted at selected regions and crops where overall nutrient use or nutrient use efficiency is currently too low.

Nutrient Education

IPNI is recognized as a national leader in developing and publishing educational information for diverse stakeholders involved with plant nutrition and fertilizers.

Improved Fertilizer Recommendations

The IPNI Brazil program has developed several web-based tools on their website to optimize fertilizer recommendations and nutrient application for crops. Some examples include:

1. providing fertilizer recommendations based on soil test analysis from different regions of the country and for various crops,
2. the nutritional status of Brazilian crops can be assessed through plant tissue analysis based on our diagnosis and recommendation integrated system (DRIS), and
3. allowing farmers and crop advisers to easily measure crop nutrient budgets at a farm scale. An additional tool to optimize the application of lime and fertilizers is under development.

Closing Yield Gaps

Through agronomic research, crop modelling, and review of the scientific literature, we are working to close yield gaps of high-priority crops by implementing enhanced 4R nutrient management.

Enhancing Sustainability

IPNI Brazil scientists will run and publish studies indicating the sustainability of current crop nutrient use practices at country, state, and the crop level (through nutrient budgets and soil fertility surveys). These sustainability assessments identify specific regions and crops to target for achieving higher overall nutrient use and improved nutrient use efficiency.

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examples of IMPLEMENTING THE TACTICAL GOALS

Significant Partnerships:

In performing priority activities, we rely on key partnerships in the country. By joining with affiliated organizations, we can better accomplish our goals beyond our limited resources. Examples of important partners include: the Agronomic Institute of Campinas, the Brazilian Fertilizer Association, Brazilian Soil Science Society, Research Foundation of Mato Grosso, Research Foundation ABC, Nutrients for Life in Brazil, among many others.

Educational Activities:

Our IPNI program is recognized as a national leader for delivering science-based information regarding nutrient use. Most Brazilian agricultural college students and professionals either study our books and newsletters, participate in our face to face events, join our webinars, seek technical information from our website, or use our web-based tools to develop improved nutrient management techniques.

This outreach focuses on delivering 4R Nutrient Stewardship concepts that can be translated into real-world field practices with a high level of credibility. Our delivery is largely free and offered through the website: brasil.ipni.net.

Engagement in Industry:

IPNI scientists and members regularly meet to discuss technical issues and develop collaborative efforts to accomplish individual company objectives. A biennial meeting is organized with IPNI member companies to review programs and priorities. Personal consultations, scientific presentations, and research projects are frequently done at the request of IPNI member companies.

Research Leading to Impact:

All projects conducted by IPNI in Brazil have a mandate to address real-life problems related to plant nutrition. Some research projects, like the nutrient budget and soil fertility survey, are aimed at evaluating how nutrients are currently used in various regions. Other projects target improvements in cropping systems which lead to higher nutrient efficiency and yields.

Changes in Nutrient Practices:

Our educational programs and publications promote enhanced crop nutrient use in the country. For example, our free digital newsletter is read by more than 20,000 agronomic professionals. Educational needs are widespread for Brazil's regional cropping systems. Our focus is on those that currently receive insufficient amounts of nutrients, or are using nutrients inefficiently (e.g. pastures).

Leadership in Plant Nutrition Issues:

The IPNI Brazil program is a nationally recognized leader in many aspects of plant nutrition, particularly related to the transfer of information from academia to field practitioners. Some examples are recent symposiums focusing on citrus, coffee, fertigation, and precision agriculture. We also facilitate flow of information from the field to the researchers. For example, recently a symposium was organized on the topic *"Are We Prepared to Nourish High Yielding Cropping Systems?"* The goal was to convey the message that a fresh look is needed in view of new crop genetics, higher yield goals, and economic opportunities.

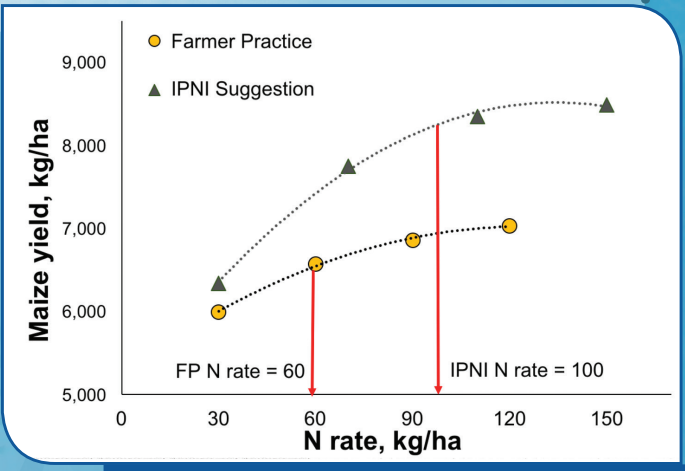
EXAMPLES OF IPNI IMPACT

Increasing Yields and Nitrogen Use Efficiency for Maize in Two Important Regions of Brazil

The Global Maize Project aims to increase maize yields and nutrient use efficiency. The IPNI Brazil program participates in this global effort with two experimental sites in South and in Central Brazil to develop better agronomic practices for farmers. In southern Brazil, where high-yielding maize is cultivated during the summer, the goal was to identify techniques to achieve even higher yields along with better nitrogen use efficiency (NUE). In central Brazil, where maize is cultivated after soybean with relatively lower yields (maize, second crop), the objective was also to increase grain yields.

After seven years, the objectives have been largely accomplished at both locations. We demonstrated that improved management in the southern site will increase maize yields and NUE by including forage pea in the rotation, compared to farmers' current use of black oat. For the central Brazil location, maize yields were increased 25% by adopting a combination of modern hybrids and higher N fertilizer application rates (100 kg/ha) than presently used.

These improved practices have been transmitted to farmers through different venues, including field days, publications, speeches, and technical visits. It is encouraging to see many farmers adopting these new high-yielding techniques, based on IPNI field research.



Maize yields are increased by using advanced IPNI-recommended management and boosting nitrogen fertilizer application rates.

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