



IPNI REGIONAL REVIEW

South Asia Program

Key Issues & Needs

- **Developing Nutrient Expert®** for additional crops and disseminating better fertilizer recommendations, in multiple regional languages, to smallholder farmers in South Asia.
- **Educating farmers** on balanced fertilizer use, with special emphasis on potassium use, in collaboration with the Indian fertilizer industry..
- **Evaluating the potential for Ecological Intensification** in maize-based cropping systems for improved yields and profits, while improving nutrient use efficiency.
- **Promoting farm typology-based fertilizer recommendations** considering the socio-economic status and resource endowment of farmers.
- **Attending to member company needs** and their fertilizer industry clients through planning of market development programs and participating in capacity building with agronomists.
- **Assessing the impact of IPNI activities** in the region through Network analyses and survey of major stakeholders with whom IPNI is associated in the region.



TACTICAL PLAN highlights & priorities



4R Nutrient Stewardship

Dedicated 4R training courses are being offered to the scientists, post graduate students, and industry agronomists. For example, IPNI collaborated with a university in North Bengal to offer training on the concept, principles, and applications of 4R Nutrient Stewardship.

Nutrient Education

The South Asia Program serves a broad clientele including scientists, agronomists, and agricultural students as key targets for nutrient education. This is accomplished through various means, such as technical webinars contributing to academic training, and developing materials on nutrient management and crop deficiencies, as well as human nutrition.

Improved Fertilizer Recommendations

The program is currently out-scaling the information and communications technology (ICT)-based Nutrient Expert® tool for making better fertilizer recommendations. We deliver fertilizer recommendations that are demonstrated to promote high yields, improve farmer income, and enhance nutrient efficiency. This work is being expanded for use in soybean and cotton.

Closing Yield Gaps

We have managed large yield gaps in crops across the region. The *Better Crops* article by Garcia et al. (2017) discussed the management of wide yield gaps in maize systems through the principles of Ecological Intensification.

Enhancing Sustainability

IPNI is engaged with a multi-stakeholder partnership project on "Nutrient Management for Diversified Cropping in Bangladesh (NUMAN)", aimed at increasing profitability and sustainability of intensive and emerging cropping systems in Bangladesh through 4R-based, improved nutrient management.



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examples of IMPLEMENTING THE TACTICAL GOALS

Significant Partnerships:

IPNI is a highly respected national leader in plant nutrient science. For example, a regional potassium conference organized in partnership with the National Agricultural System, FAI, CIMMYT and TAAS, highlighted the need for improving K fertilizer use in the region through a better policy support.

Partnership with NGOs such as FORWARD, and NRNA in Nepal provide the local basis for developing and promoting Nutrient Expert® in Nepal.

Partnerships with private industry aids in the dissemination of online information directly to farmers.

Educational Activities:

Regional workshops on 4R Nutrient Stewardship and precision nutrient management increase awareness of 4R concepts.

Organized a panel discussion on Nutrient Expert® on national television channel that highlighted the tool's capability for large-scale dissemination of balanced fertilizer recommendations.

Jointly organized a special session on "Out-scaling Site-Specific Nutrient Management using the Nutrient Expert® Fertilizer Decision Support Tool for Improving Farmer Income and Soil Health" at the 82nd Annual Convention of the Indian Society of Soil Science.

Engagement in Industry:

Training on potassium management organized for industry agronomists of Adventz group representing Zuari Agro Chemicals Ltd, Paradeep Phosphates, and Mangalore Chemicals and Fertilizers Ltd. Agronomists learned the use of Nutrient Expert® to educate fertilizer dealers for generating better fertilizer recommendations.

IPNI continually engages with the Fertilizer Association of India through active participation at their Annual Seminar. IPNI creates an interface between the academic front including government and the fertilizer industry and garners support for promoting improved nutrient management in the region.

IPNI scientists participate in government-industry meetings to suggest approaches for promoting improved fertilizer recommendations.

IPNI scientists recently co-organized a workshop on fertigation to consider the potential of this technique for Indian crops.

Research Leading to Impact:

IPNI-led research on Nutrient Expert® provides the basis for adoption of 4R nutrient management by individual farmers of major cereals (rice, maize, and wheat) aimed at bridging yield gaps and ensuring food security.

Collaborating with partners to understand farm typology provides new understanding for making better fertilizer recommendations that consider the economic, education, and social resources of farmers.

IPNI studies on crop nutrient response are providing the basis for expanding Nutrient Expert® to include soybean and cotton.

Changes in Nutrient Practices:

IPNI collaborative research with Dr. PDKV University (Maharashtra) helped to change the official K fertilizer recommendations for soybean from 0 to 30 kg K₂O/ha.

Nutrient Expert®-based recommendations helped boost N fertilizer use in rice in West Bengal, increased P and K use in the maize-growing regions of southern India, and recommended increased K use in the wheat-growing regions.

Leadership in Plant Nutrition Issues:

IPNI provides leadership on promoting proper nutrient management. Recent examples include organizing special sessions at the 4th International Agronomy Congress.

IPNI is well recognized for leadership in plant nutrient research and extension activities in India. Two IPNI scientists were recently recognized with "Young Scientist" awards by major professional Indian scientific societies.

EXAMPLES OF IPNI IMPACT

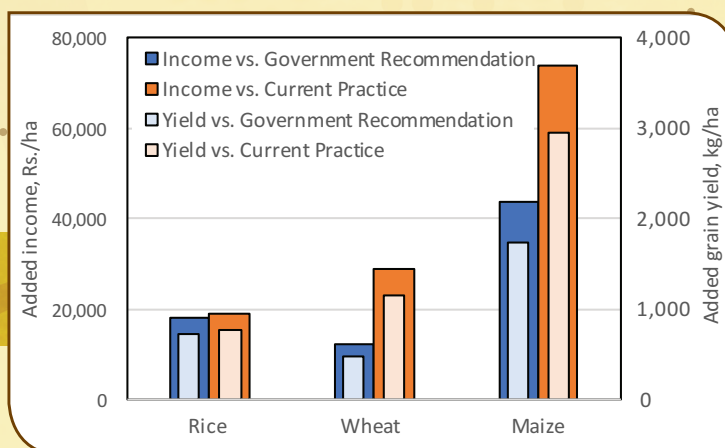
Nutrient Expert® Software Boosts Farm Profitability in Eastern Nepal

The Terai region is the most agriculturally productive region in Nepal. But inadequate plant nutrition is a major reason why crop yields never approach their potential.

Nutrient Expert® was introduced over a two-year period to provide improved fertilizer recommendations to at least 600 farmers. An introductory workshop was organized to kick-start the project and to bring together all stakeholders. Key farm advisers of FORWARD and other

cooperating groups were trained to use Nutrient Expert® on behalf of each of the 600 participating farmers.

Nutrient Expert® recommendations increased rice yields by 16% over current practice; wheat yields increased by 47% over current practice and 18% over government recommendations; and maize yields rose by 42% over current practice and 21% over government recommendations.



The adoption of Nutrient Expert®, a relatively simple tool, was able to generate farm-specific information, enhance food security within Nepal, and secure the livelihoods of its farmers.



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