THE CONCEPT OF THE RATIONAL USE OF MINERAL FERTILIZERS AND ITS REALIZATION IN RUSSIA

Svetlana IVANOVA
IPNI, Russia
The Concept of the Rational Use of Mineral Fertilizers and its Realization in Russia

Ivanova Svetlana
Vice-President for Eastern Europe and Central Asia
IPNI - International Plant Nutrition Institute
E-mail: sivanova@ipni.net

IPA Fertilizers & Agriculture Conference, October 8, 2009, Moscow

THE MISSION OF IPNI

“Development and dissemination of information about the importance of science-based use of mineral fertilizers for plant nutrition for the benefit of all mankind.”
Functioning programmes of IPNI

- 30 Ph.D.v 10 regional programs
  - 9 scientists in North America
  - 17 – in other regions
  - 4 – management

Publications and the internet site

www.ipni.net
Objectives of sustainable agriculture

Aspects of sustainable development associated with the use of fertilizers

- Food security
- Jobs
- Soil fertility
- The content of cadmium in soil
- Eutrophication
- Non-renewable resources
- Greenhouse gas
- Depletion of the ozone layer (N₂O)
- Air quality: ammonia, smog
- Water quality: nitrates, algae
- Public opinion
The tasks of sustainable agriculture

**Ecological**
- Support and improvement of soil quality
- Preservation of nutrients in natural ecosystems
- Preservation of natural flora and fauna

**Economical**
- To invest the financial gain into further support of agricultural services
- To preserve and support the level of life quality
- To generate a maximum output from every invested ruble

**Social**
- To produce food of a good quality
- To support programs that ensure supplies to general public
- To help to resolve a global problem of food supplies
- To ensure availability of jobs in agricultural sector and related areas

The concept of “4R"
The concept of 4R

- The optimal form and dose of fertilizers; the time and the methods of introduction of fertilizers
- Combining science and practice to achieve stable results

What are the proposals of the strategy of “4R”?

- Optimal forms, doses, timing and manner of introduction of fertilizers to ensure stable productivity.
- Rational use of fertilizers and improvement possibilities.
- A balanced approach in all four directions.
- Fertilizer producers: the role of distributors and suppliers.
- Availability of information
Scientific Principles: the form of fertilizers

• Balanced content of essential nutrients.
• Forms that are suitable to the plants.
• Correspondence to physical and chemical properties of soils.
• Be taken into account:
  – Synergism of nutrients and forms of fertilizers;
  – Compatibility of fertilizer mixtures;
  – Use of nutrient and non-nutrient (supplementary) elements.

Scientific Principles: Rational Doses

• Assessment:
  – Of soil nutrients;
  – Of availability of nutritional elements deriving from all possible sources;
  – Of needs of the particular crops.
• Forecast of fertilizer use efficiency
**Scientific Principles : Time of Introduction**

- Consideration for dynamics of absorption of nutrients by crops.
- Assessment of nutrients reserves in soil.
- Accounting for weather factors affecting loss of nutrients.
- Assessment of logistics for field operations.

**Scientific Principles : Method of Introduction**

- Accounting for the spatial dynamics of a location of roots in soil.
- Accounting for heterogeneity of soil fertility.
- Reducing the possible loss of nutrients from the fields.
Implementation of a rational system of fertilizer use in Russia:

4 key regions for growing wheat (spring and winter):

- Central
- Stavropol and Krasnadar areas
- Tatarstan
- Western Siberia
Thank You for Your Attention!