PROGIS
Software that shows

Agroanalytical Data to Promote Circular Economy

AGROMANAGEMENT BELGOROD 2015

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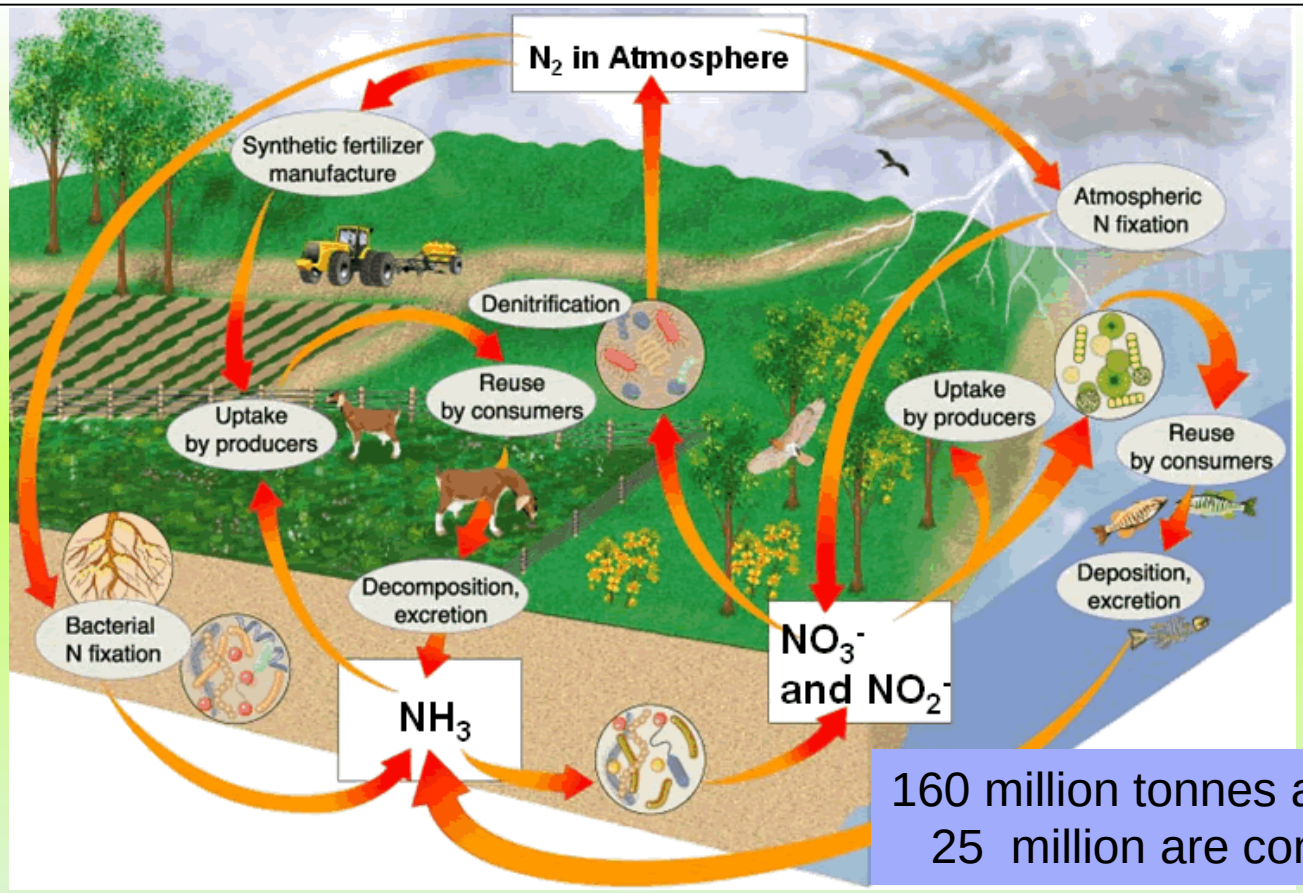
Is the Complexity of Nitrogen Cycle a Handicap for Efficient Agriculture ?

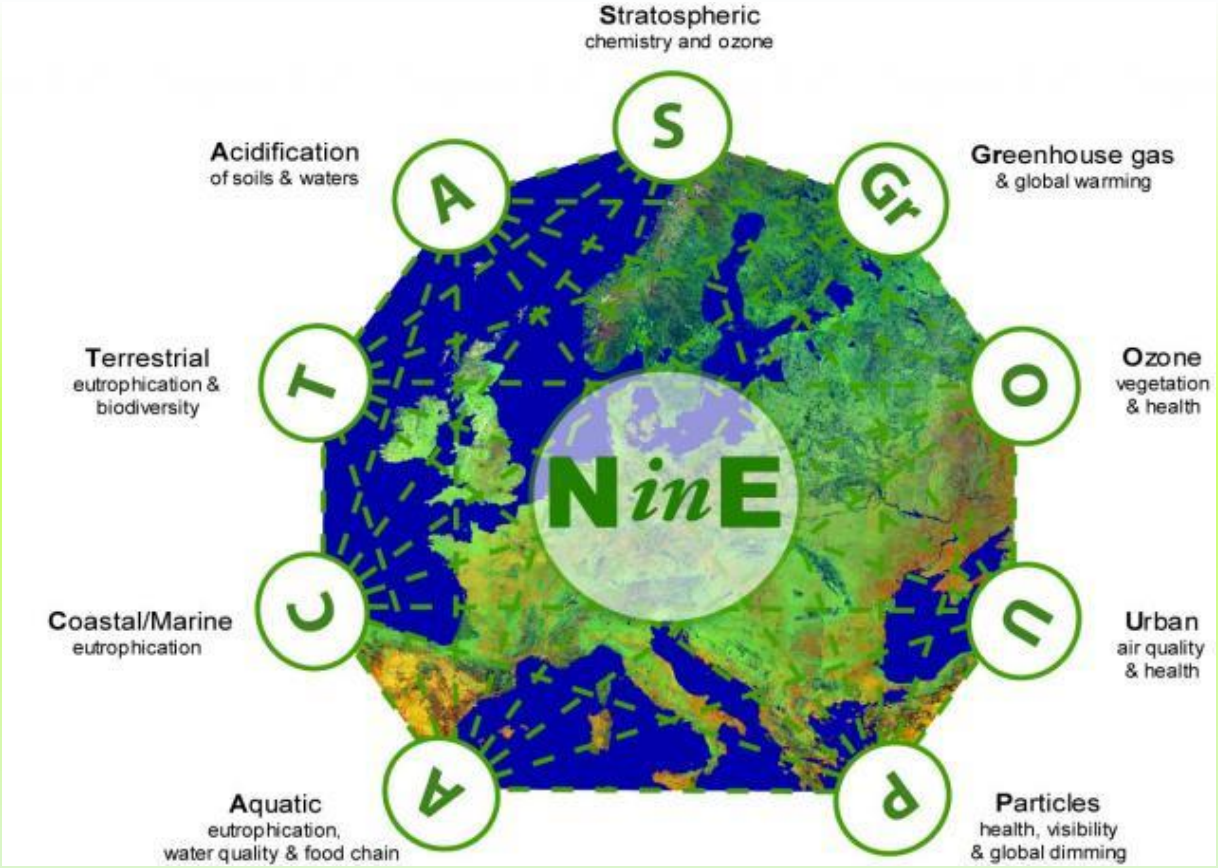


160 million tonnes are fixed
25 million are consumed p.a.

NO ! The most important parts of the nitrogen cycle can be represented as figures just using basic data of animals, soil, feed and manure as a whole

Externalities of Nitrogen Emissions ?

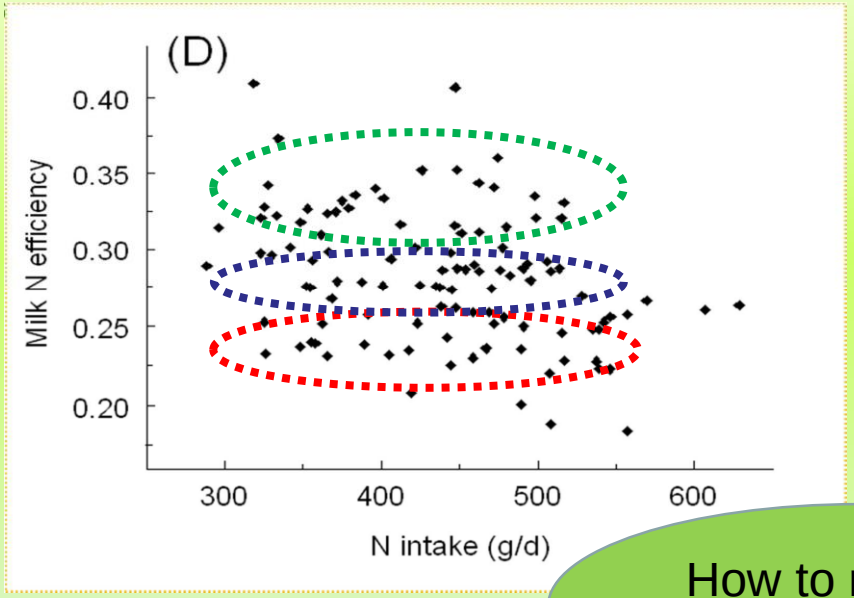
The European Nitrogen Assessment, ENA , Cambridge2011



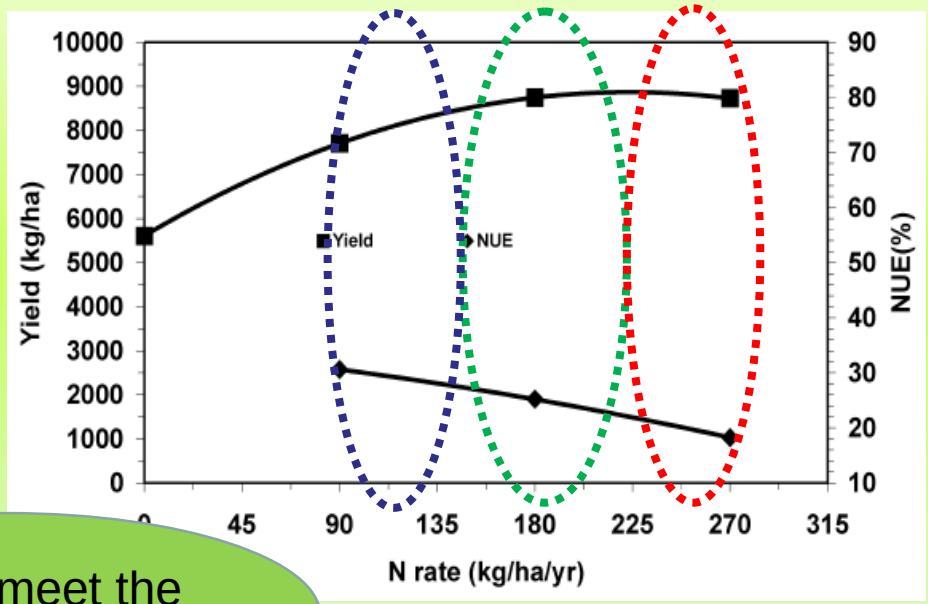
The nitrogen pollution is responsible for human made climate change an is costing each person in Europe +- € 450.- a year

Lead advisors and farmers looking to targeted input data for own and external resources

Nitrogen Efficiency in Milk and Crop Production ?



Kebreab et al., 2002

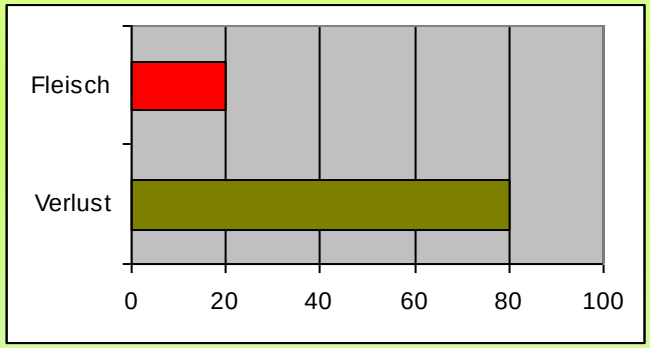


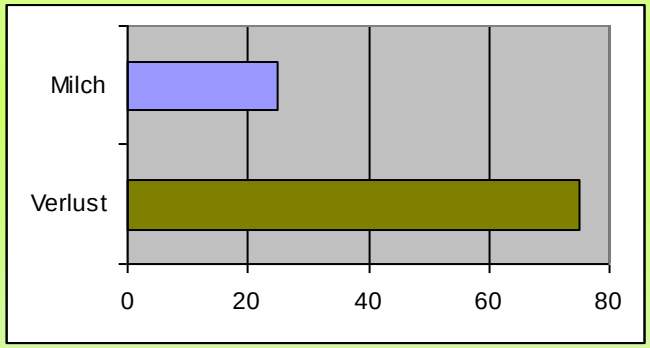
How to meet the optimum ?

Worldwide 120 Mill. tonnes of nitrogen in the agrarian cycle pointing at questions of efficiency and to the challenge of a climate intelligent agriculture

Main Facts in Animal Husbandry

Agricultural animals consume the half of total worlds cropped biomass. Only 20 % are transformed to meat and max. 25 % to milk





Evalution of feed for protein and energy (C/N Ratio) is essentiell for the efficiency of own ressources and purchased concentrates

Liquid Manure Quality and Nutrient Calculation

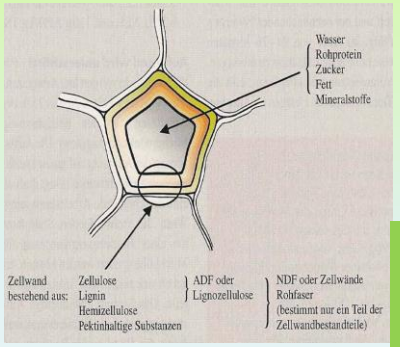
A
Feed uptake
Quality

B
Yield: Milk and
Meat

C
Basal
metabolism

D
Specific stable
losses

E
Manure nutrients
QUALITY

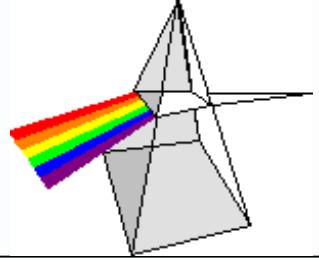


Focus on Cellwall & Cellplasma

Meet the Optimum !

Manure: Nitrogen, Dry Matter, Ash, Ammonia (C/N-Ratio)

Main Facts of Cropping



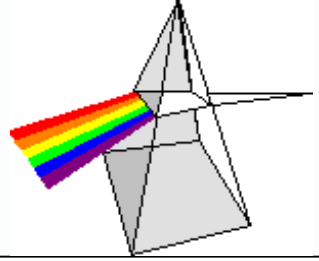
- **Consumption and ecology are decoupled (Data of HANPP for densely populated countries)**
- **Soil is boardering to productiveness (erosion, depletion of humic substances, intoxication)**
- **Usable farmland per capita is decreasing worldwide**

> 1961 : 0,44 ha > 1997 : 0,26 ha > 2050: ca. 0,15 ha

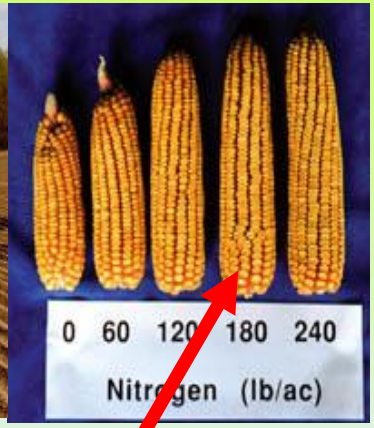
A broad and exact definition of the „biotechnological“ properties (main & micronutrients, texture a.o.) of soil determines yields, efficiency, energy cosnumption and emissions

World Agrar Report 2008: International Assessment of Agricultural Knowledge, Science and Technology for Development – IAASTD

Nitrogen Balance in Cropping



A	B	C	D
Available Nitrogen Organic Quality Chemical Comp.	Organic and/or mineral Fertilisation	Basal metabolism Humus Reproduction Emssion	Yield Nutrient output

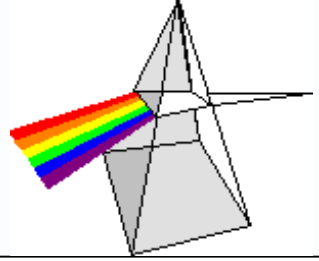


Focus on Organic Substance

Soil Analysis: Different Forms of Nitrogen, Carbon and Phosphor (Total & Available)

Meet the Optimum !

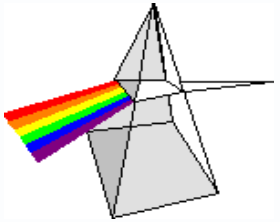
Promoting Circular Economy by Basic Data of Soil, Feed, Manure and Animals

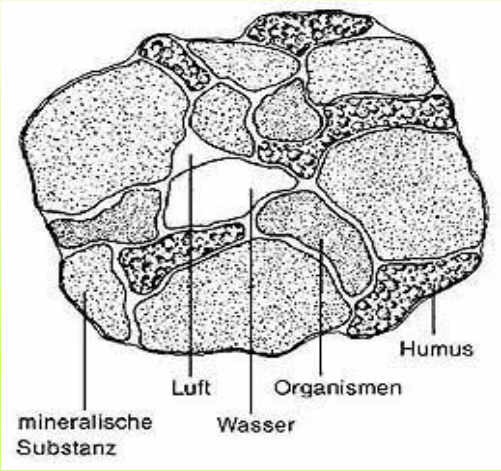


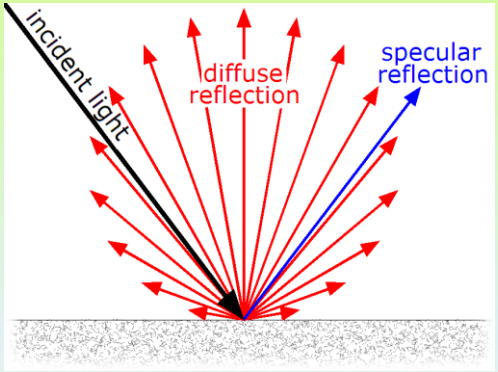
- Avoid obsolete segmented view to soil, feed, manure, products….
- Up-to-date data use linking GIS & Efficient Agro Analytics
- Integrate concepts of embedding internet based system analysis (remote sensing on fields, monitoring in stable…)

Introduce a unique System for the creation and synopsis of basic data to enhance production and meet environmental needs by balancing nutrients

Field of Application of SPECTROSOPY for Circular Economy (BIONIRS, MINAMMON)

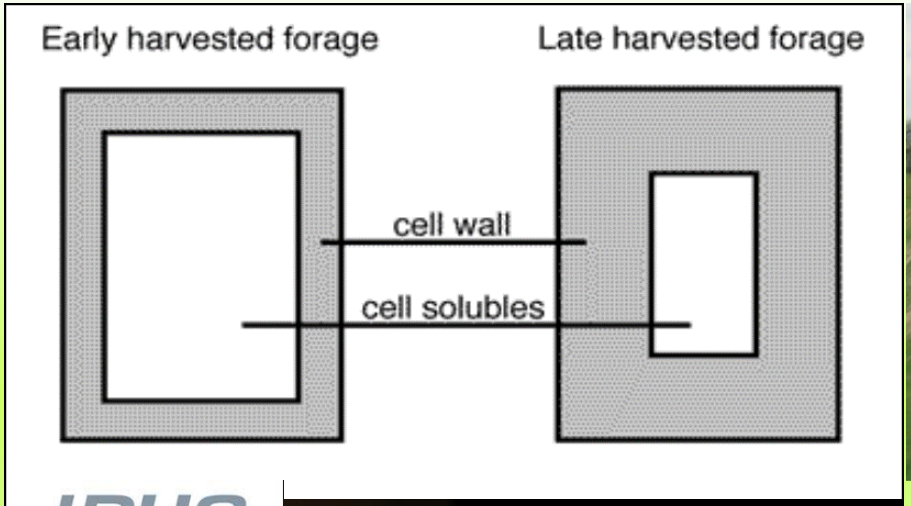






J-kühnen-Institut

Innovative Austrian Analytics: NIRS Methodology for feed, soil and liquid manure



FEED: Carbon & Nitrogen Differentiation in Plasma and Cell Wall, acc. to CNCPS Cornell System (USA)

SOIL: Local Nutrient Dynamics and Nutrient Balances, Different Forms of Nitrogen to improve fertilisation and soil melioration (left side before !)

LIQUID MANURE: Succeeding of total nutrient analysis with NANOBAG ® and pH- High Definition Module

Austrian Innovative Hardware

High resolution FTNIR Instrument for analysis of all main parameters of soil, feed, manure and agricultural products

High Definition MINAMMON HD-pH-TUBE and monitoring unit for continuous measurement of pH and for optimisation of feeding

Austrian Innovative Hardware

Die automatische Streueinrichtung fährt auf einer Schiene über den Laufbereich.

The intelligent Eartag collects in real-time the current location, the activity, heat changes and the rumination of animals. It is easy to mount and can be reused. Data will be displayed on a digital map of your barn

Fully Automatic MINAMMON spreader for micro mineral pellets for big barns .Improve-ment of animals wellness, intern and local climate conditions, soil fertility and avoiding of ammonia losses up to 50 %

GIS in Agriculture and Environment – Embedding Innovative Solutions - Efficient Data Acquisition - Keys to Prosperity

GIS for Agriculture

Balancing the inputs and outputs on a farm is fundamental to its success and profitability. The ability of GIS to analyze and visualize agricultural environments and workflows has proved to be very beneficial to those involved in the farming industry.

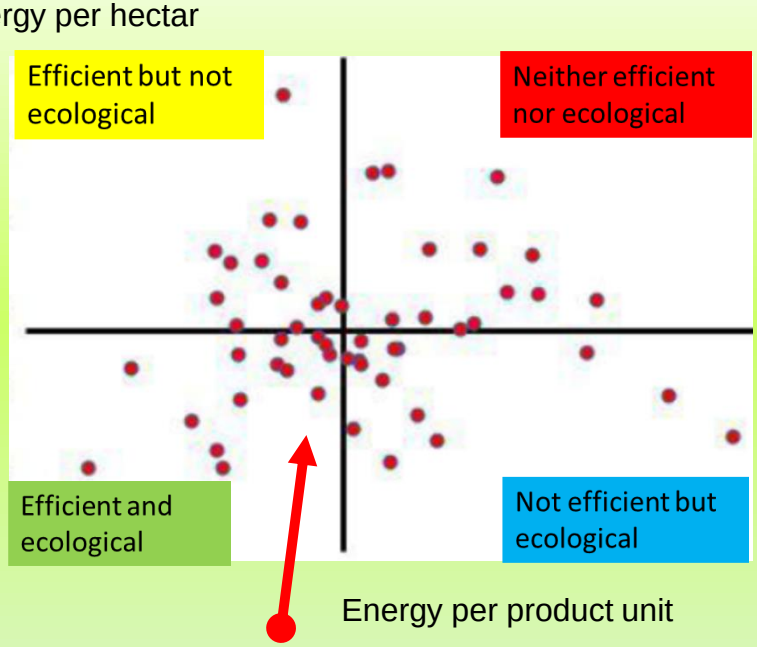
From mobile GIS in the field to the scientific analysis of production data at the farm manager's office, GIS is playing an increasing role in agriculture production throughout the world by helping farmers increase production, reduce costs, and manage their land more efficiently.

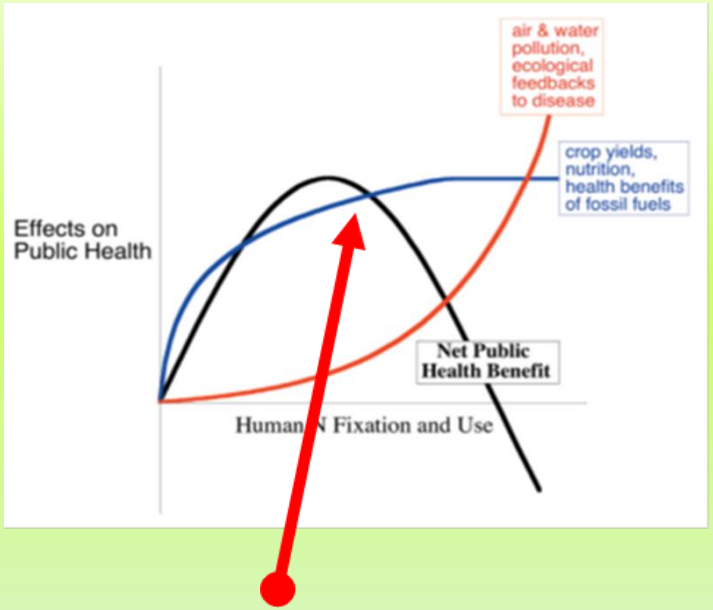
While natural inputs in farming cannot be controlled, they can be better understood and managed with GIS applications such as crop yield estimates, soil amendment analyses, and erosion identification and remediation.

ESRI

Combing GIS, realtime and localised basic-data will help to find best decisions for any farm and for whole agricultural systems

EVALUATION OF EFFICIENCY AND SOICIAL BENEFIT



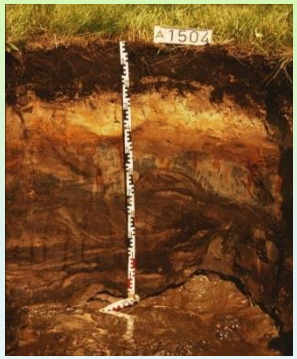


Optimisation of the total energy consumption of any farm including feed, manure,agrochemicals, buildings, machinery, manpower and facts of sustainability

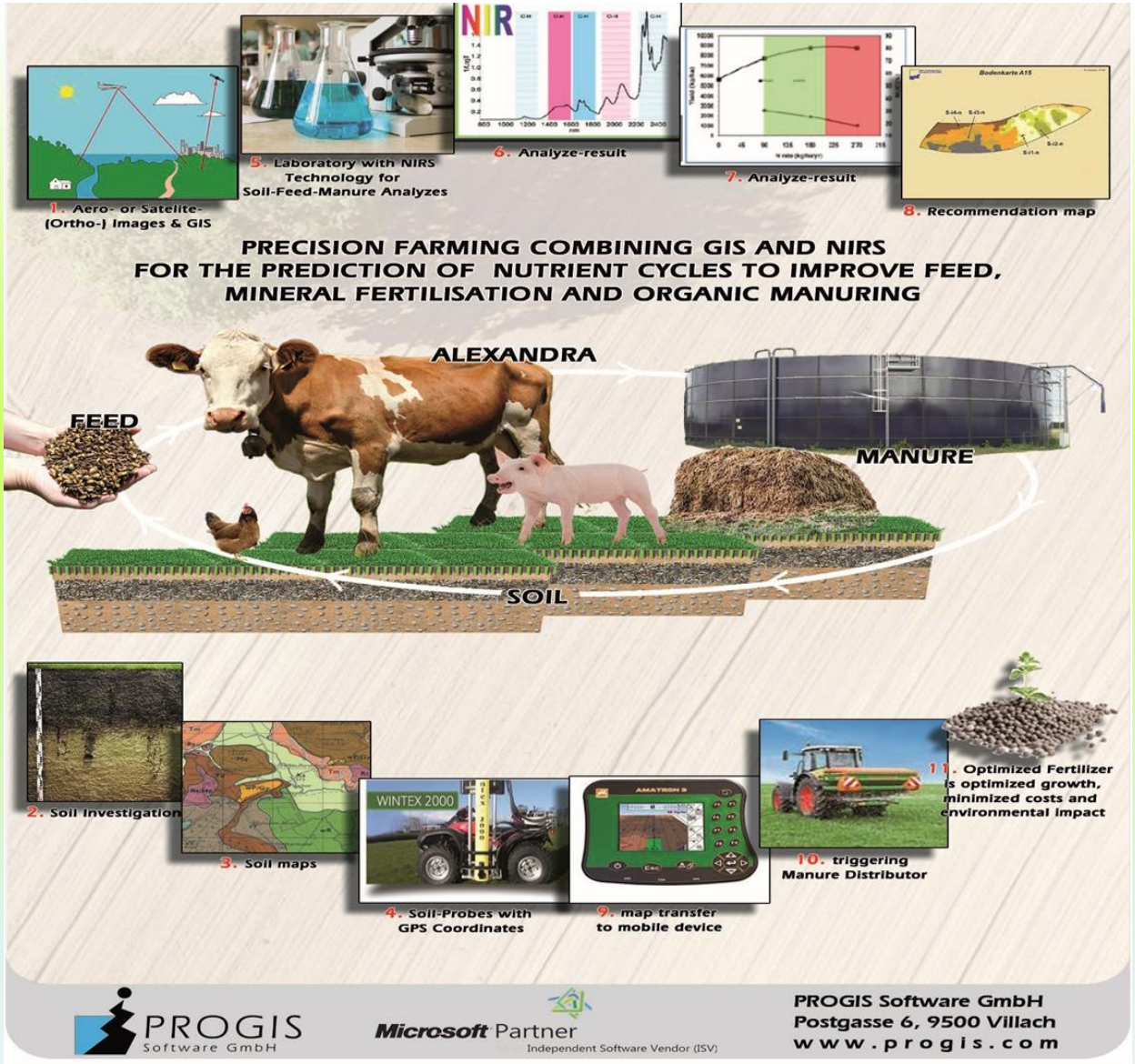
Optimisation of the production philoso-phy of any region/country deduced by nutrient input/output balance and using GIS Tools for daily practice, planning documentation and optimisation

Innovative Solutions: Indicators of efficiency for precision cropping and livestock farming for nutrient balance

Nutrient Efficiency



PROJECT ALEXANDRA
PROGIS TOOLS + DIGITAL DATA for FIELD and BARN



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THANK YOU FOR YOUR ATTENTION !