What is Eco-Efficiency?

The purpose of Eco-Efficiency Analysis is to harmonize economy and ecology. BASF Aktiengesellschaft in Ludwigshafen, Germany, is one of the first chemical companies to develop this method for use in its business activities.

Sustainable Development is based on 3 pillars: Economy, ecology and social aspects. Only through balanced consideration of all 3 pillars, can a company carry out sustainable production or develop sustainable products and processes.


The calculation of total costs and the calculation of the environmental fingerprint are independent calculations of the economic and ecological aspects of a total system featuring different alternatives. Alternatives having the same product of economic and ecological assessment are deemed equally eco-efficient. To illustrate the results of an eco-efficiency analysis, BASF has developed the Eco-Efficiency Portfolio.

To calculate the input values for this portfolio, a normalizing step is initially carried out in the environmental assessment for each category.

Conclusion

- Fertilization with a Nitrification inhibitor, applied on an Ammonium-nitrate (AN)-fertilizer is the most eco-efficient alternative.
- The other alternatives are much less eco-efficient, mainly due to their worse environmental position.
- A lot of scenarios showed potentials for further development and optimization of the system.
- The Eco-Efficiency Analysis supports R&D, marketing and customers in defining the most sustainable alternative for the fertilization.