Special Seminar

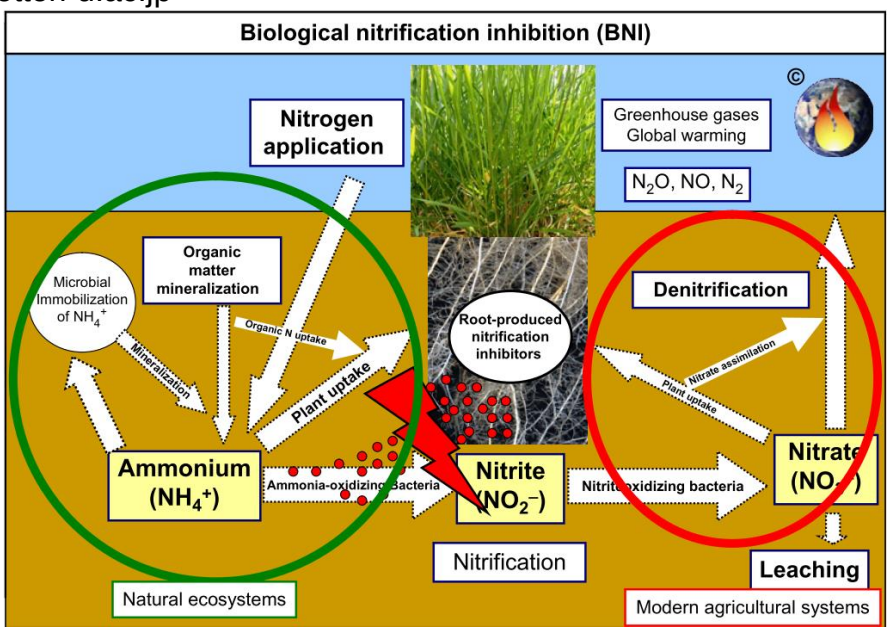
Date and Time: July 15, 2020, 9:00-10:00
Place: Multi purpose room, ALRC

Dr. Guntur V. Subbarao
(BNI research team, JIRCAS, Tsukuba, Japan)

Towards low-nitrifying agricultural production systems – Role of Biological Nitrification Inhibition

Nitrogen losses from farmlands has become a major environmental crisis affecting the quality of ground water, surface water bodies and is largely responsible for greenhouse gas emissions. Agriculture has become the biggest contributor (33%) of the global GHG (greenhouse gases) emissions; N_2O, NO are some the major greenhouse gases emitted from farmlands, which are associated with nitrogen fertilizer applications. Nitrogen fertilizer applications are largely responsible for tripling food grain production since 1960's, but this has come with a nearly a 15-fold increase in nitrogen fertilizer application globally. This led to a situation where the world is awash with reactive nitrogen, threatening human health and ecosystem's stability. Agriculture has become a nitrogen leaking enterprise as nearly 70% of the nitrogen fertilizer applied to farmlands leaks before the crop has a chance to converts into plant-protein. The soil nitrifier activity in farmlands has become super-active lately, which has resulted in rapid conversion of ammonium nitrogen into nitrate nitrogen, largely responsible for nitrogen leakiness. One of the possible strategies to make agriculture less leaky is to reduce soil nitrifier activity and move the production systems towards low-nitrifying. The natural ability of some plant root systems to produce nitrification inhibitors to suppress soil nitrifier activity is termed as 'biological nitrification inhibition' (BNI). During this talk, we will show the feasibility for genetic exploitation of BNI-ability in crops and pastures to develop crop varieties with BNI-capacity to make production systems low-nitrifying, and low-N_2O emitting, using wheat, and sorghum as model systems.

Contact: tsujim@tottori-u.ac.jp



Source: Global Warming Art

Supported by MRA project