

Biological Nitrogen Fixation For Food Production In The

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Biological Nitrogen Fixation For Food

Biological nitrogen fixation (BNF) is an important N supply route for both natural vegetation and crop plants (Vance, 2002), but quantifying its contribution on a global scale is problematic, mainly due to inaccurate statistics on areas under legume cultivation and the sparseness of fixation data for non-legume crops and most natural ecosystems (Cleveland et al., 1999; Herridge et al., 2008).

Biological Nitrogen Fixation - an overview | ScienceDirect

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Science 22 Jul 1977: Vol. 197, Issue 4301, pp. 332-339 DOI: 10.1126/science.197.4301.332

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Biological Nitrogen Fixation for Food and Fiber Production ...

These bacteria convert nitrogen gas to ammonia through a process called biological nitrogen fixation. Bacteria take nitrogen from the air and convert it into ammonia for the plants, which use it for energy to grow. The plants in turn provide carbon and other nutrients to the microbes.

Nitrogen-fixing genes could help grow more food using ...

Biological Nitrogen Fixation for Food and Fiber Production What are some immediately feasible possibilities? Harold J. Evans and Lynn E. Barber Harold J. Evans is professor of plant physiology and Lynn E. Barber is assistant professor of micro-biology at Oregon State University, Corvallis 97331. 332.

Biological Nitrogen Fixation for

"A more sustainable way to provide nitrogen to crops would be through the use of biological nitrogen fixation, a practice well developed for leguminous crops," says plant pathologist Gary Stacey ...

Reducing reliance on nitrogen fertilizers with biological

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Whilst biological nitrogen-fixation is a vital gardening practice, so is starting a compost pile for all the other nutrients that your broccoli, carrots and lettuce are going to need. And perhaps, if you love succotash like I do, your first attempt will be at growing lima beans ; they are very nutritious legumes for our own protein needs, as well as for their capacity to fix nitrogen.

Nitrogen fixation bacteria are vital; without them we ...

Through the process of biological nitrogen fixation (BNF), symbiotic and nonsymbiotic organisms can fix atmospheric N_2 gas into organic N forms (Figure 1). A few living organisms are able to utilize molecular N_2 gas from the atmosphere. The best known of these are the symbiotic Rhizobia (legume bacteria), nonsymbiotic free-living bacteria such as Azotobacter and Clostridium, and blue-green algae.

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Biological nitrogen fixation was discovered by Hellriegel and Wilfarth (1886), who reported that some legumes could use nitrogen gas (N_2) from nodules on their roots. Two years later (1888), the N -fixing bacteria strain *Rhizobium leguminosarum* was isolated for the first time by Beijerinck [63].

Exploiting Biological Nitrogen Fixation: A Route Towards a ...

Biological nitrogen fixation, on the other hand, offers a natural means of providing nitrogen for plants. Legume (aka Pulse Crop) in association with *Rhizobium* bacteria. Biological Nitrogen fixation is an important component of regenerative agriculture, organic gardening/farming, forest gardening, and other polyculture practices.

Nitrogen Fixation - The Permaculture Research Institute

Biological dinitrogen (N_2) fixation is a natural process of significant importance in world agriculture. The demand for accurate determinations of global inputs of biologically-fixed nitrogen (N) is strong and will continue to be fuelled by the need to understand and effectively manage the global N cycle. In this paper we review and update long-standing and more recent estimates of biological ...

Global inputs of biological nitrogen fixation in ...

sought. Biological nitrogen fixation (BNF), a microbiological process which converts atmospheric nitrogen into a plant-usable form, offers this alternative. Nitrogen-fixing systems offer an economically attractive and ecologically sound means of reducing external inputs and improving internal resources.

Biological nitrogen fixation for sustainable agriculture ...

Felix Dapare Dakora from Tshwane University of Technology, Pretoria, South Africa, discusses biological nitrogen fixation in legumes, including the opportunities for green agriculture and increased food security in Africa. The African continent is rich in legumes, which are unique in their ability to form root nodules with soil bacteria generally referred to as rhizobia.

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Biological nitrogen fixation in legumes: Green agriculture

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Biological Nitrogen Fixation for Sustainable Agriculture Extended versions of papers presented in the Symposium, ... Chemical fertilizers have had a significant impact on food production in the recent past, and are today an indispensable part of modern agriculture.

Biological Nitrogen Fixation for Sustainable Agriculture ...

These bacteria convert nitrogen gas to ammonia through a process called biological nitrogen fixation. Bacteria take nitrogen from the air and convert it into ammonia for the plants, which use it ...

Nitrogen-fixing genes could help grow more food using ...

If biological nitrogen fixation introduced successfully by cereals it means revolution in agriculture and environmental protection from pollution by nitrogen fertilizer application, and decrease ...

Biological Nitrogen fixation for cereals?

Conditions for biological N_2 fixation: 30 degree, 1 atmosphere pressure, enzyme catalysts-nitrogenase and reducing agents are organic substances. Conditions for industrial N_2 fixation: 300-400 degree, 500 a.t.m, chemical catalysts-Fe, Al oxides. Reducing agent is hydrogen. Symbiotic Nitrogen Fixation: The relationship between the plant and the bacteria is known as a symbiotic relationship ...

Biological Nitrogen Fixation and its Genetic Engineering

...

One alternative to overcome this problem is biological nitrogen fixation (BNF). Indeed, more than 60% of the fixed N on Earth results from BNF. Therefore, optimizing BNF in agriculture is more and more urgent to help meet the demand of the food production needs for the growing world population.

Exploiting Biological Nitrogen Fixation: A Route Towards a ...

Field evaluation of symbiotic nitrogen fixation by rhizobial strains using ^{15}N methodology. Plant Soil 82, 369-375 9 Khurana, A. L.,

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Dudeja, S.S., Sheoran, A., 1998. Biological nitrogen fixation in chickpea for sustainable agriculture. Prospects and limitations. Sust. Agric. Food, Energy, Ind.439-444 Case 3: Outputs on Rhizobium screening ...

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