Scientists Seek to Unlock Secret of Soybean N Usage

mopst puzzling questions of pounds of nitrogen. soybean research: Where all of its nitrogen?

ditions, an acre of so seans Where does the additional with a 50-bushel yield takes 170-220 pounds of nitrogen up 30 pounds of nitrogen per come from? Researchers

Researchers at the year from the air. From University of Missouri are decomposed organic matter working on a project that in the soil, the 50-bushel crop could help answer one of the draws an additional 50 to 100

However, it is known that does the soybean plant get this same 50-bushel crop actually takes up a total of Under normal field con- 300 pounds of nitrogen.

don't know.

With so little knowledge of how the soybean plant obtains nitrogen, and in view of the soybean's need for such large amounts of the element, researchers fear, that nitrogen could some day become a limiting factor in producing higher yields.

To prevent this from happening, the American Soybean Association (ASA) Research Foundation is funding a project at the University of Missouri to learn more about how the soybean plant obtains and metabolizes nitrogen.

When the project began, it was believed that the soybean plant converted nitrogen into amino acids, the building blocks of protein, in only two ways: - Nitrates from the soil are transported to the leaves, where they are converted, or reduced, to

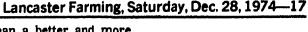
amino acids. This process occurs largely in the early part of the growing season. -- A strain of bacteria called rhizobia form nodules scientists are running on the roots of the soybean growth chamber and

plant and draw nitrogen from the air for the plant to use. This occurs in the latter part of the season. However, researchers at the University of Missouri soon made an important

discovery: The nodules not only fix atmospheric nitrogen, but also reduce a significant amount of nitrates from the soil. In fact, early results in-

dicate that nodules may be more important for the reduction of soil nitrates than for the fixation of atmospheric nitrogen. This new information

changes the whole picture of soybean metabolism research and gives all scientists studying the



soybean a better and more complete basis for their work.

From experiments last summer, the Universityof Missouri team obtained the general pattern of nitrate reduction and fixation over the season. This winter, the greenhouse experiments in which they completely control the environment, enabling them to account for all of the nitrogen metabolized by soybeans.

They are using a stable isotope of nitrogen to trace the pathway of soil nitrates and atmosphjeric nitrogen through the plant in order to calculate more precisely the relative importance of reduction and fixacion in the nodules.

Information gained will help answer the soybean nitrogen mystery and assure higher yields in the future.

Kublai Khan

vout Buddhist, Kublai completed his father's conquest of China, adding Koiea and Burma to the and the arts

Erie Canal

Canal provided a vital link be-River at Tioy Four fect deep. by the state of New York Gover nor De Witt Clinton speai heading the effort

Quarantine **Birds After** Farm Show By Jay W. Irwin Associate Agent Lancaster Co.

Poultry exhibited at the Farm Show are exposed to many diseases not common to their flock of origin. These show birds should be kept separate from the main flock after the show for at least 30 days.

Most infections contracted by poultry at shows will break before the 30-day isolation period is up. If there are no breaks, then it is probably safe to place these birds back with the flock. In the event that disease strikes, they should not be put back with the flock. **Recovered** birds remain carriers and shedders of certain diseases.

Kublai Khan was the Mongol Many disease breaks can ruler of 13th century China A de-be averted by establishing a sound vaccination program. However, there is no reliable reign The tolerant ruler was vaccine available for some highly appreciative of learning of the bacterial diseases for which the recovered birds remain carriers. Examples Lake Erie's waters rushed of these are coryza and fowl through the Ene Canal for the cholera. Be on guard for first time on October 26, 1825 The coccidiosis, too, because the tween the lake and the Hudson show birds may have no immunity to certain species. 2812 feet wide the canal was built Look for a coccidiosis break 1 to 3 weeks after bringing the birds home.



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What is this season? A time for family gatherings. A time for fond remembrance, happy anticipation. A time for reflection, rededication. A time for reaching out to others. A time for joy. A time for kindness. A time for love. A time for peace. \bigwedge Best wishes for this holiday season. Commonwealth **National Bank**

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