iron is influenced by a number of factors such as the nature of the soil, the chemical composition of the organic matter, reaction of medium, temperature, degree of submergence and such like. In soils which are alkaline or contain useful quantities of lime or other buffering constituents, the iron is precipitated almost immediately after it is brought into solution. In other types of soils (especially acid ones), the iron in solution continues to persist for several weeks. The dissolved iron is present, not as bicarbonate as suggested by some earlier workers but mostly as salts of organic acids. After the subsidence of the initial fermentation and on exposure to air, it undergoes hydrolysis and tends to get oxidised, with the result that iron is deposited in finely divided form as ferric hydroxide. It is this which constitutes the red-brown, fluffy layer often found at the surface of the swamp soil. In addition to this, iron is also precipitated as the carbonate, sulphide or the phosphate. The last reaction involves the removal of a part of the phosphate in solution. The precipitated phosphate is finely divided and is available, at any rate, to the immediate crop.

Another interesting change, attendent on swamping, is the increased availability of silicon. Application of organic manures (especially green manure) further improves the availability. Since the rice plant (especially the straw and the husk) is exceptionally rich in silicon, the increased availability of this element may, at any rate, partly account for the beneficial effect of swamping.

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The mechanism of dissolution of silicon has not, so far, been fully understood. It may be mentioned, however, that soluble silicates (which behave in the same manner as colloidal silica) increase the availability of phosphorus. This aspect of the problem has been studied by a number of workers, but the more recent work of Sreenivasan would suggest that silicon acts by combining preferentially with the soil complex and thus releasing phosphrous for the plant. Fermentation of organic matter releases phosphorus and thus produces an effect which is somewhat similar to that of light dressings of alkali silicate.

One of the most striking features about the cultivation of rice is the enormous demand for water. All the superior varieties of rice and even many of the coarser ones, flourish best only under the conditions of the swamp soil. The crop, by itself, takes very little water—at any rate, no more than most other dry cultivated crops do. It is, nevertheless, a common experience that if the water supply is reduced or the crop raised under conditions of dry cultivation, growth is adversely affected and yield considerably lowered. The available evidence would suggest that swamp soil conditions provide certain constituents which are not, ordinarily, readily available in the dry soil. One of these is silicon, but there are probably great many others which are essential to the rice plant and are released only under the conditions of the swamp soil. If the nature of these substances can be determined, it may be possible to provide them in comparatively stable forms even under dry soil conditions and thus improve the yield of rice. Intense research in this direction will lead to findings of very great practical value.

NEWS

LASER FOR SURGERY

Researchers at the Institute of General Physics under the USSR Academy of Sciences have made an original garnet-crystal laser for use in surgical operations. It is named "erbium" because the crystal, one of the main parts of the new instrument, contains the rare chemical element erbium.

The new laser, unlike those already applied, serves as a sterile scalpel for making bloodless operations. Its ray is easily absorbed by live tissues and this helps enhance the efficiency of the operation, without injuring the deeper-lying tissues. (*Soviet Features*, Vol. XXVI, No. 58, May 15, 1987; Information Department, USSR Embassy in India, New Delhi 110 001)