cause of anaemia. Three different approaches for iron biofortification are the agronomic approach, breeding and genetic engineering. Lack of genetic diversity makes breeding programs ineffective, while consumer resistance hampers the widespread application of genetic engineering approach. An agronomic approach, especially Fe fertilization is thus a promising solution for improving iron concentration and bioavailability to address on-going human Fe-deficiency. However, the high cost/easy oxidation of the soluble plant available Fe(II) fertilizer and readily conversion of Fe(III) fertilizer into insoluble Ferric oxide make iron biofortification a global challenge.

Thus, there is a need to provide solutions that can overcome, or at least ameliorate, one or more of the disadvantages described above.

Summary

In one aspect of the present disclosure, there is provided a method for promoting plant growth, comprising subjecting at least one part of a plant to a carbon dot, wherein the carbon dot is doped with one or more doping material selected from the group consisting of silica, plant macronutrients, plant micronutrients, and drug molecules; and wherein the doping material is conjugated within and on the surface of the carbon dot.

In another aspect of the present disclosure, there is provided a use of a carbon dot for plant growth, wherein the carbon dot is doped with one or more doping material selected from the group consisting of silica, plant macronutrients, plant micronutrients, and drug molecules; and wherein the doping material is conjugated within and on the surface of the carbon dot.

In an aspect of the present disclosure, there is provided a method for promoting plant growth, comprising subjecting at least one part of a plant to a carbon dot, wherein the carbon dot is doped with one or more doping material selected from the group consisting of silica, plant macronutrients, plant micronutrients, and drug molecules; and wherein the doping material is conjugated within and on the surface of the carbon dot.

In another aspect of the present disclosure, there is provided a use of a carbon dot for plant growth, wherein the carbon dot is doped with one or more doping material selected from the group consisting of silica, plant macronutrients, plant micronutrients, and drug

molecules; and wherein the doping material is conjugated within and on the surface of the carbon dot.

Advantageously, the carbon dots of the present disclosure may be purified easily with high yield, making it advantageously scalable in production.

Further advantageously, the carbon dots of the present disclosure may possess high loading capacity of doping material, making it advantageously useful in material delivery to support plant growth.

Also advantageously, the carbon dots of the present disclosure may be capable of prolonged delivery of doping material over a long period of time. This advantageously results