

Nuggets Of Knowledge - a Thickening Agent for Auxin Solutions[®]

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Sodium carboxymethyl cellulose (also known as NaCMC, sodium cellulose glycolate, SCG, and cellulose gum) is used as a thickener, binder, emulsifier, stabilizer, and colloidal suspending agent in salad dressings, fruit pie fillings, baked goods, dietetic foods, ice cream, toothpaste, shampoos, and many other products. This material can also be used to increase the viscosity of auxin solutions and enhance adhesion of an auxin solution to the base of a cutting.

Sodium carboxymethyl cellulose is added slowly to an auxin solution with stirring. The solution should be left covered overnight to allow the material to dissolve completely. Research by Blythe and Sibley (2010) showed that adhesion of solutions to bases of stem cuttings is maximized using 13.5 g of sodium carboxymethyl cellulose per liter of solution, but users can determine their own preferred viscosity.

Sodium carboxymethyl cellulose allows more auxin solution to adhere to the cutting base, exposing the tissue to auxin over a longer time compared with use of an aqueous auxin solution alone. Depending upon the crop, rooting response of stem cuttings can be increased by including sodium carboxymethyl cellulose in auxin solutions used for a basal quick-dip treatment prior to sticking into the rooting medium (Blythe and Sibley, 2007). On crops where auxin solutions prepared with the thickening agent are more effective than with auxin alone, use of the thickening agent may also allow lower rates of auxin to be used without a decrease in rooting response. Due to increased viscosity of the auxin solution, use of the thickening agent may also reduce the chance of spillage and reduce evaporation of alcohol being used as a solvent for the auxin.

Sodium carboxymethyl cellulose is available from chemical suppliers in food grade and other commercial grades, and as the product Dip-Gel™ from Dip'N Grow[®] (Clackamas, Oregon). At present, there is no sodium carboxymethyl cellulose product registered in the USA for use as agricultural adjuvants. Some states, such as California and Washington, require adjuvants to be registered before they can be sold.

Literature Cited

Blythe, E.K. and Sibley, J.L. 2007. Sodium cellulose glycolate as a thickening agent for liquid auxin formulations can enhance rooting of stem cuttings. *J. Environ. Hort.* 25:126-130.

Blythe, E.K. and Sibley, J.L. 2010. Maximizing adhesion of auxin solutions to stem cuttings using sodium cellulose glycolate. *HortScience* 45:1507-1509.

