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## Short introduction about coating seeds with micronutrients

### General information about seed coating

Seed coating is practiced because of several reasons. A typical reason is to protect the seeds from diseases by coating them with fungicides and herbicides. In some cases, the seeds are simply coated with an inert substance like diatomaceous earth that increases the overall weight of the seed, so that the lightest seeds are better separated from each other during sowing.

Another typical method is to coat the seeds with micronutrients to give them a nutrient boost at the beginning of their growth. A traditional method has been to mix powdered micronutrients, water and/or a binding agent with the seeds in a rotating drum, where the micronutrients then stick onto the seeds. Nowadays this method is mostly banned because of occupational hazards caused by dusting, and liquid products are preferred instead.

### Good reasons for coating seeds with micronutrients

Micronutrient seed coating is a common practice, because it is an efficient and cheap method to give the seeds a micronutrient boost. Studies have shown that when applying zinc for example for wheat, the seed yield and the grain weight of the crop can increase considerably. The micronutrient seed coating can also help the root growth of the seed, enabling the roots to grow longer, and also in number.

### Typical coating methods and solutions

In Europe, seed coating is most often done in seed processing factories from which the farmers can buy readily coated seeds for sowing on their fields.

Another method is to subcontract a mobile seed dresser to process farmer saved seed. Typically this is carried out by spraying the coating chemical onto the seeds.

The third alternative is for the farmer to coat the seeds themselves whilst planting. The chemicals used in coating can leave the seed surface moist, which can in some cases result in blockages in the conveyor and the drill. To avoid this, a more functional method could be to coat the seeds separately in a container, and then sow them some days afterwards. This would allow the chemicals to dry on the seed surface. However, this method is often too time-consuming, especially during springtime when time is already at a premium.



### About coating the seeds with micronutrients

A method that is gaining popularity is to mix liquid foliar micronutrients with the coating agent, and spray these to the seeds simultaneously. Usually some water is also added. The chemicals and water should first be mixed in smaller scale (so-called “jar test”) to confirm compatibility.

A typical dose of micronutrient solution is about 2-4 l per 1000 kg of seed, and the combined amount of coating chemicals and micronutrient solution is typically somewhere between 3-5 l. It is not advisable to exceed this amount, due to adding too much moisture to the seeds.

Using excessively high doses of the mixed coating solution should be avoided because the seed germination could start prematurely

### Test results

Tracegrow’s products were tried for seed coating in a research institute in Finland. The seeds were coated with fertilizer and plant protection chemical according to the following table, giving the following results:

TRT.	Treatment	Rate mL/kg	Test 1 germination %	Test 2 germination %	Germination % total
1	Untreated check		95	100	97,5
2	Redigo Pro	67	99	97	98
3	Redigo Pro ZM-Grow	67 400	96	96	96
4	Redigo Pro ZMC-Grow	67 400	98	97	97,5

The total liquid amount was 5 l / ton of seed after small water addition was made to the mixture. The seeds coated with Redigo Pro and ZMC-Grow can be seen from the picture below:





**Picture 1.** Coated seeds after germination has occurred; chemicals used for coating were Redigo Pro and ZMC-Grow

Seed coating with plant protection chemicals and fertilizer had no detrimental effect for the germination. Therefore their use is reasonable, because unlike the germination experiments that were made in laboratory conditions, the planting in field conditions has much more variations like plant diseases and harsh conditions. If the seeds are coated before the planting, they might have improved possibilities to germinate because of the extra protection that the combined coating can give.

