



## Seed Pelleting: Enhance Seed Quality

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The coating of seeds with glue and an inert powder is known as seed pelleting. Seed pelleting produce round shaped seeds irrespective of the original shape. The coating of seeds about changing the shape is called encrusting. In traditional seed pelleting there are several brands of methyl cellulose compounds like Methosfos and Methocel that are suitable gums or adhesives and lime is the most common inert powder that is used to cover the adhesive gum or glue. Sometimes special nutrient or growth-promoting substances are placed in the pellets to aid in seed germination and growth. Pelleting makes seeds more uniform in size.

### Method of Pelleting

There is a basic formula for seed pelleting. According to the basic formula, one litre of gum or glue and 200 g of lime is required for pelleting 100 kg of seed. The pelleting procedure consists of following three main steps.

- (i) **Calculation of Quantity:** First the quantities of seed, lime/powder and glue that are needed for pelleting are calculated. This is calculated keeping in mind the quantity of seed to be pelleted.
- (ii) **Pouring of Gum:** The second step is pouring of gum over the seed and mixing it well until all seeds are wet.
- (iii) **Adding Lime:** Finally, the required amount of finely ground lime is added and mixed until the seeds are evenly coated and well pelleted. The mixing should be stopped as soon as the pellet is formed. If a thicker coat is needed, this can be done by using less seed with the same ingredients. Such a formula is used for encrusting seed whereby a certain weight increase has to be achieved, for example, for Katambora Rhodes grass weight increases of two or three times the weight of the seed would be the objective so that seeding is improved. Computerized seed pelleting machines are now available. For example, the R12 rotary pelleting ingredients (seed, powder and binder) through a set programme. This programme is made through trial batches of the different seed types. Each seed type will have a different.

### What kind of Seeds is Pelleted?

Seeds of various sizes are commercially pelleted, from relatively large seeds like onion and tomato to very small seeds like lettuce species.

For onion, the seed can increase in weight 6-fold due to pelleting; there are approximately 230 raw seeds per gram, and after pelleting the diameter may be 13.5/64th of an inch (0.54cm). The volume for 1000 propagules is 3.7 cm<sup>3</sup> for raw seed compared to 18.0 cm<sup>3</sup> after pelleting.

Begonia is the smallest seed that Seed Dynamics pellets. Median seed weight for raw begonia is 88,000 seeds per gram. After pelleting, the seed count can average 857 seeds per gram, an increased mass of over 100-fold.

### Modern Methods of Seed Pelleting

- 1. Seed Wetting:** Wet the seeds with a pressurised spray of water or glue, depending on the seed type and coating to be applied until the seed is wet.
- 2. Powder Application:** Apply the powder simultaneously with the glue, balancing the two.
- 3. Calibration of Sieve:** If the process is encrusting, calibration with a sieve may be necessary to ensure that pellets are uniform before all the powder is exhausted. Finish all the powder when all the pellets are about the same size. Some seed encrusting is not calibrated, e.g. Rhodes grass seed. If the process is pelleting to a required size, the calibration process is carried out several times during the pelleting process.
- 4. Adding Colour:** Colour is added (if required) to the pellets before they are dried.
- 5. Drying:** The pellets are then dried in an open dryer at 22-25°C. The drying time varies according to the seed and coating material.
- 6. Recalibration:** Calibrated pellets are re-calibrated after drying in a slow rotating round sieve. The large and small pellets are discarded.

### Causes of Poor Pellets

Sometimes, the pelleting is poor. The poor pellets include (i) too much lime/power, (ii) too much adhesive, (iii) clumping, (iv) too little power and (v) hard pellets. All these are explained as follows:

- (i) Powdery Pellets:** Powdery soft pellets indicate either too much lime/powder or uneven mixing or both.
- (ii) Pasty Pellets:** Pasty-looking pellets with the seed surface indicate too much adhesive solution. This can be rectified by adding more lime.
- (iii) Clumpy Pellets:** Clumps of small seed may be caused by excessive amounts of gum, and may not break down after the addition of powder.
- (iv) Hard Glossy Pellets:** Hard glossy, smooth pellets indicate too little powder, much mixing after addition of powder/lime. Such pellets have a tendency to crack and flake on drying especially when handled.
- (v) Hard Pellets:** Hard pellets are caused by excessive rotation in the pelleting drum. This may affect germination by inhibiting water uptake. The application of Incorporation of fertilizers and agro-chemicals : This can be done especially when fertilizers and micro-nutrients to the pellet can bring about huge savings on labour. Phyto- IKorporating micro-nutrients or when using starter fertilizers. Agro-chemicals can also be toxic should be tested before application to large quantities of seed.

### Quality Control

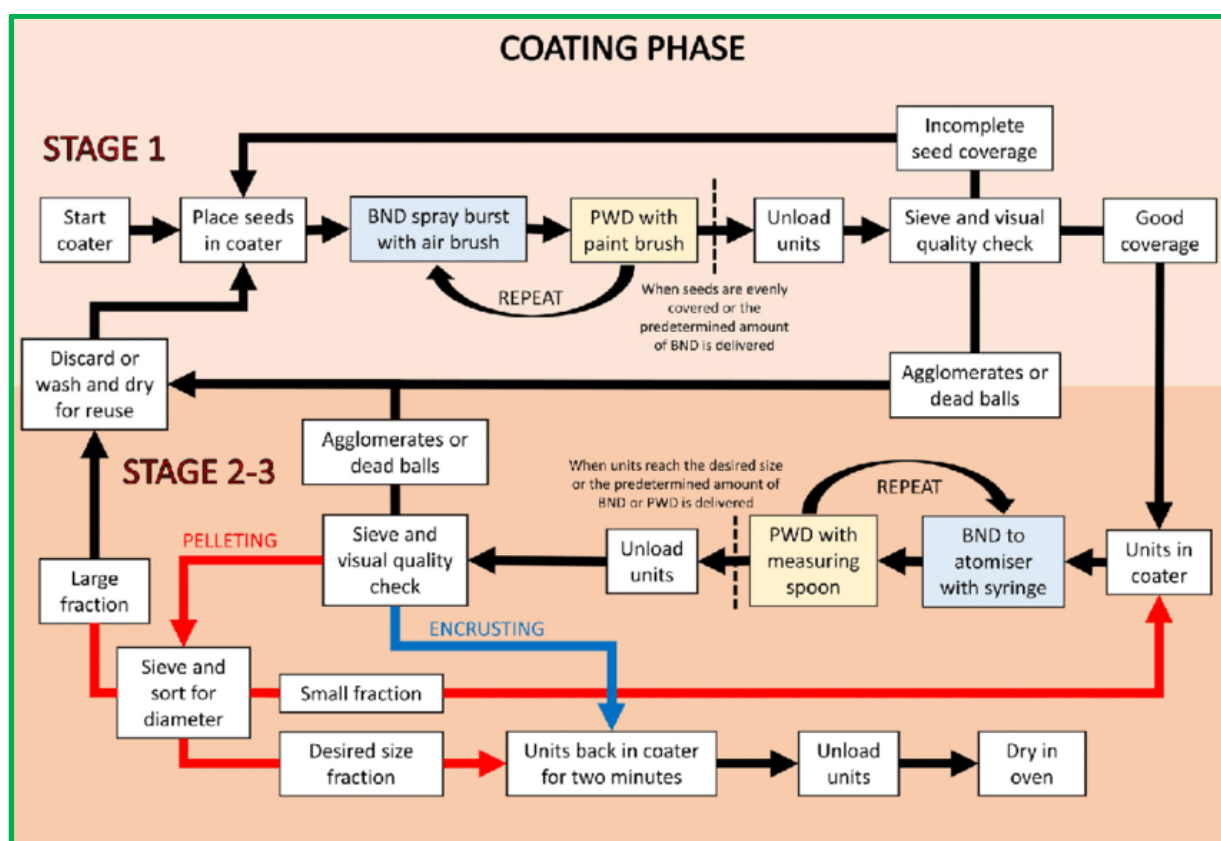
Certain quality control measures are adopted before and after the process of seed pelleting.

1. Pre-pelleting germination test-should meet the government seed regulations.
2. Post-pelleting germination test-should meet the government seed regulations.
3. Dissolving test in water for tobacco Oxymelt 170-should take about 15 seconds.
4. Dissolving test on filter paper for tobacco Oxymelt 170-should take about 60 seconds.
5. Thousand pellet weight determination.
6. Pellet moisture test-should be around 1.2-1.5%.

### Benefits of Pelleting

There are several benefits of seed pelleting such as easy seeding, better water uptake, easy handling, neutralizes acidic effects, combination of treatments is possible and there is no loss by rodents and birds. All these have been discussed as follows.

1. **Easy Sowing:** Pelleting leads to ease of sowing and uniform distribution for light seeds like Katambora Rhodes grass during broadcasting. The ballistic properties of seed are increased as coated seed weighs more than bare seed.
2. **Better Water Uptake:** Improves seed to soil contact for small seeds and improves water uptake for imbibitions.
3. **Easy Handling:** Seed dressings can be incorporated in the seed pellet and reduce inhalation and skin irritations caused by dust seed dressings on people handling the seed. It leads to precise and effective application of seed dressings which gets bound on the seed by a polymer. It improves handling of small seeds like tobacco seed.
4. **Neutralizes Acidity:** In lime pelleting of rhizobia inoculated legume seed, the lime acts as a physical barrier between acid fertiliser and the rhizobia, and neutralises the acidity Close to the germinating seed and promotes rapid nodulation in acid soils.
5. **Combination of Treatments:** Seed priming and micro-nutrient fertilisers can be combined with the seed pellet reducing labour costs on field application.
6. **No Loss by Rodents and Birds:** Rodents and birds fail to recognise broadcast coated seed as food and hence increase establishment as no seed will be predated.



Flow chart of seed pelleting