

Pelletizing Seed for No-till Rotations

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Wrapping seed in a clay pellet is a simple technique for hiding and protecting seed until it can germinate. It is of special importance in natural farming because most seeding is done by broadcasting right onto the surface where the seed is vulnerable to birds, insects, rodents and other small animals.

Although pelletized seed has long been used in the United States, I first heard about it and used the technique at Masanobu's farm in southern Japan. Mr. Fukuoka uses a field rotation of rice in the summer and barley over the winter. The seed is tossed onto the straw-mulched surface to germinate among the weeds and clover. He often broadcasts seed directly into the ripening grain of the preceding crop.

When Mr. Fukuoka began farming by the natural method more than thirty years ago he had the idea of following the natural process as closely as possible in his fields. He believed that it should be a lot easier working in cooperation with nature than trying to subdue nature by conquest. Over the years he developed a few simple techniques which allowed him to do that.



Pelletizing seed protects it from birds and mice. Shown here is rice seed that has been mixed with moist clay and separated into pellets.

For example, he wanted to sow the rice seed in the autumn when it would naturally have fallen to the unplowed ground. He waited until the weather turned cold in mid-November so the seed would not germinate prematurely and sowed the rice onto a field recently planted to winter grain. Within days all of the seed was eaten by birds. "Sometimes the sparrows watched patiently from the trees until I had gone back to the house. Sometimes they followed behind and started eating the seeds as soon as they hit the ground," he recalls.

Eventually Mr. Fukuoka refined his rotation by continuously growing a ground cover of white clover interplanted with the grains. Then he began seeding the rice and barley while the preceding crop was still standing. With a continuous succession of grain and clover in the fields the seeds were hidden from the birds, and weeds were held back because they had no opening to come through.

The rice is sown in November or early December and covered by a thin layer of straw. It lies dormant for about five months before sprouting in the spring. Although hidden from birds, Mr. Fukuoka still had the problem of the seeds being devoured by field mice. Finally, after several years of failure, he got the idea to wrap the seed in pellets. "It seems like a simple solution, but it took me ten years to figure it out," he says.

Two main techniques for pelletizing seed are used at his farm. By one method the rice seed is mixed with moist clay, then pushed through the holes of medium-mesh chicken wire. This separates the clay into little clods. After drying for a day or so the clods can be separated by rolling them gently on a mat or between the palms of the hands. Ideally one seed is in each pellet. It is an easy method but takes the practice of trying it yourself once or twice.

By the other method the seeds are rolled in a basket or shallow pan with a circular motion. Dry clay is dusted alternately with a fine mist of water until a thin coating has built up over the seed. Some farmers say plaster of Paris works as well as clay. A thin coating of cement also works for pelletizing seed.



Wheat seed pelletized with powdered clay prior to broadcasting into standing clover.

In one day it is possible to make enough pellets to seed several acres.

Japan has a very humid climate so seed germination is rarely a problem. The clover and winter grain come up so quickly that there is no need to pelletize the seed. Mr. Fukuoka wraps his rice seed in clay because it lies exposed for several months before sprouting. He still pelletizes the rice seed if he sows it in the spring, however.

"If this were a patch of rice growing wild there would be millions of seeds falling to the ground in the autumn. The birds would eat many of them and the mice would get plenty too, but enough would survive to fill the field the following year. Human beings harvest nearly all of the grain and replant only a fraction. We have to give these few seeds added protection to be sure they survive to produce our food. Shifting the balance slightly in favor of the crops is making a livelihood by agriculture. Wrapping seeds in clay pellets is a simple and effective technique. I think it is a reasonable sort of agricultural technology."

Still, Mr. Fukuoka loses many seeds to mice and insects; others rot, especially in parts of the field with poor drainage. But he compensates by seeding a little heavily, checking the sprouts in spring and re-seeding areas where germination was thin. Occasionally he wraps vegetable seeds in pellets before sowing, especially large seeded ones such as beans and corn.

When our community of young farmers in the mountains north of Kyoto first changed over to natural farming the season was autumn. Until then we had farmed by the traditional Oriental method. In the preceding summer the fields had been manured and plowed with a rototiller. We

sowed white clover and covered the field with straw. In spring there was a thick stand of clover and a few weeds.

Fukuoka-san had advised us to pelletize the seed even for spring rice planting, but we were busy with many other chores. We thought it would not matter if we broadcast the unhulled rice just as it was because it would germinate soon anyway. The first two days were fine, but on the third we noticed that some of the seed was gone. The local mice must have had a field day and invited their friends because by the end of the week not a seed remained.

There was still time to sow buckwheat, however. Buckwheat is a crop that germinates so quickly it seems to be sprouting almost before it leaves your hand. We sowed the seed in a light rain and then mowed the clover, leaving the clippings on the field to mulch the buckwheat and confuse the mice. The clover recovered and the mice returned, but not until the buckwheat had a chance to get established.

On another occasion we had already made the pellets when someone suggested that instead of just tossing them out, we poke a hole in the ground with a piece of bamboo and drop the pellets in. We decided to try it both ways. It took only half an hour to broadcast the pellets over a quarter acre; it took nearly all day to make the holes and plant the pellets for one small experimental plot. Germination turned out almost the same.

Once during a dry year we seeded the pellets in spring and tried to aid germination by a quick flooding of the field. When the water went in it looked as if the clay was washing off the seed so we drained the field immediately. The next day we found that the clay had not washed away but had melted around the seed in tiny cone-shaped mounds like hundreds of miniature Mt. Fujis. Watching the shoots emerge was a memorable experience.

Depending on crops and conditions it may not be necessary to pelletize your seeds at all, but for many natural no-till rotations, such as the rice and winter grain succession Fukuoka-san uses in Japan, it can be a very handy technique.

LARRY KORN edited the English translation of Masanobu Fukuoka's *The One Straw Revolution*.

INFORMATION SOURCES

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