

Australian inventions for sustainable farming



What is the name of the invention or new knowledge ?

**Hannaford's Seed Pickler –
a machine to protect seed from fungus**



What did it look like ?

There is a photo of the first the Hannaford Wet Wheat Pickler at *Seed Grading History at Hannaford website* www.hannafords.com/seed-grading-history.php

When was it known ?

1915
wet pickler sold
followed by a Dry pickler in 1924
and a combined grader /pickler in 1925

Who was the scientist?

Alf Hannaford
farmer from South Australia,
went into machinery making and inventing machines to improve seed health

for more details about Hannaford see
Quick, Graeme Ross. *Remarkable Australian Farm Machines*, 2007 Dural: Rosenberg
Publishing p 70



What need was there for this?

- Seeds could be damaged by a fungus (smut or bunt)
- It was known soaking them in hot chemical solution would protect them from it – but this was messy.
- Seed would grow better crops if plant rubbish, weed seeds, and a standard size for seed was possible.
- Hannaford's dry whent pickler, in 1925, Hannaford addressed the problem of the mess and safety of using wet chemicals.

For more information on the background to this invention see:
Quick, Graeme Ross. *Remarkable Australian Farm Machines*, 2007 Dural: Rosenberg
Publishing p 70-71





What was the discovery that led to this invention?

It was known that Copper sulphate could be used for protection against smut.

A standard box was invented to contain the wet grain and coat it with copper sulphate.

The 1925 Hannaford discovered how to replace the wet chemicals with dry ones by using a much larger box, with pipes, metal and gears.

A year later he worked out how this could be combined with a grader to select only the larger and non-weed seeds.

For more information on the background to this invention see:

Quick, Graeme Ross. *Remarkable Australian Farm Machines*, 2007 Dural: Rosenberg Publishing p 70-71

How does it work ?

The key points are:

- grain held in central hopper
- grain is dropped from hopper into the chemical in the box.
- The grain is covered in the box with a coating of the chemical so that the fungus cannot get started to grow on it.

For more information on the specific design of this invention see

Quick, Graeme Ross. *Remarkable Australian Farm Machines*, 2007 Dural: Rosenberg Publishing p 71



What shows its importance as an Australian discovery/invention ?

Business set up on it	Hannaford set up his family company on the basis of this invention.
Where used on farm	around the sheds
Changes it made to farming	seed quality was improved as seeds did not grow into plants that suffered from smut
Contribution to sustainability	1 plant health 2 later seed health as weed seeds were removed by grading = ie made the farming enterprise more efficient
How quickly adopted	gradually, by word of mouth at first
The places it spread to	across Australia
Changes made to it for today	dry pickling and grading continue



Still in use today	yes, as mobile visits to farms, but decreasing with the advent of Monsanto's patents on seed so that farmers are not allowed to keep seed to sow from one year to the next
Current use in the Wimmera-Mallee	still used on wheat, barley seed carried forward from one year to the next
Led to other knowledge or invention	8 stages of pickler development through to the 1950s

for more on the 8 stages of pickler development at Hannafords go the *Seed Grading History* at *Hannaford* website www.hannafords.com/seed-grading-history.php

For an photo of a modern dry wheat pickler cleaner go to *Operating Hannaford SeedCleaner* at *Gumtree* website <http://www.gumtree.com.au/s-ad/lake-cargelligo/heavy-farming-agriculture-equipment/operating-hannaford-seed-cleaner/1019343057>



Shape Sleuths Link – An exercise for the 2013 Maths of Planet Earth

1 From the Hannafords website , make a drawing using the simple shapes that make up the:

- *1915 wet pickler*
- *1930s dry pickler and grader*

2 Name the shapes that are found in your drawings above.

3 Put into a box some dry sand, some soil, and some wheat or barley (seeds) and mix them around. Try this simulation of grading:

- *Now get a piece of shade cloth and/or flywire screen and/or a sieve to use as a screen.*
- *Gradually tip the mixed materials on to each of the screen materials.*
- *Shake them or stir them around to see what will fall through.*
- *Save what is on the screen that you have used.*
- *The size of the holes will allow finer grained materials like soil or sand to fall through. How does this make the farm more efficient?*
- *If you have used different screens, what difference does it make to which of the sand, soil and seeds are allowed through? If the weed seeds are much smaller than the wheat seeds, what would you keep for sowing the next crop and what would you dispose of ?*

And this simulation of pickling needs some food dye and a container of water:

- *Mix the dye in some water,*
- *Mix some seed in with the water*
- *Pour the mixture through a sieve to separate the seed and save the dyed water to be used again.*
- *You can't see the fungus smut, that the wheat seed may have, and you won't see the disease in the plant until the plants are late into their*



growing. If smut hits the value of the crop will be lost as the grain will be ruined.

- *How long did it take you to coat the seeds? Why would farmers spend time doing this when they can't see the problem and won't know if it has worked for months later? Why would a dry pickler who comes to do the pickling for you be worth the money?*

4 If you know someone still uses pickling of wheat or barley seed, interview them to find out:

- *What time of year the picking is done?*
- *If a mobile pickler comes to the farm to do this?*
- *How the farmer organises the pickling of the seed?*
- *What it costs and if the farmer can afford not to pickle the seed? Why/not?*

For further information :

Books

Quick, Graeme Ross. *Remarkable Australian Farm Machines*, 2007 Dural: Rosenberg Publishing pp 70-1

Websites

Hannafords History at *Hannaford* website www.hannafords.com/hannaford-history.php

Operating Hannaford SeedCleaner at *Gumtree* website <http://www.gumtree.com.au/s-ad/lake-cargelligo/heavy-farming-agriculture-equipment/operating-hannaford-seed-cleaner/1019343057>

Seed Grading History at *Hannaford* website www.hannafords.com/seed-grading-history.php



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