

BEANSPROUTS ROOTS & HUSKS CLEANING MACHINE

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This invention relates to improvements in machinery for cleaning roots and husks of mung and soyer beansprouts.

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5 The lack of good quality sprouts (without roots and husks) has been a problem for cooking dishes. Not only it affects the appearance of the untidiness in the dish, it also causes the natural taste of the vegetable to taste less.

10 There have been some proposals to clean the sprouts with machinery, but proving not effective. The percentage of the by-products (root, husks) along with the sprouts was just as high as the sprouts which have not gone through the machine. For example, one previous machine proposed a group of device, beating and pushing the sprouts within a container of water, with the addition of a suction machine to vacuum the floating by-products.

These proposals have the disadvantage of limited roots being removed, still leaving a number of husks and roots along with the sprout.

15 Another disadvantage is in the process, whereby many sprouts become broken from the machinery action. In the final, the quality of the sprouts is not as high as it should. Even though the consumers can remove the by-products, the problem of the broken sprouts still remains.

20 These problems are overcome by the present invention, which provides a roots, husks cleaning machine comprising a non-elastic rotation cylinder inside a casing cylinder.

The rotating cylinder is adapted to brake "only the roots" of the beansprouts and at the same time, separates the by-products from the sprouts.

25 In one form of the invention, the rotation cylinder comprises perforated holes throughout, each hole size a diameter ranging from 7.94mm to 12.70mm to form a screen with maximum open area ranging from 49% to 62%.

Caused by the spinning motion of the rotating cylinder, the path of the by-products travelling through the perforated holes will end up "trapped" in between the gap of the casing cylinder and of the rotating cylinder.

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In another form of the invention, the rotation cylinder may comprise an internal and external spiral strip, attached so that when the cylinder rotates the spiral will travel in an opposing direction from the other. The internal spiral will transport the clean sprouts in one direction (within the internal rotating cylinder), and the external spiral transporting the by-products in another direction between the gap of the rotation cylinder and its outer casing.

In respect to the spirals, a restriction in size of the height is required for its purpose of transportation to work effectively.

The external spiral strip must range between 7.50mm to 15.00mm in height, from the outside of the rotation cylinder leaving a gap size of 3-6mm between the external spiral strip and the casing cylinder.

The internal spiral strip must range between 30mm to 150mm in height from the internal rotation cylinder.

In another form of the invention, a full length brush is located against the inner surface of the rotating cylinder supported by brackets to the external casing cylinder, whereby the bristles touch the inner surface of the rotation cylinder and spiral strip.

This in effect assists the removal of the build up of the by-products from the perforated holes and the spiral strip, constantly keeping the holes open and free of buildup on the spiral; resulting in a effective screening work all time.

The diameter of the rotating cylinder play an important role in the invention. The recommended diameter of the rotation cylinder is between 300mm to 600mm. For example, the smaller the diameter, the loading capacity is decreased resulting in less output capabilities Vs time. As the diameter is greater than the recommended diameter, it will result in an incomplete cleaning cycle and in unclean sprouts.

The rotation speed of the rotating cylinder plays a crucial role to the invention.

A recommended rotation speed between 40rpm to 70rpm is required to make this invention workeable.

For example, if the speed is lower than 40rpm, the beansprouts will become broken. If the speed is higher than the specified range of rotation it will also



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result in unclean sprouts.

The composition of the casing and the rotation cylinder can be manufactured from any material which are non-elastic.

Examples could be moulded plastic or metal.

- 5 To assist with understanding the invention, reference will now be made to the accompanying drawings which show one example of the invention.

In the drawings:

FIG.1 shows one example of a beansprouts roots, husks cleaning machine according to this invention;

- 10 FIG.2 shows the application of such a beansprouts roots, husks cleaning machine in the first stage of process;

FIG.3 shows the application of such a beansprouts roots, husks cleaning machine in the second stage of the process.

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Referring to FIG.1 it can be seen that the beansprouts roots, husks cleaning machine according to this invention comprises a non-elastic rotating cylinder 3 driven by a motor . . . rotating inside of a non-elastic casing cylinder 1 which in turn are supported by three groups of bearings 9 built on to the rotating cylinder 9 .

On the rotating cylinder 3 there are specified sizes of perforated holes 4 throughout the cylinder 3 to form a screen with a maximum "open area" for the passage of the by-products 10 to pass through.

The rotation cylinder 3 comprises two spirals, internally 7 and externally 6 , in opposite directions 8 .

The specified diameter of the rotating cylinder 3 allows the maximum volume of unclean sprouts along with a specified rotation speed to become separated. As the external spiral 6 pushes the by-products towards the loading direction 13 inside the gap 5 (between the rotation cylinder 3 and the casing 1) then falls out.

As the rotation cycle continues, the unclean sprouts travelling away from the loading direction 13 due to the driving of the internal spiral 7 , it then falls out from the rotating cylinder 3 as clean products.

Referring to FIG.2 it shows the beansprouts roots, husks cleaning machine in operation. It can be seen the unclean sprouts 12 loading into the rotating cylinder . In every rotation the roots are being broken instantaneously. The fragile roots are broken, apart from the sprouts; and the husks easily removed from the beansprout head during this process. Afterwards, it then travels (the roots and husks) through the specified size of hole . into the gap between the rotating cylinder and the casing cylinder .

From then the external spiral removes these by-products 10 in an opposite direction to the loading direction 13 and ends up falling into a bin 14.

By the process of the beansprouts roots, husks cleaning machine, most of the by-products 10 are separated from the clean-sprouts .

Referring to FIG.3 it shows the beansprouts roots, husks cleaning machine in operation at stage 2.

It can be seen the unclean sprouts are continuously being pushed and transported by the internal spiral at a respectable length from the loaded area to the end of the cylinder . Thus the by-products of the beansprouts



becomes less and less mixed within the beansprout as the distance progresses. At the final, it travels to the end of the rotating cylinder and then falls out into the other bin 15 at the same direction as the loading.

From the process of the beansprouts roots, husks cleaning machine, most of the by-products have been separated out, leaving very high quality rootless, huskless clean beansprout products 16. Therefore making the sprouts 16 look very nice in appearance and producing a much better tasting vegetable than previously before.

It will be realised that the beansprouts roots, husks cleaning machine according to this invention is not restricted to the form as a single cylinder shown in the example, but may also be used as a double cylinder machine, or may be used as much cylinders required to suit the market demand.

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The claims defining the invention are as follows:

1. A beansprouts roots, husks cleaning machine comprising a non-elastic rotating and casing cylinder whereby the rotating cylinder comprises the attachment of a full length brush and an internal, external spiral strip; whereby in between the external spiral and the casing, a gap size exists.
2. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise perforated holes within a diameter range of 7.94mm to 12.70mm.
3. The beansprouts roots, husks cleaning machine of claim 2 wherein the percentage of the open area of the perforated holes are a range between 49%-62%.
4. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder comprise an internal and external spiral strip rotating opposite directions to each other.
5. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the external spiral strip from the external surface strip of the rotation cylinder is between 5mm to 15mm.
6. The beansprouts roots, husks cleaning machine of claim 4 wherein the height of the internal spiral strip from the internal surface of the rotation cylinder is between 30mm to 150mm.
7. The beansprouts roots, husks cleaning machine of claim 1 wherein the gap size between the external spiral strip and the casing cylinder is between 3mm to 6mm in length.
8. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder, a full length bristle brush touches the internal surface, and is also in contact with the internal strip.

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9. The beansprouts roots, husks cleaning machine of claim 1 wherein the rotating cylinder its diameter is no less than 300mm and no greater than 700mm.

10. The beansprouts roots, husks cleaning machine of claim 1 wherein the speed of the rotation cylinder in rpms will not be lower than 40rpm and will not be higher than 70rpms.

11. The beansprouts roots, husks cleaning machine of claim's 1-6 wherein the non-elastic rotating cylinder is produced either with metal or moulded plastic.

12. The beansprouts roots, husks cleaning machine of claims 1 and 6 wherein the non-elastic casing cylinder is produced either with metal or moulded-plastic.

13. A beansprouts roots, husks cleaning machine substantially as herein described with reference to the accompanying drawings.



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