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DEPARTMENT OF AGRICULTURAL ENGINEERING

COURSE CODE & NAME: 19AGO301 & FARM MECHANISATION

III YEAR / VI SEMESTER

UNIT : IV Harvesting and Plant Protection Machinery

TOPIC 3 – Dusters





Types of Dusters

Depending on the source of power it can be classified as manually operated and power operated dusters.

The manually operated dusters are (i) package duster (ii) plunger duster (iii) bellows duster and (iv) rotary duster.

(i) Package dusters

- ✓ In some pesticide dusts are packed in containers that serve as hand applicators and may be discarded after use.
- ✓ They are mostly provided with rubber, leather or plastic section which, on getting squeezed, provides a puff of air that emits the dust in a small cloud.
- ✓ The simplest type of package duster is worked by pressing it between the fingers.



(ii) Plunger dusters

- ✓ The consists of an air pump of the simple plunger type, a dust chamber, and a discharge assembly consisting of a straight tube or a small exit pipe whose discharge outlet can be increased or decreased by moving a lid provided at the end of the dust chamber.
- ✓ The air from the pump is directed through a tube into the container where it agitates the dust and eject it from a discharge orifice or tube.
- ✓ The amount of dust can be controlled by the speed of the operation of the pump.
- ✓ These are useful for spot application in restricted areas and for controlling ants, poultry pest and pest of farm animals.



(iii) Bellow duster

- ✓ In the below may be made from rubber, leather or plastic. On squeezing, it puffs the air that expels the dust in a small cloud.
- ✓ Hand held bellow duster has containers of capacity from 30 g to 500 g.
- ✓ The bellows can be operated either directly by hand or by handle provided for that purpose.
- ✓ The knapsack duster has the container capacity of 2.5 to 5.0 kg.
- ✓ The air blast developed by the bellow draws the dust from the hopper and discharges through the delivery spout intermittently.
- ✓ These dusters are suitable for spot treatments.



(iv) Rotary duster

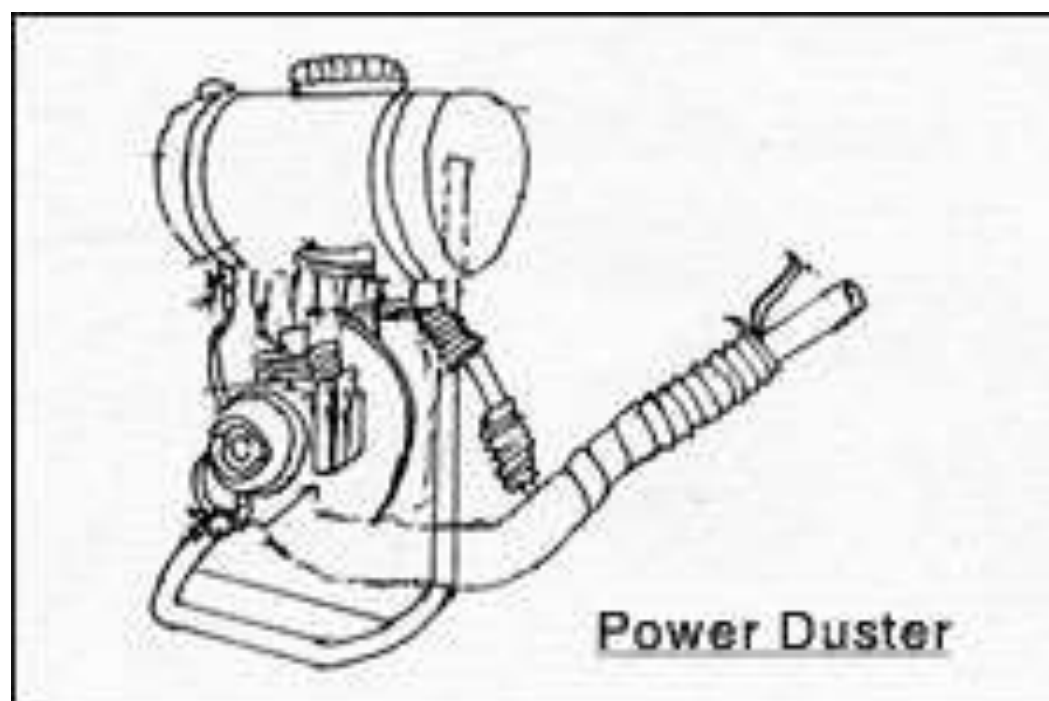
- ✓ A consists basically of a blower complete with a gear box and a hopper. It is operated by rotating the crank.
- ✓ The cranking motion is transmitted through the gear box to the blower.
- ✓ A drive is taken for the dust agitator located in the hopper.
- ✓ The rotary duster may be hand carried type or shoulder mounted or belly carried type.
- ✓ The feed is controlled by a feed control lever, which operates a slide to control the aperture at the bottom of the hopper.



(v) Power Dusters

✓The resemble the rotary duster is construction, except that the power to drive the blower through the gear box is tapped from an external power source which may be an engine or P.T.O. shaft of the tractor or flywheel of the power tiller.

✓The power operated centrifugal energy knapsack sprayer also can be converted into a power duster, by allowing the dust fluid into the air stream, near the point of attaching the pleated hose, in the blower elbow





Some of the recommendation of WHO (1974) for this duster are

The sheet hopper should not be less than 0.63 mm thick.

The concave bottom of the hopper permits all the dust to move towards the feeding aperture.

The fan should be capable of displacing 0.84 m³ of air per minute at a speed of 35 rpm.



Uses of spraying and dusting equipments

The spraying and dusting equipments are used for the following purposes

- ✓ For the insecticides application to control insect pests on crops and in stores, houses, kitchen, poultry farms, barns, etc.
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- ✓ For the acaricides application to control phytophagous mites.
- ✓ For the fungicides and bactericides application to control the plant diseases.
- ✓ For the herbicides application, to kill the weeds.
- ✓ For the hormone sprays application to increase the fruit set or to prevent the premature dropping of fruits.
- ✓ For the application of plant nutrients as foliar spray.
- ✓ For applying the powdery formulation of poisonous chemicals on the crops and for any other purposes.



Thank You