

# Types of threshing cylinder

**Syndicator type**

**Hammer mill or Beater type**

**Spike tooth type**

**Raspbar type**

**Wire loop type**



# Syndicator type

**Adoption of chaff cutting & threshing**

**Axially Feeding**

**2- 4 chaff cutter blade**

**Cutterbar has serration**

**Crop chopped to about 20 cm**

**Corrugated rim fly wheel**

**Crop threshed between corrugated flywheel & concave**

**Positive feed roller**

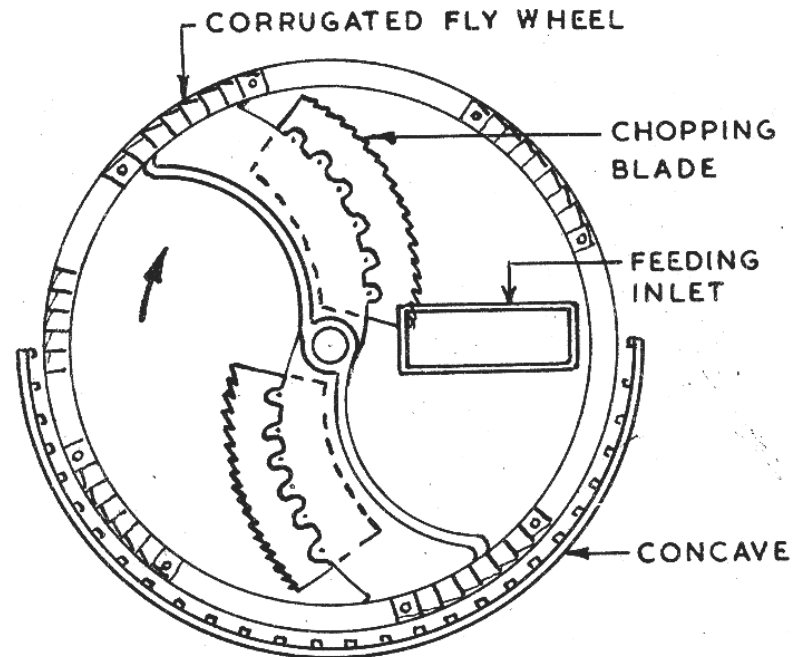
**Preferred for moist crop**

**Prior cutting reduces power consumption**

**Suitable for wheat**

**Quality of straw: Very fine**

**Power requirement: 6-8 kW/t**

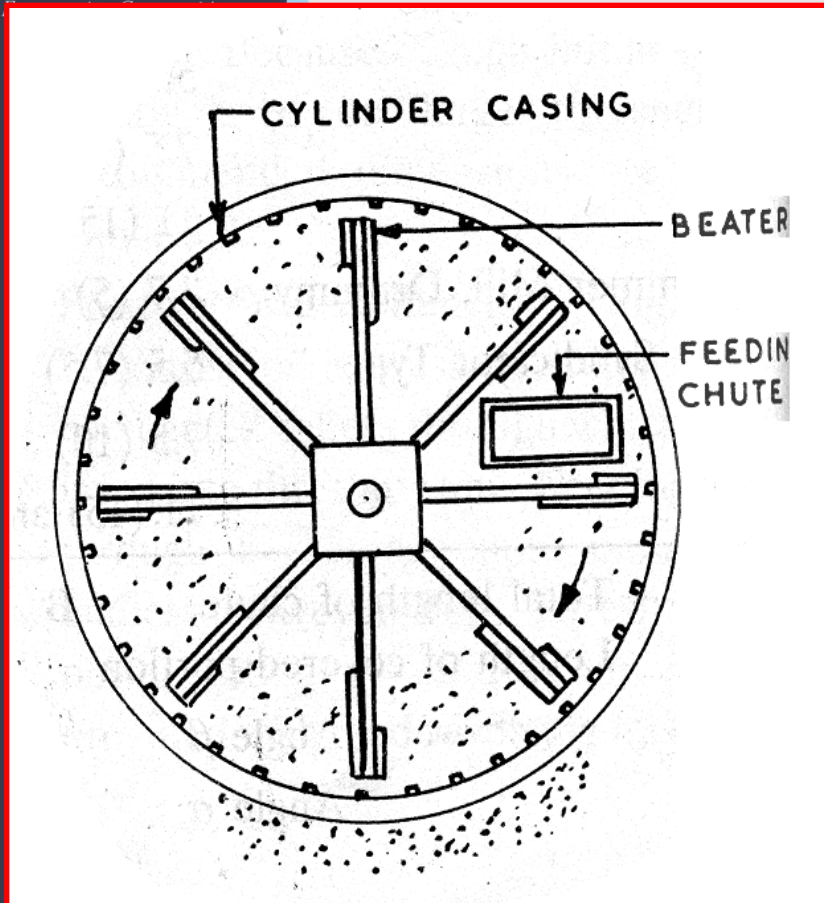


**Syndicator type threshing drum**

# Beater or Hammer Mill type cylinder



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**Modification of drummy  
thresher**

**Beaters made of flat iron  
pieces**

**Has aspirator blower**

**More power requirement**

**Cylinder size: 75,90,105 cm**

**Suitable for wheat**

**Quality of straw: Very fine**

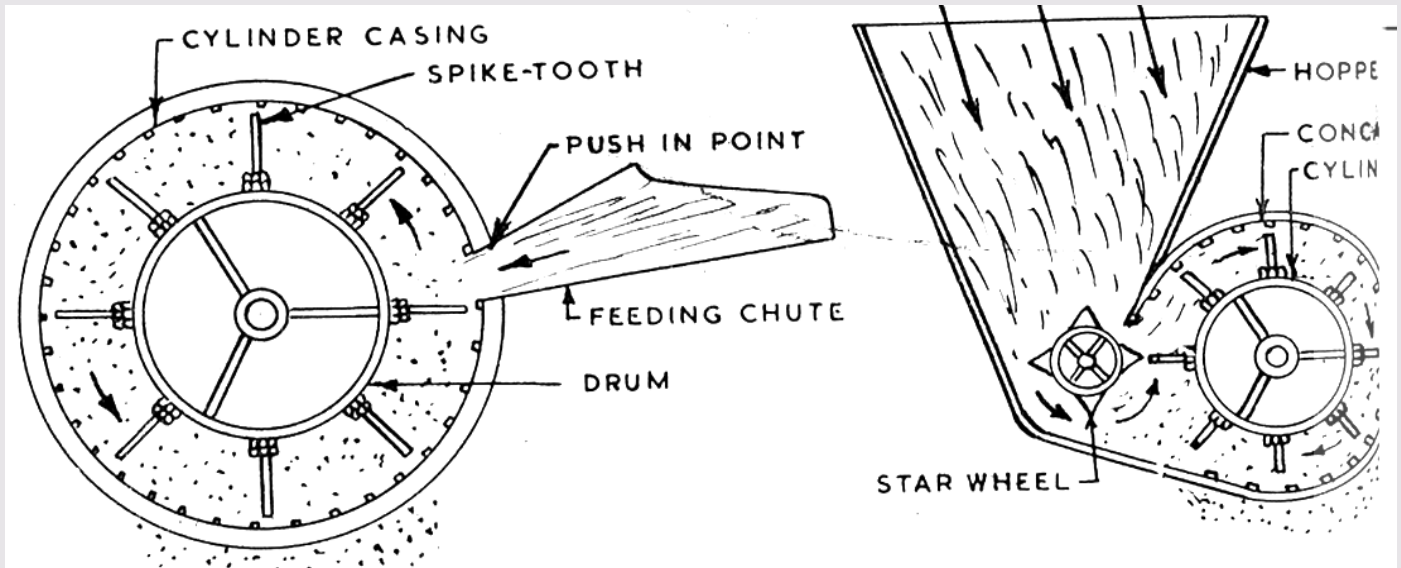
**Power requirement: 12-  
15kW/t**



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# Spike tooth type cylinder



Spikes or pegs mounted on the periphery of a drum in staggered pattern. **Spikes may be provided in concave.** **Crop is fed through chute in small thresher and through hopper type bulk feeding system in large thresher.**

The quality of bhusa better compared to hammer mill.

The common sizes of cylinder (length × diameter) are 75 × 35, 90 × 45 and 90 × 60 cm

Crop: Multi crop (Rice and wheat, pulses, groundnut etc.)

Straw: Fine

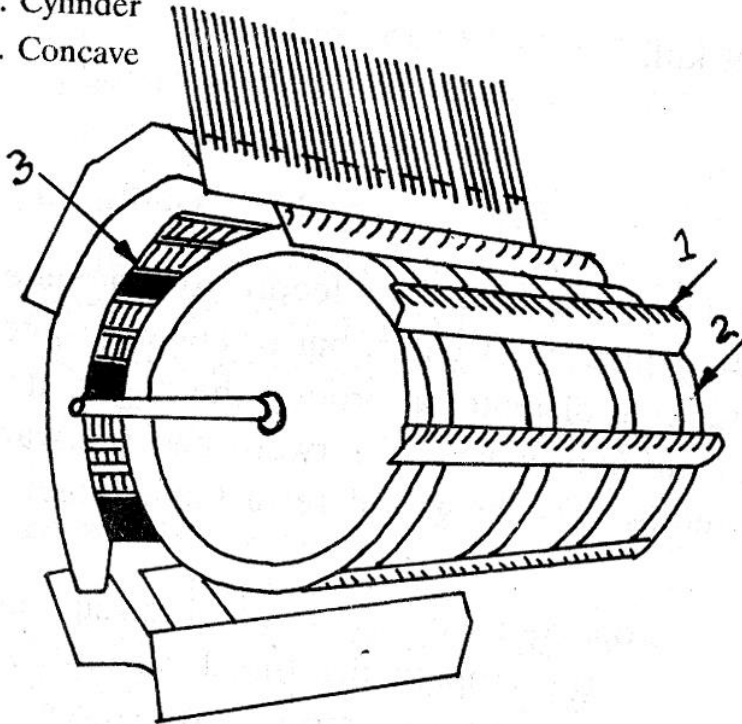
Power requirement: 6-9 kW/t

# Rasp bar type



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1. Rasp Bar
2. Cylinder
3. Concave



Raspbar type threshing drum

**Number of raspbars  
(corrugated flat bars)  
mounted on the periphery of  
a drum.**

**The threshing is achieved by  
rubbing action of plates  
between cylinder and  
concave and the impact by  
the raspbar**

**Most common on grain  
combines**

**Used for paddy, wheat, maize,  
soybean etc.**

**No chopping of straw into  
bhusa**

**Power requirement: 5-6 kW/t**



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## **Axial flow type**

**Used for paddy**

**Long straw (no  
chopping of  
straw)**

**Wire mesh type  
lower concave**

**Power  
requirement: 3-4  
kW/t**

## **Wire loop type**

**Used for paddy**

**Full length straw**

**Wire dia.: 5-6 mm**

**Height: 5 - 6 cm**

**Power requirement:  
5-6 kW/t**



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# How to calculate feed rate?

**Let  $\delta = q_g / q_s =$  grain straw  
ratio**

**If  $\delta = 0.6$ , then  $q_s = (1/0.6) \times q_g$**

**If thresher output is 5 q/h**

**Then  $q_s = (1/0.6) \times 5 \text{ q/h} = 8.33$   
q/h**

**So total grain + straw**

**$= 8.33 \text{ q/h} + 5 \text{ q/h} = 13.33 \text{ q/h} =$   
 $0.370 \text{ kg/h}$**





# Length of the drum (rasp bar)

$$q = (0.25 * n_r * N * l_d * k) / (1 + \delta)$$

$q$  = feed rate, kg/s

$n_r$  = no. of rasp bar

$N$  = RPS of the threshing cylinder (Rotation/ sec)

$l_d$  = length of the drum , m

$k$  = constant = 0.17-0.32 kg/ m length of cylinder

$\delta = q_g / q_s$  = grain straw ratio

Alternately,

$$q = q_a * l_d * n_r$$

$q_a$  = allowable feed rate ( 0.35 – 0.4 kg/s/m)

$l_d$  = length of rasp bar

$n_b$  = no. of rasp bar





# Length of the drum (Peg type)

$$l_c = 0.36 * l_d$$

$l_c$  = length of concave, m

$l_d$  = length of drum, m

No of pegs

$$= N_p = P [( l_d / a) + 1]$$

$N_p$  = No of pegs

$l_d$  = length of cylinder

$P$  = no of pitch of the helix over which pegs are fixed

$= P = c_b / 2$  (where  $c_b$  = no of cross bars or slats

$a$  = effective distance between two pegs on the drum, = 25 mm