

BIHAR ANIMAL SCIENCES UNIVERSITY
BIHAR VETERINARY COLLEGE, PATNA
Department of Animal Nutrition

Class: M.V.Sc.

Course No.: ANN-603 (Unit-I)

Date: 09.11.2020 & Time: 10.0 – 11.0 AM

Familiarization of feed mills, layout & operations
(Part-2)

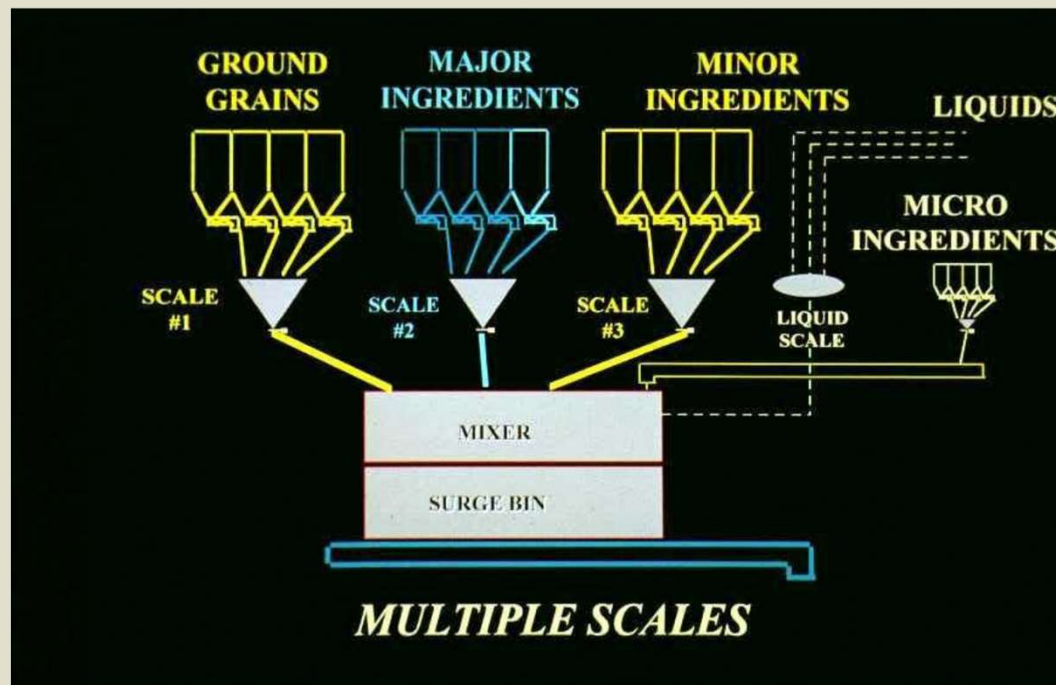
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Proportioning Systems

- **Batching System (scale hopper – individual ingredient addition)**
- **Continuous System (continuous feed – simultaneous ingredient addition)**

Batching System

- Capacity must be fast enough to keep up with mixer cycle times
- Multiple scale hoppers shorten batching time requirements.



Continuous System

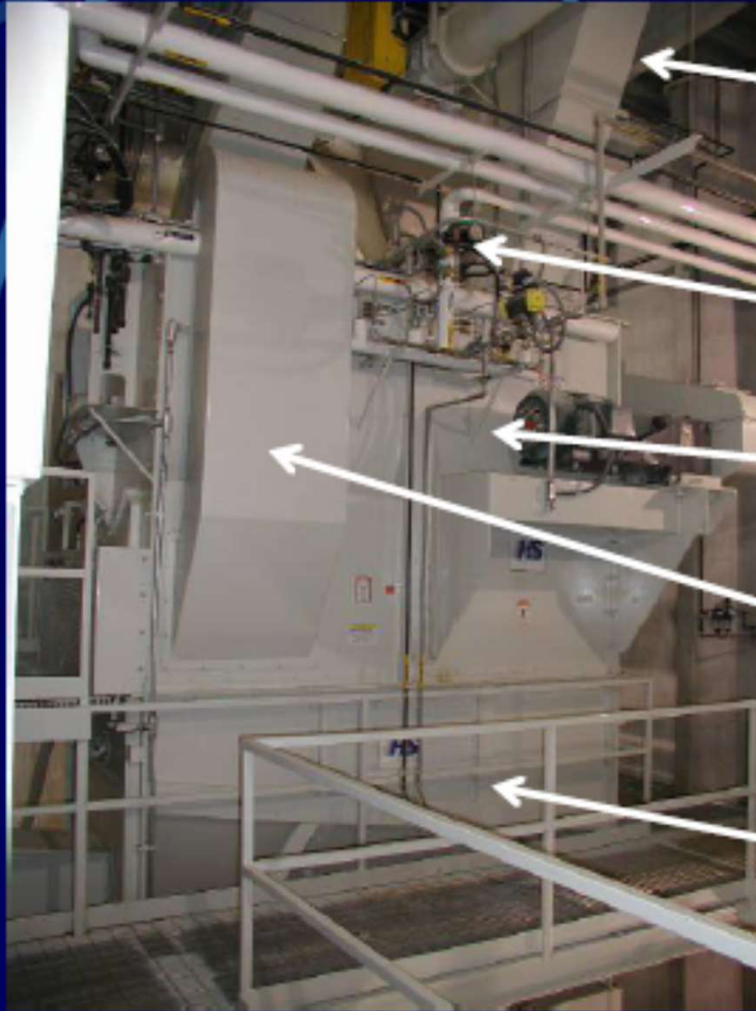
- Ingredient addition rates must be closely monitored to assure accuracy.
- Individual continuous scale feeders for each ingredient best.



Mixing Batch System

- **Cycle time must be long enough to fully mix dry ingredients and added liquids.**
- **Cycle time must allow time for filling and discharging the mixer.**
- **Size of mixer based on required mixing time. Standard ribbon mixer requires 3-5 minutes for mixing.**
- **Twin rotor and special agitator mixers can fully mix in 1-1 ½ minutes.**

Batching Scale & Mixer



Scale Hopper

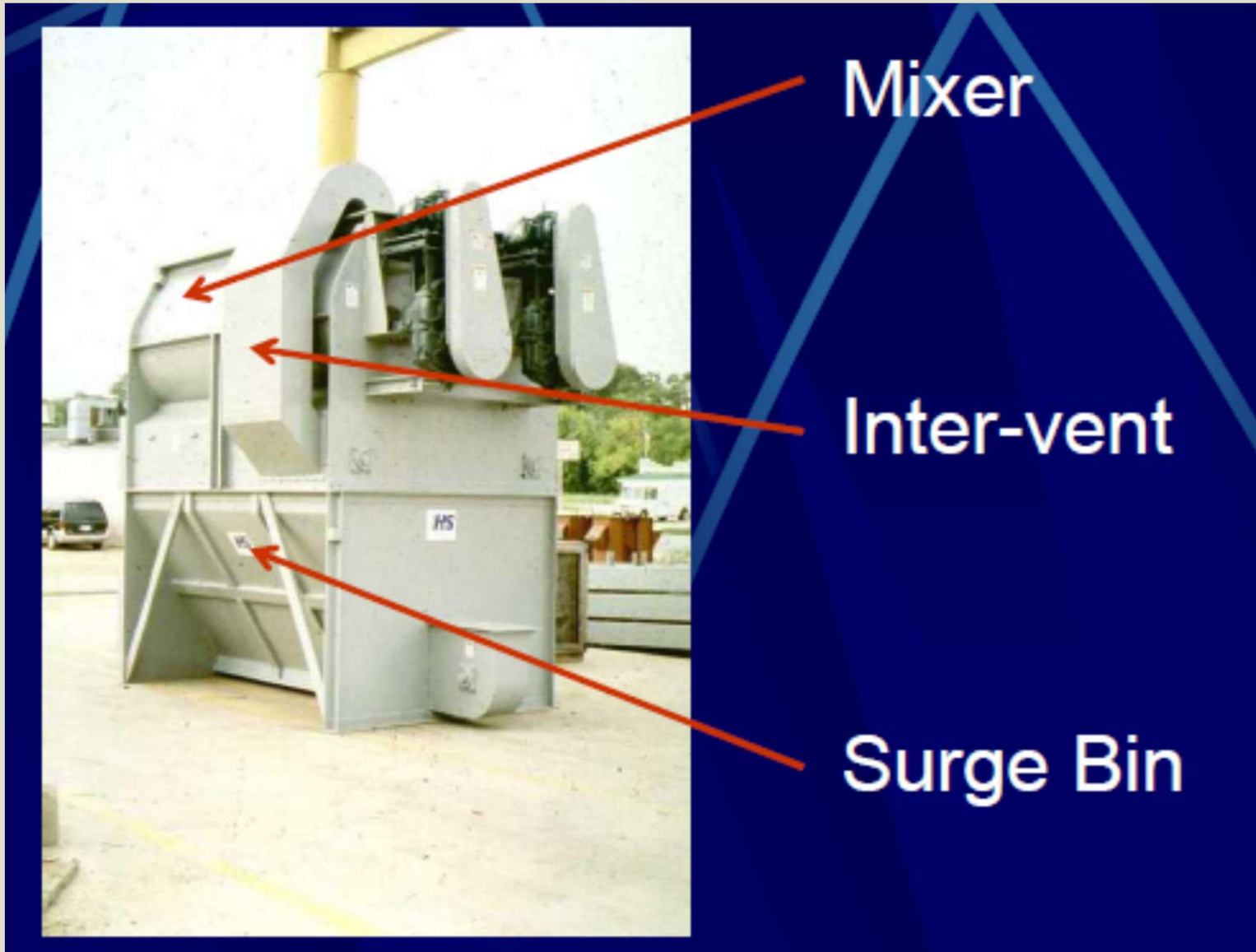
Liquid Manifold

Mixer

Inter-vent

Surge Bin

Twin Rotor Mixer



Pelleting System

- ✓ Capacity is dependent on drive horsepower.
- ✓ Capacity varies by ingredients used, liquid added, and pellet size.
- ✓ Minimum of 2 mash bins should be located above mill.



✓ **Horizontal Cooler** 18-21 cubic meters per minute of air per metric ton of capacity.

✓ **High maintenance.**



✓ **Conter flow Cooler** 12-16 cubic meters per minute of air per metric ton of capacity

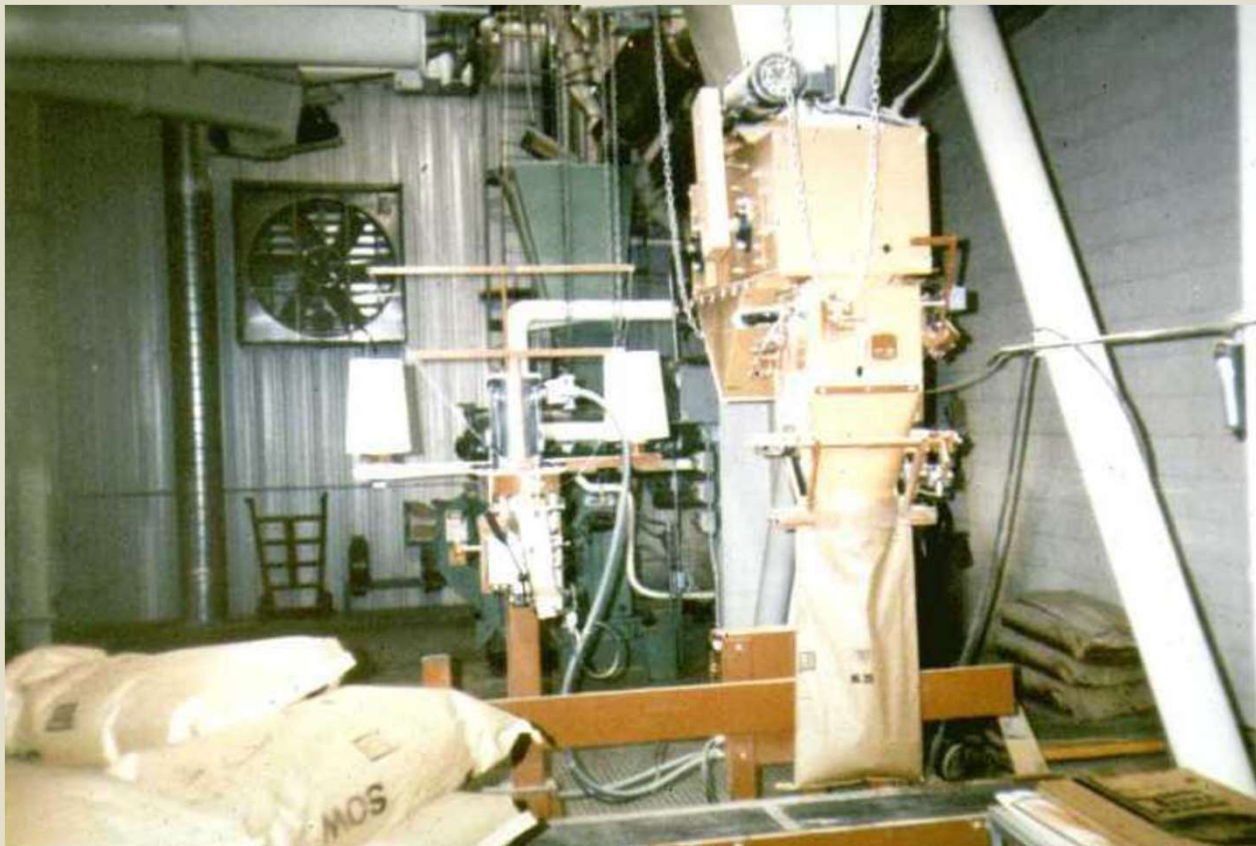
✓ **Low maintenance .**



Bagging System

- ✓ Manual bag placement and sealing.
- ✓ Requires 1-2 people to operate at capacity.

Manual System 6-8 bags per minute



- **Automatic bag placement, filling and sealing.**
- **Requires restocking of new bags in bag hanger.**

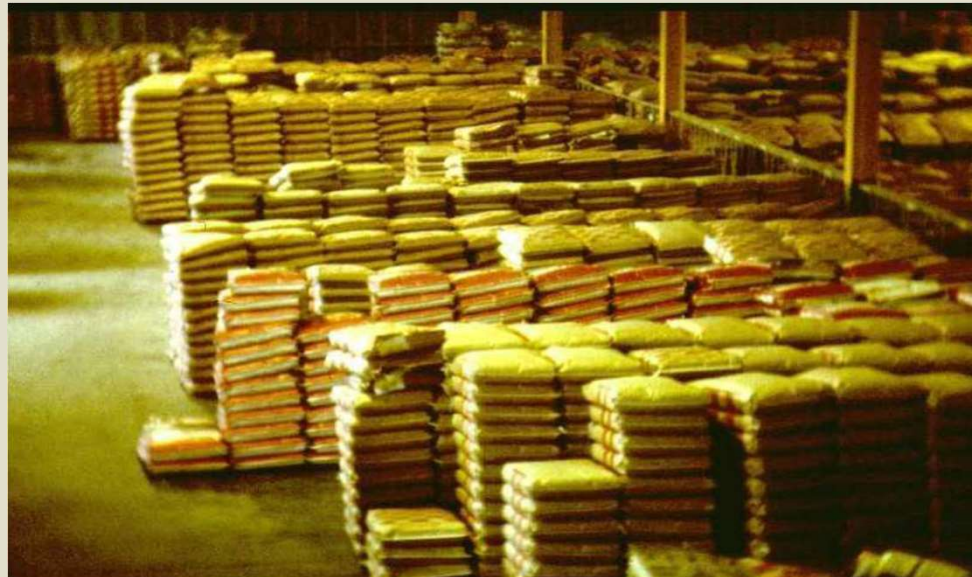
Automated System 18-20 bags per minute



- **Bagging system capacity based on amount to be bagged and time allowed to do it.**
- **A minimum of 2 supply bins should be placed above packing system.**
- **Supply bin capacity based on batch or lot size to be bagged.**

Warehousing

- Allow adequate space for storage of individual bagged products and supplies.
- Products should be arranged so, oldest products used first.
- Products should be located in warehouse to minimize travel distances to and from storage area.



Bulk Feed Loadout

Scaled weight required for selling product.

- Truck scale
- Weigh Lorry
- Batch weight



- ✓ **Number of bulk product bins based on amount of feed made, number of products made, truck capacity, available loading time, scheduling.**
- ✓ **Capacity of bulk product bins based on lot size, batch size or use requirements.**

Sum up

- **The product mix for the facility must be clearly identified and understood.**
- **Production requirements for each type of product must be determined to identify equipment needed.**
- **Plant capacities both current and future must be determined to make sure key systems will handle all capacity levels.**
- **The process flow of the mill must be defined and drawn before any physical layout of the mill is started.**
- **Provision for future equipment and systems must be included in initial mill design.**

Discussion.....

Thank you