

EVALUASI KUALITAS BERBAGAI JENIS PAKAN DAN EFISIENSI BENTUK PAKAN UNTUK TRANSPORTASI LAUT

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Indonesia Cattle Ship Condition (Camara Nusantara)



Feed in Cattle Ship during voyage

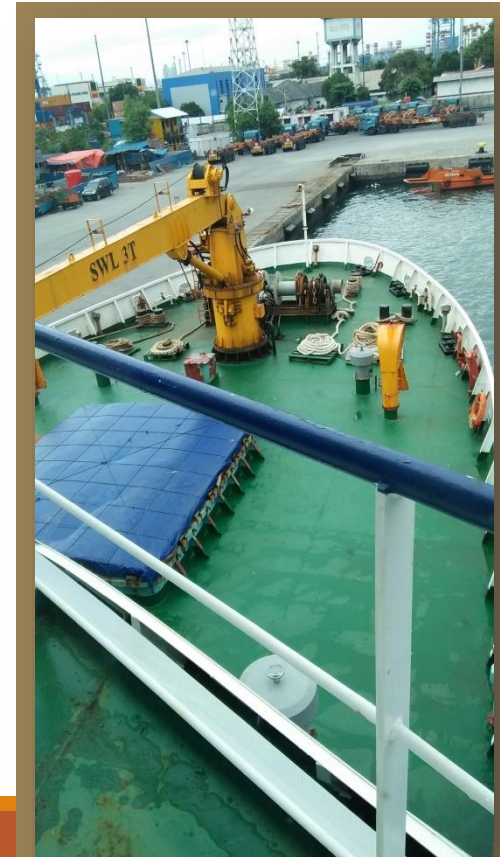
- Straw Rice Hay
- Low nutrient quality and digestibility
- Weight loss up to 12,6 %
- Bulky (placed everywhere on cabin)

Nutrient Content (%)	Feed Variety
	Hay
Dry Mater	85.23
Ash	12.67
Crude Protein	4.60
Crude Fat	5.29
Crude Fiber	30.2
Nitrogen Free Extract	47.24
TDN	56.6

Storage condition

- Palka (Ship Storage) volume is 199,1 m³
- Useless
- If used for storing straw rice hay it can carry as much as 21,9 ton

Nutrient Content (%)	Crude Protein	TDN
NRC (1982)	11.5	65.2
MLA (2011)	10.5-12	59.62



Refinement of Feed

Feed Formulation
(Hay + concentrate)

mash

pellet

wafer

Feed Production Based
on Local Resources

mash

pellet

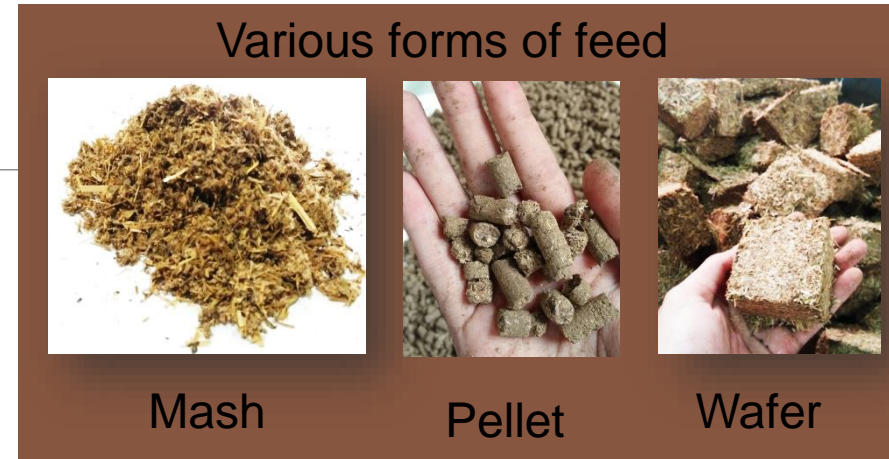
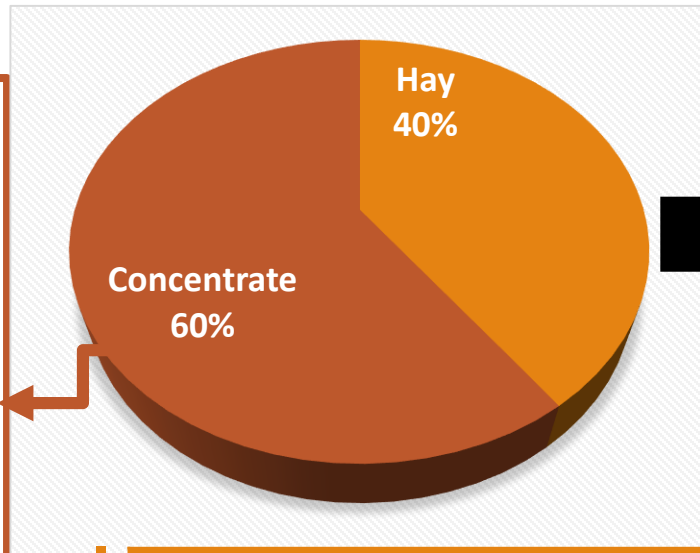
wafer

dried
pellet

cube

Feed Formulation (Hay + Concentrate)

- Pollard
- cassava dregs (onggok)
- dried distillers grains with soluble (DDGS)
- Copra
- soy bean meal
- coffee skin
- CaCO₃
- molasses



Nutrient Content and Digestibility
Hay VS Formulation Feed

Nutrient Content (%)	Feed Type	
	Hay	Formulated Feed
Dry Mater	85.23	85.23
Ash	12.67	12.67
Crude Protein	4.60	12.06
Crude Fat	5.29	2.75
Crude Fiber	30.2	19.67
Nitrogen Free Extract	47.24	52.85
TDN	56.6	64.23





Variable	Feed Type	
	Hay	Formulated Feed
KCBK (%)	42.81	73.83
KCBO (%)	36.02	71.93
NH ₃ (gr/cm ³)	6.43	8.46
VFA (gr/cm ³)	101.21	134.08

Nutrient Standard

Nutrient Content (%)	Crude Protein	TDN
NRC (1982)	11.5	65.2
MLA (2011)	10.5-12	59.62

Storage Efficiency Various Form of Formulated Feed

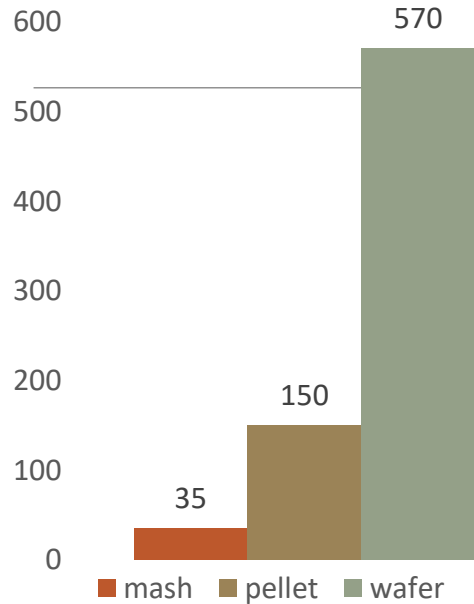
Storage calculation for hay VS formulated feed

		Density (kg/m ³)	Carriage feed (ton)	Storage efficiency (%)
Hay		110	21.9	Not efficient
Formulated Feed	Mash 	170	33.8	20.4
	Pellet 	450	89.6	70
	Wafer 	180	35.84	24.9

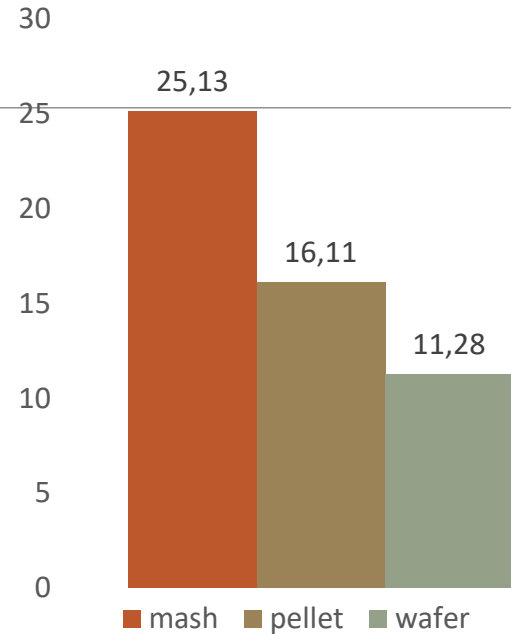
- ✓ Voyage (5 days + 2 days inventory reserve) with 500 cattle in a ship, we need 26,9 ton feed base on daily feed needs (Kearl 1982)
- ✓ The assumption is that feed saturate the entire storage space (hatch).
- ✓ The highest feed storage efficiency was found in pellet-shaped feeds of 70%.

Palatability

Feed Consumption (gram/hour)



Feed Adaptation (minute)



Palatability of formulated feed on Cattle Selter, Cibitung

- ✓ Wafers are the most widely used form of feed for 1 hour of feeding compared to the form of mash and pellet.
- ✓ Cattles prefer wafer as a feed form than other feeds because it has a compact shape but is easily broken so that it is easily snatched by cattle.

