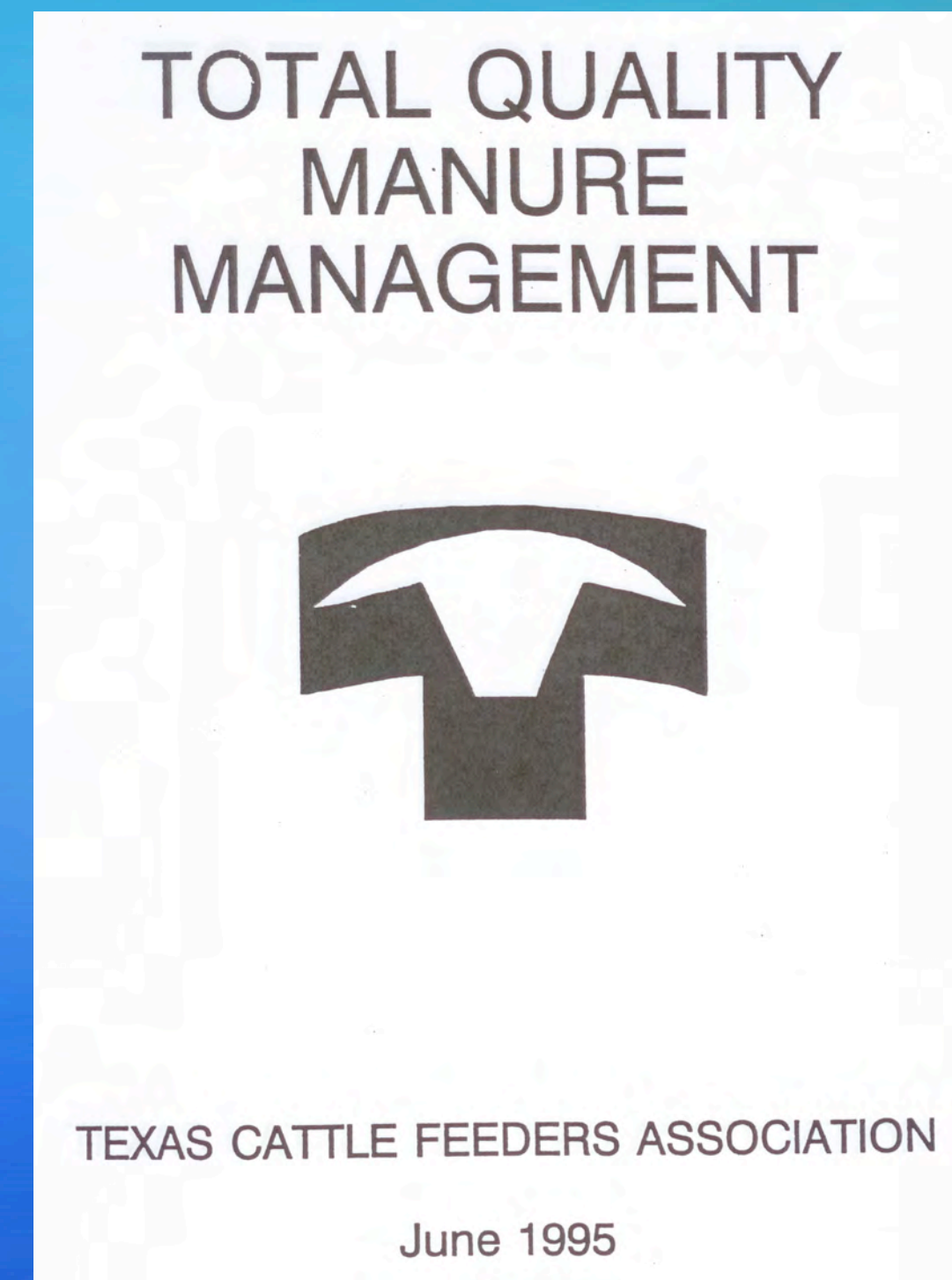


Total Quality Manure Management

How Attentive Management Shows Up in Superior Fuel and Fertilizer Value

Total Quality Manure Management

- ❖ Published in 1995
- ❖ Major topic areas
 - ❖ Manure stockpiles
 - ❖ Manure collection methods
 - ❖ Cattle performance vs. pen surface condition
 - ❖ Manure quality and economics
 - ❖ Manure quantity



Manure Stockpiles

- ❖ “Manure is a perishable commodity that generally loses value with residence or storage time.”
- ❖ “Manure needs to be harvested frequently to preserve nutrient value, with the best quality manure collected preferentially.”
- ❖ “Manure should be used in a timely manner to preserve nutrients and prevent environmental losses.”



Manure Harvesting Methods

- ❖ “Manure collection methods should minimize admixing the underlying soil and incorporating debris.”
- ❖ “Soil or debris that is mixed with manure reduces the value per ton through reduced nutrient content and higher tonnage.”
- ❖ “Manure contractors and workers should adopt an attitude of *harvesting manure* rather than *cleaning pens*.”



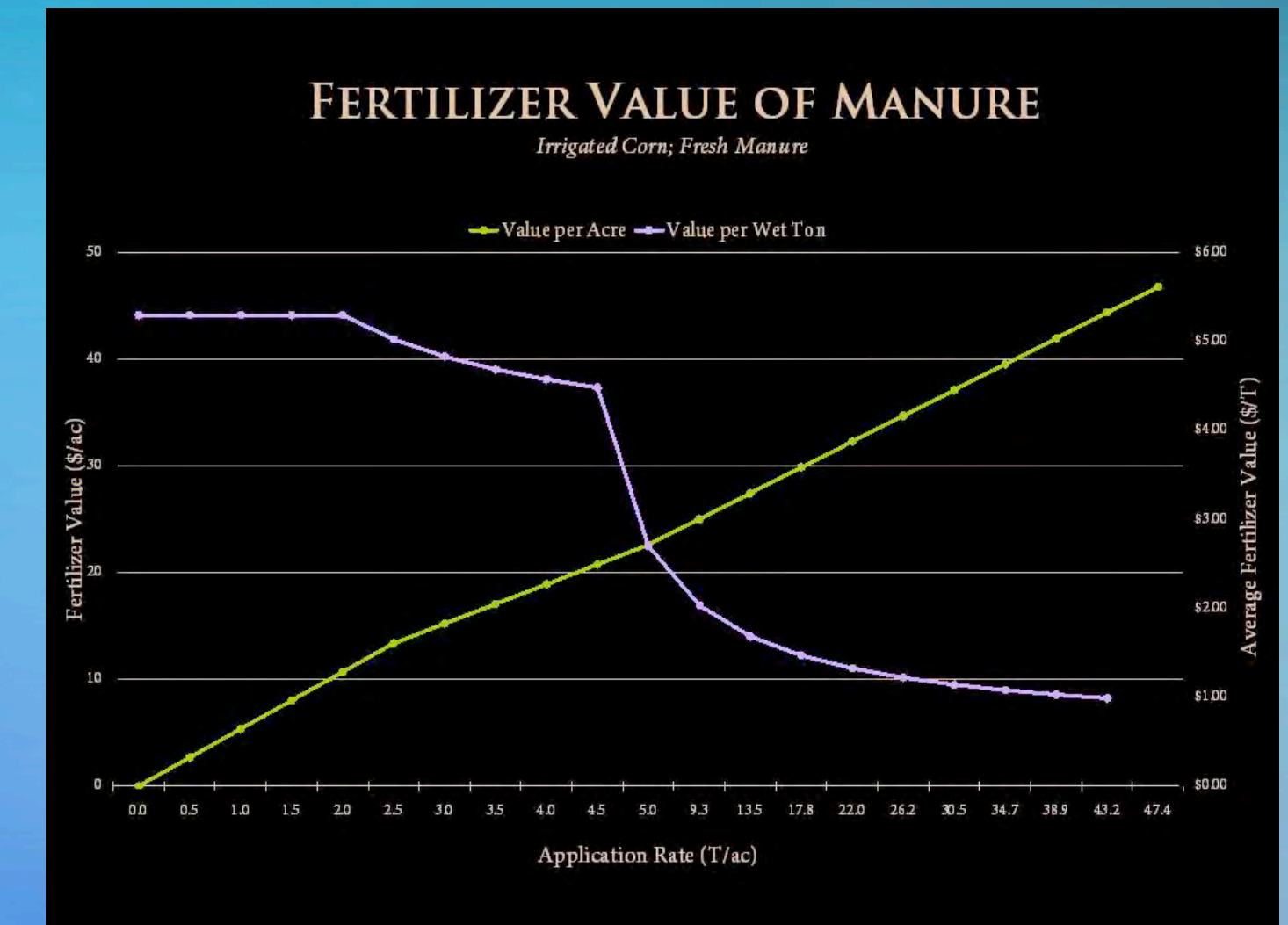
Cattle Performance

- ❖ Muddy conditions in feedlot pens increase a 900-lb steer's daily net energy requirement for maintenance by 45% and can reduce gains by 25-35%
- ❖ Cost of gain may increase by \$0.14-0.18/hd/d under muddy conditions
- ❖ “Lot surface management that results in fewer muddy days would improve the feed-to-gain ratio.”



Manure Quality and Economics

- ❖ The largest variables affecting nutrient content are water and ash
- ❖ Ammonia emission rate nearly triples during the drying cycle after a rainfall event

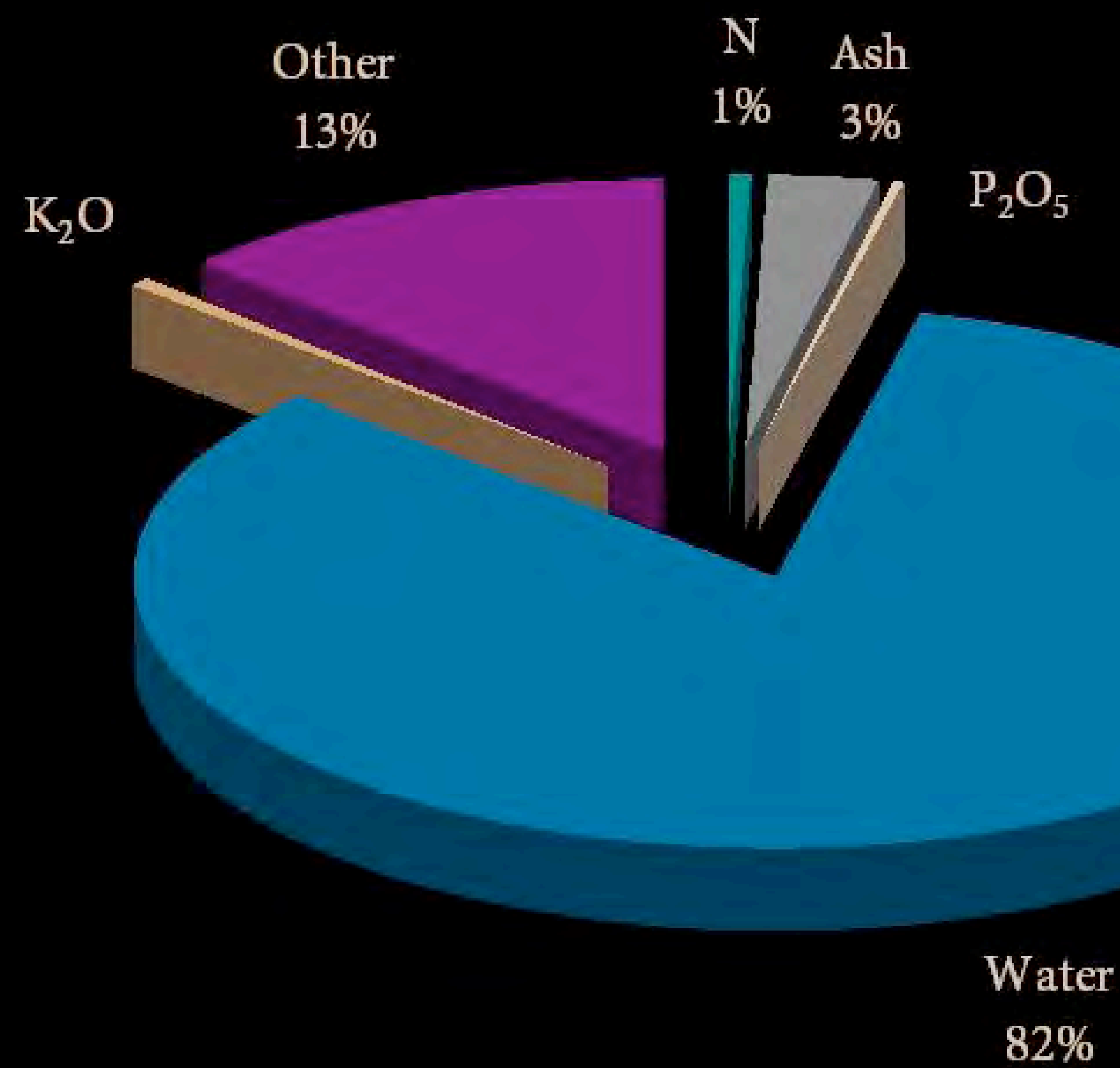


Manure Quantity

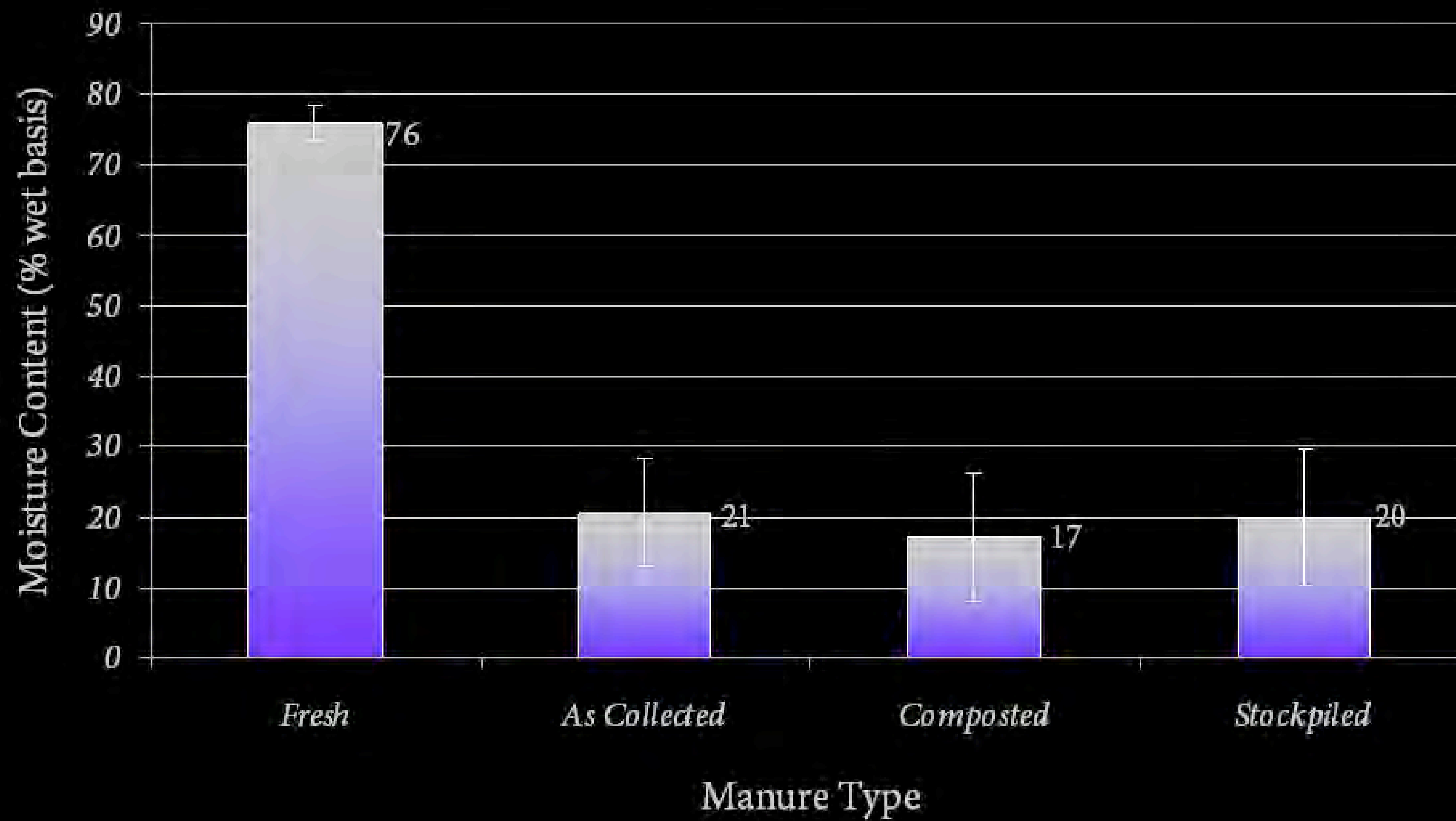
- ❖ Mounding results in loss of up to 30% of dry matter
- ❖ Poorly built mounds that take up too much space in the pen and are unusable by the cattle:
 - ❖ Reduce the effective animal spacing; and
 - ❖ Concentrate both manure and moisture excretion
- ❖ Soil and debris increase mass of manure collected



FRESH MANURE COMPOSITION



Manure Survey, 2002

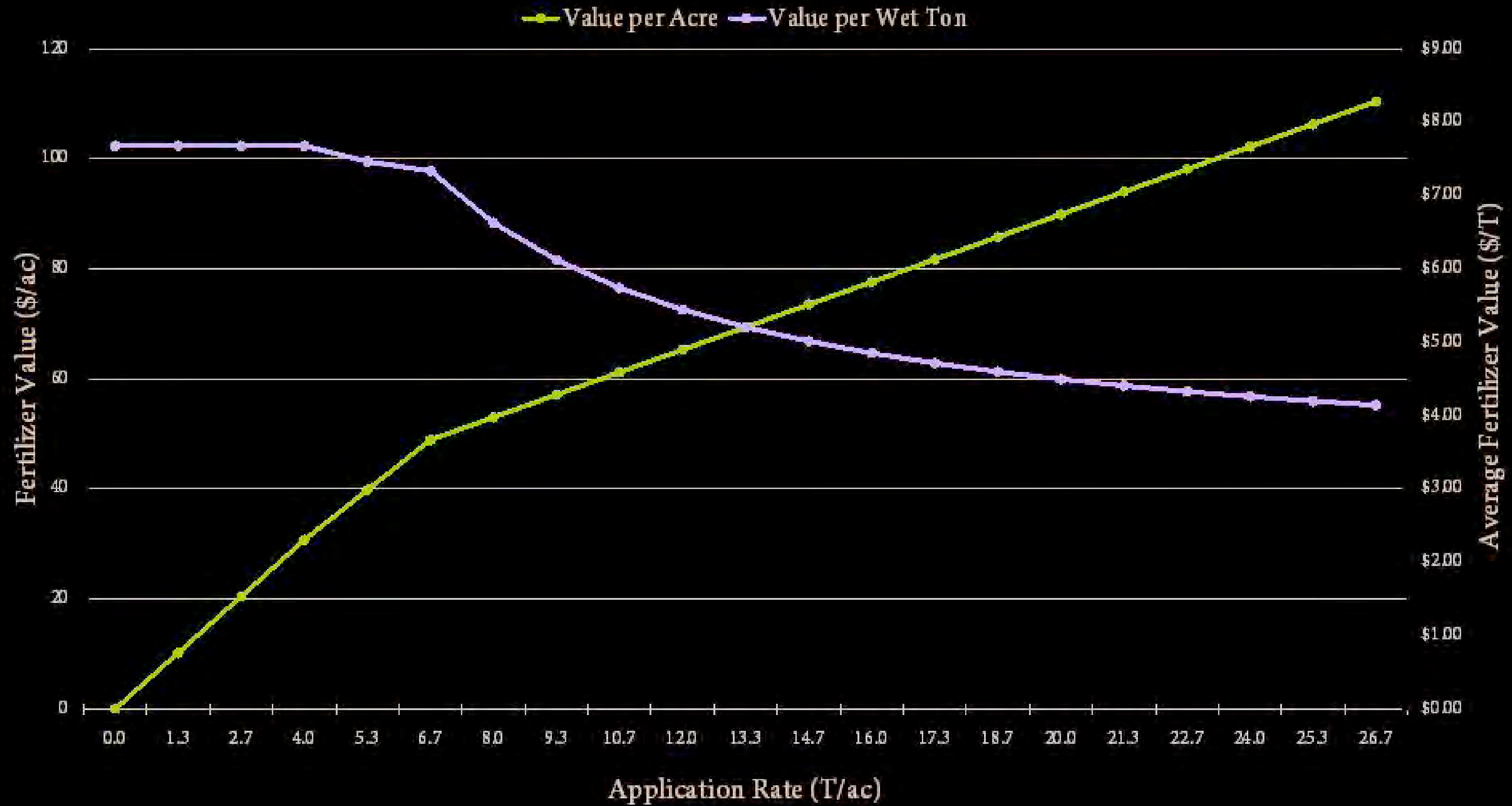


MANURE COMPOSITION

Manure Type	Fresh	As-Collected	Stockpiled	Composted
N	0.68	1.29	1.48	1.42
Ash	2.60	36.37	48.28	35.57
P ₂ O ₅	0.42	0.89	1.11	1.32
Water	83.00	35.40	24.20	30.80
K ₂ O	0.51	1.32	1.93	2.33
Other	12.79	24.74	23.00	28.57

FERTILIZER VALUE OF MANURE

Irrigated Corn; Fresh Manure; K required



Benefits of a Conscientious Manure-Harvesting Program

- ❖ Higher fuel value
- ❖ Higher fertilizer value
- ❖ Reduced metabolic maintenance requirements
- ❖ Improved pen drainage
- ❖ Reduced dust, odor, flies and ammonia potential

Summary: Objectives of a Conscientious Manure-Harvesting Program

- ❖ Hard, smooth, well compacted, well drained corral surface
- ❖ No exposed mineral soil or caliche
- ❖ No disruption of interfacial layer
- ❖ Well constructed, well maintained mounds (if needed)
- ❖ No wallows; no uncompacted mounds