

(A)

ESTIMATE OF GLOBAL PRODUCTION

AGGREGATED DATA

data source: FAOSTAT (2010–2018)
mean \pm std

estimated global dairy production



$$E_{\text{dairy}} \approx 0.1 \cdot E_{\text{day}} \approx 200 \text{ kcal} \cdot \text{day}^{-1}$$

$$p_{\text{dairy}} \approx \frac{1}{2} \text{ kcal} \cdot \text{g}^{-1}$$

$$m_{\text{dairy}} \approx \frac{200 \text{ kcal}}{\text{day} \cdot \text{person}} \cdot \frac{1 \text{ kg}}{500 \text{ kcal}} \cdot \frac{365 \text{ days}}{1 \text{ year}} \cdot 7 \cdot 10^9 \text{ people}$$

$$\sim 10^{12} \text{ kg} \cdot \text{year}^{-1} \sim 1000 \text{ Mt} \cdot \text{year}^{-1}$$

estimated global beef production

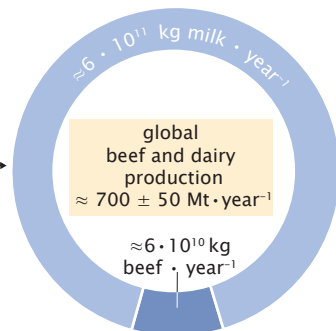


$$E_{\text{beef}} \approx 0.1 \cdot E_{\text{day}} \approx 200 \text{ kcal} \cdot \text{day}^{-1}$$

$$p_{\text{beef}} \approx 2 \text{ kcal} \cdot \text{g}^{-1}$$

$$m_{\text{beef}} \approx \frac{200 \text{ kcal}}{\text{day} \cdot \text{person}} \cdot \frac{1 \text{ kg}}{2000 \text{ kcal}} \cdot \frac{365 \text{ days}}{1 \text{ year}} \cdot 7 \cdot 10^9 \text{ people}$$

$$\sim 10^{11} \text{ kg} \cdot \text{year}^{-1} \sim 100 \text{ Mt} \cdot \text{year}^{-1}$$



(B)

ESTIMATE OF GLOBAL PROCESSING

AGGREGATED DATA

data source: FAOSTAT (2010–2018)
mean \pm std

total global dairy cattle population (milked)



$$m_{\text{dairy}} \sim 10^{12} \text{ kg} \cdot \text{year}^{-1}$$

$$V_{\text{milk production}} \approx \frac{30 \text{ kg}}{\text{day}} \cdot \frac{300 \text{ lactation days}}{\text{cow}} \approx 10^4 \frac{\text{kg milk}}{\text{cow}}$$

$$N_{\text{cattle}}^{(\text{dairy})} \approx \frac{10^{12} \text{ kg}}{\text{year}} \cdot \frac{1 \text{ cow}}{10^4 \text{ kg}} \sim 10^8 \text{ dairy cattle} \cdot \text{year}^{-1}$$

total global beef cattle population (slaughtered)



$$m_{\text{beef}} \sim 10^{11} \text{ kg} \cdot \text{year}^{-1}$$

$$m_{\text{edible}} \approx 200 \text{ kg} \cdot \text{cow}^{-1}$$

$$N_{\text{cattle}}^{(\text{beef})} \approx \frac{10^{11} \text{ kg}}{\text{year}} \cdot \frac{1 \text{ cow}}{200 \text{ kg}} \sim 5 \cdot 10^8 \text{ beef cattle} \cdot \text{year}^{-1}$$

