(A)

ESTIMATING METHANE EMISSIONS FROM CATTLE

$N_{cows} \approx 10^9$ cattle

$m_{feed}^{(cattle)} \approx$ 10 kg / (day x cattle)

$$m_{feed}^{(total)} \approx N_{cows} \times m_{feed}^{(cattle)} \times 365 \text{ days / yr}$$

$$\approx 10^9 \text{ cattle} \times \frac{10 \text{ kg}}{\text{day} \times \text{cattle}} \times \frac{365 \text{ days}}{\text{yr}}$$

$$\approx f \times 10^{12} \text{ kg / yr}$$

$\varepsilon_{CH_4} \approx f$ %

$$m_{CH_4} \approx m_{feed}^{(total)} \times \varepsilon_{CH_4}$$

$$\approx \frac{f \times 10^{12} \text{ kg}}{\text{yr}} \times \frac{f \times 10^{-2} \text{ kg } CH_4}{\text{kg}}$$

$$\approx 10^{11} \text{ kg } CH_4 \text{ / yr}$$

(B)