

Milk2000

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UWEX

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Milk2000

Purpose:

To combine yield and forage quality into a single term for comparison of varieties and treatments.

How much milk will a cow produce on a given feed?

- Determine energy intake of animal
 - Energy content of feed * intake
- Determine maintenance requirement of animal
 - Weight * energy required per pound
- Subtract maintenance requirement (prorated based on forage intake) from total energy intake
- Divide difference by energy per lb of milk

How to calculate energy?

TDN or NE_L is calculated from

- ✓ chemical analysis or
- ✓ in vitro digestibility

Calculating TDN

TDN (maintenance)

$$= \text{tdCP} + (\text{tdFA} * 2.25) + \text{tdNDF} + \text{tdNFC}$$

$$\text{tdCP} = \text{CP} * 0.93$$

$$\text{tdFA} = 0.97 * (\text{EE} - 1)$$

$$\text{tdNDF} = \text{NDF} * \text{NDFD}$$

$$\text{tdNFC} = 100 - \text{CP} - \text{NDF} - \text{EE} - \text{Ash} + \text{NDFCP}$$

(starch & sugars)

NRC, 2001

Adjust energy to feeding level

Net energy of lactation at 3x maintenance:

$$NE_L \text{ (Mcal/lb.)} = ((\text{TDN} * 0.0245) - 0.12) / 2.2$$

(NRC, 1989)

Adjust intake

- NDF intake set at 1.15% of body weight
- divided by 0.3 (assuming 30% NDF in ration)
- then adjusted +/- 0.374 lbs for each 1% change in NDF digestibility above or below an average NDF digestibility

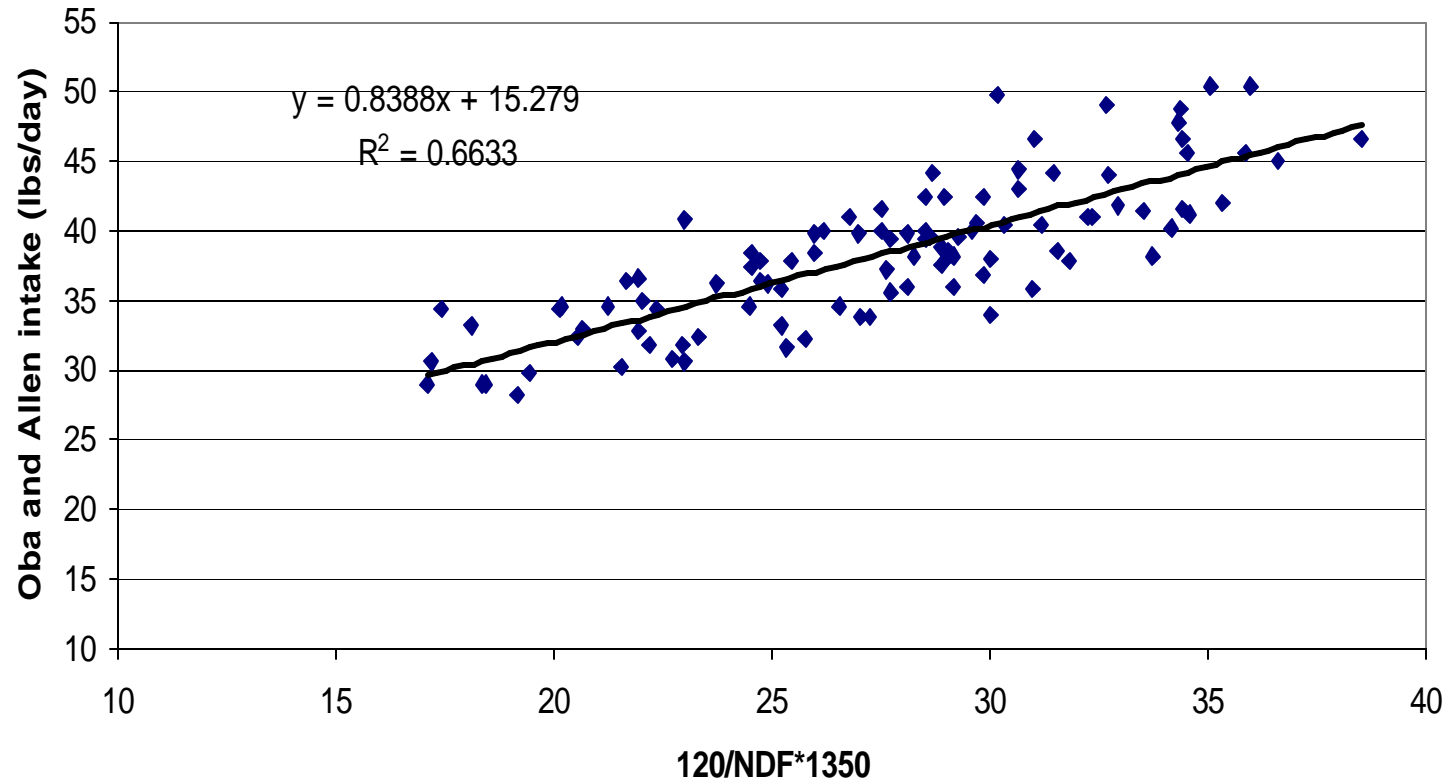
Oba and Allen, 1999

Milk from forage

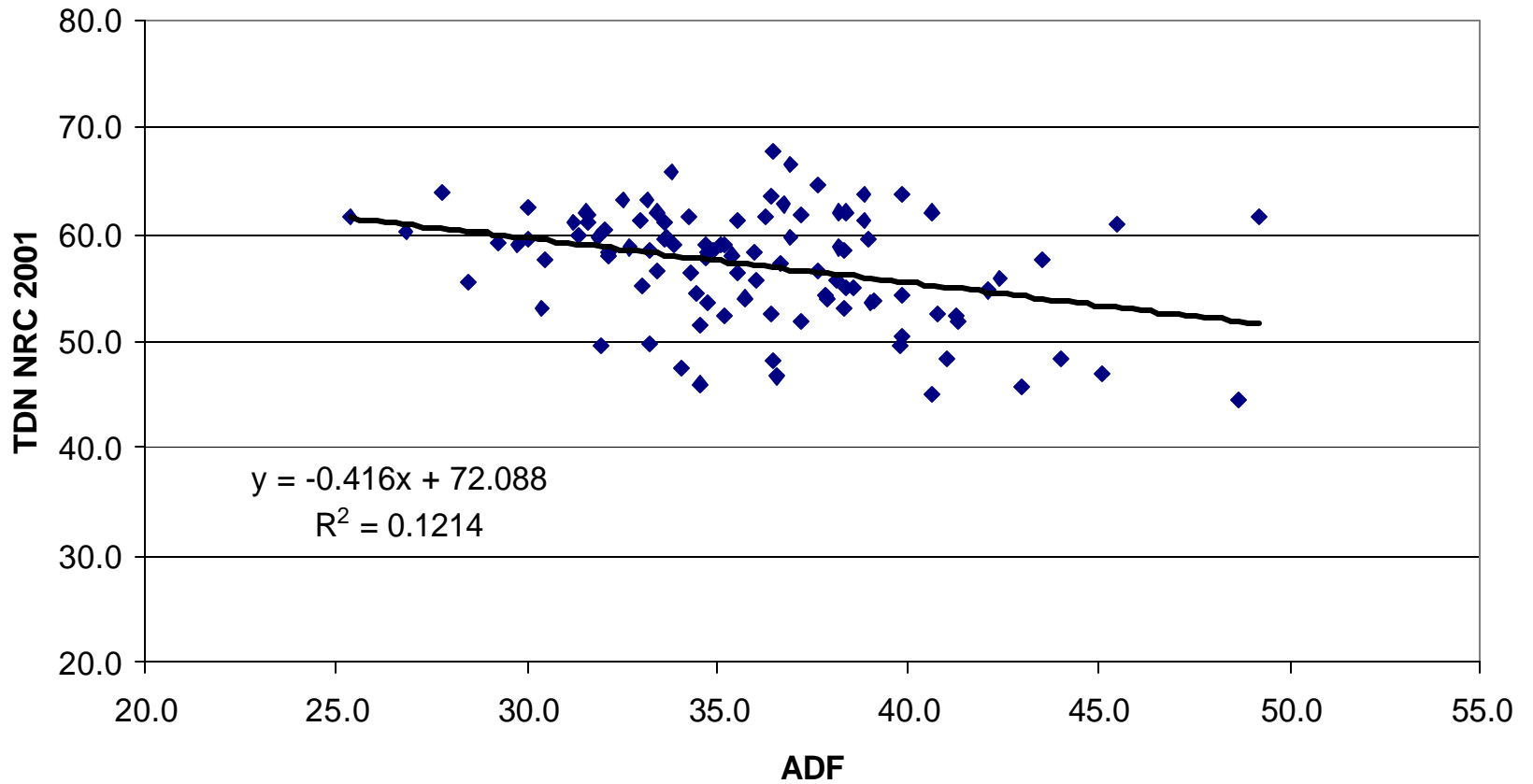
Milk production =

$$\left((NE_L * \text{forage intake}) - (0.08 * 613.64^{.75} * \text{percent forage in ration}) \right) / 0.31$$

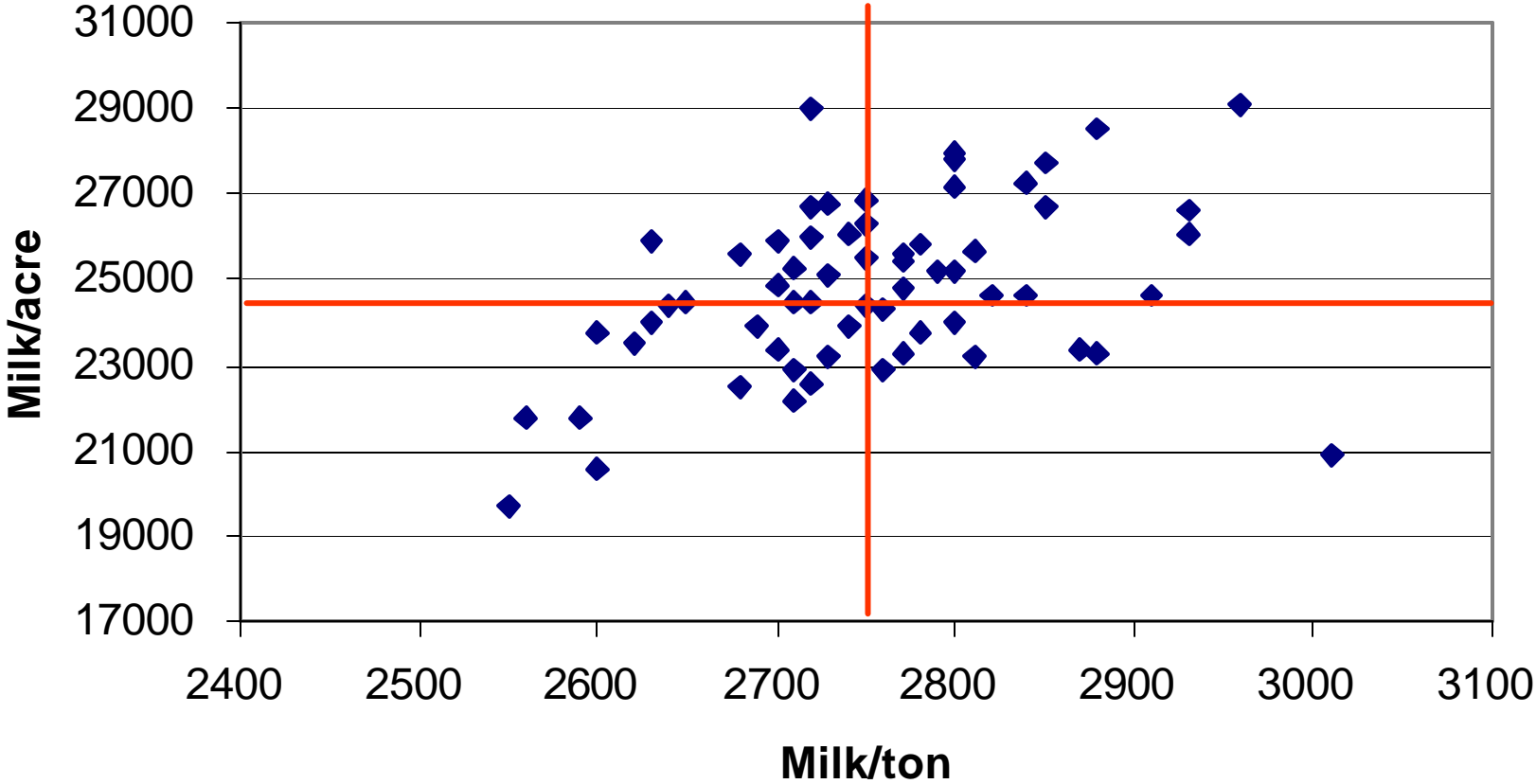
Comparison of Intake equations



Comparison of ADF to TDN

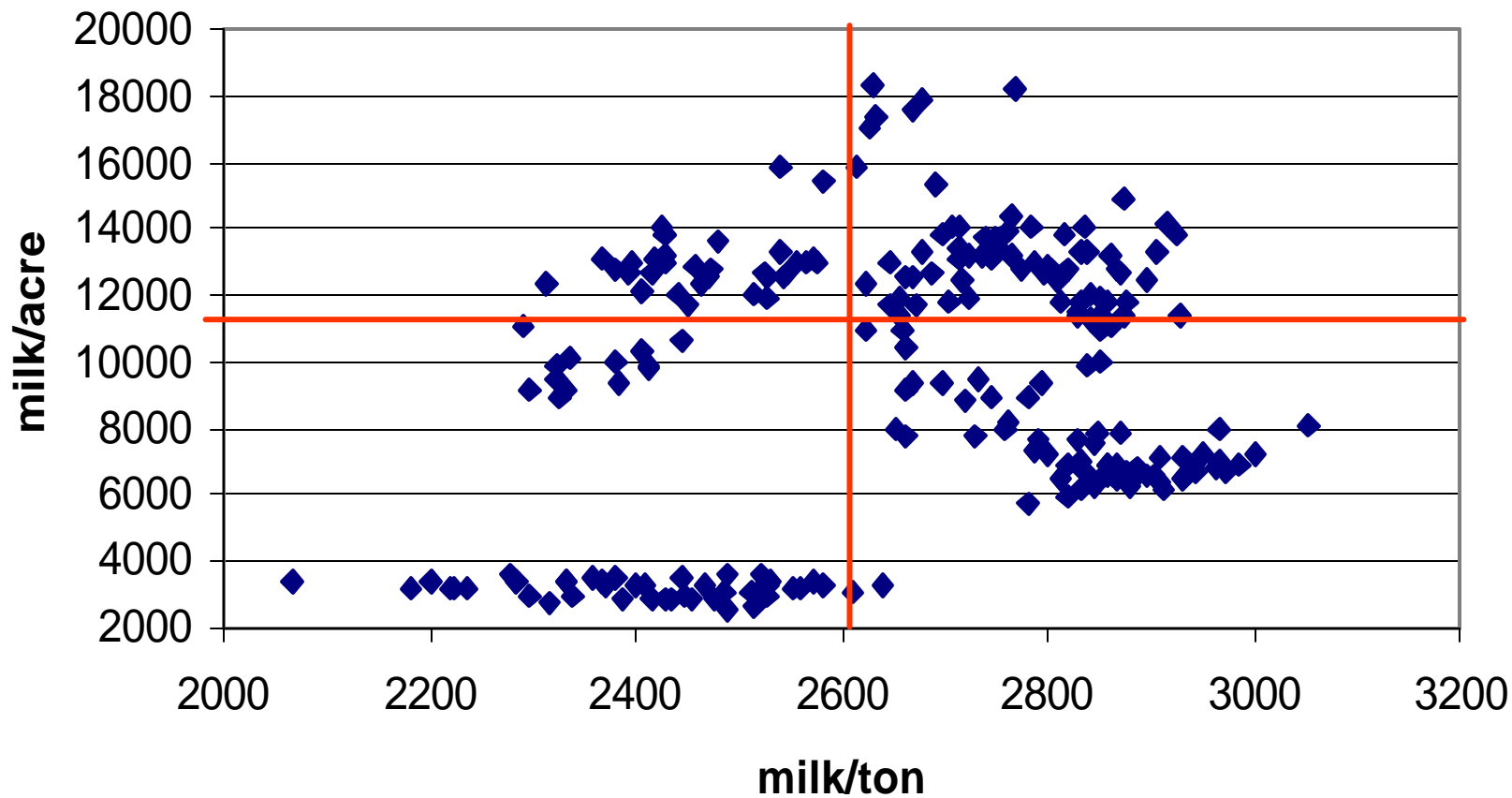


Selecting High Quality Corn Silage Hybrids



Select hybrids from upper half or upper right, depending on needs.

Selecting high quality alfalfa varieties



Select varieties from upper half or upper right, depending on needs.

Summary

- Varieties and hybrids can be accurately compared for yield and forage quality using milk per acre
- NDF digestibility improves prediction of animal performance on a forage.
- Milk2000 using NDF digestibility gives significantly different numbers than previous milk per acre spreadsheets.