FINAL NOTES on TmR APPLICATIONS

Intro

- The important point in formulation the Daily Ration for the intended animal is to balance more number of nutrients as much as possible. For this reason, more feed materials type may be useful. The Balancing should be done on a single energy unit [TDN, ME or NE (NE_L or Nem and NEg)]. So it can be done more easily. Nem and Neg must be used together.
- If the program estimates different energy units, one or more of them can be removed. For example; If ME_RU is to be used, NEm and NEg limits can be removed. TDN is the correction unit and after first solution, nutrient needs can be recalculated by changing the %TDN in the Environment Tab.

Fattening (NRC 1996-2000):

- DMI (Dry Matter Intake) will be balanced and there will be fixed input. If no solution exist, the balancing can be done by setting the DMI to the lower limit or upper limits. That being the case, the DMI should not change too much after new solution. Additionally, the producer should fallow the feed intake in the herd, because the computer does not know the concept of taste and whether the delivered amounts is more or less then the calculated amounts.
- DM (%) (dry matter rate) should not be limited, the program uses it to calculate the air dry amounts. The amount of water in the ration is the inverse of DM, it should be taken into consideration. If possible, the ration should be based on wet basis, that is, 45-50% water would be better.
- TDN: It will be released in the solution, that is, if there is a limit, it should be removed. According to the TDN result obtained after the solution, if there is an increase, it is reconstructed accordingly. Nutrient needs should be calculated again and solutions should be made accordingly.
- ME_RU: if used as a stand-alone energy unit because of the NEm and Neg content of the matrix are not exist, the NEm and NEg limits could be removed. ME_RU is more suitable in terms of linearity (Soltion method).

Fattening (NRC 1996-2000):

- NEm and NEg: These two net energy units should be used together, because of Nem and NEg are not addable. Even this reason, the solution is conducted on total net energy especially in the fattening.
- E_NDF: It is used in fattening (effective neutral detergent fiber) for the control of stomach acidity. It should be balanced, but in case of a deadlock it can be lowered slightly if necessary.
- CP: It is sum of RDP (rumen degraded protein) and RUP (rumen undegraded protein). If CP and RUP are balanced, the other one is also balanced. In this case, the RDP limit can be removed.
- Calcium, Phosphorus, Na, Mg and S will be balanced
- Vit + Min Needs; In OMIX versions of 2.5 and 2.6 see the prospectus of premixes and (40-60 g per animal) as 0.040-0.060 kg in the program should be entered. In version 2.7, Vit+Min contents can be written into the matrix, because the needs are calculated and these nutrients are also available in the base matrix.

In Milk: (NRC 2001):

- DMI (Dry Matter Intake) will be balanced and there will be constant input, but if no solution is exist. it can be taken as lower bound. In this case, the feed consumption (DMI) status in the herd is checked.
- There should be no limit on DM (dry matter rate). It is used in the calculation of air dry amounts (as is).
- TDN: Can be used alone as a unit of energy (for 1989). When feed ingredient contents of NE_L and ME_RUM are unknown. In this case other energy limits can be removed.
- ME_RUM: Can be used alone and other energy limits can be removed. It should be applied when the feed ingredient contents in terms of NE_L are unknown.
- NE_L: Balancing alone is sufficient for maintenance and productivity. It is suitable for lactating cows. It is superior to TDN in yield prediction. NE_L gives maintenance and the yield (milk) together. It is also quite suitable for LP (solution methods).

In Milk: (NRC 2001):

- For young animals (calves, heifers) NEm and NEg will be used together. ME_RU can also be used for young animals alone.
- ADF (Acid detergent cellulose) and NDF (Neutral detergent cellulose) must be balanced. If only one of them is to be balanced, NDF is sufficient.
- CP: It is sum of RDP (rumen degradable protein) and RUP (rumen undegradable protein). If CP and RUP are balanced, the other one is also balanced. For this reason, the RDP limit can be removed.
- Calcium, Phosphorus, Na, Mg, S will be balanced.
- Vit + Min needs; in versions 2.5 and 2.6, see the prospectus of premixes and should be entered as 0.040-0.060 kg (40-60 g/animal) in the program.
- In version 2.7, Vit+Min contents can be written into the matrix, because the needs are calculated and are also available in the basic matrix.

INRA Feeding System:

- INRA feeding system has own environment. The data input in the nutrient requirement estimation dialogue must be entered carefully for dedicated animal. They must be consistent with each other as to the production properties.