Feed Analysis

Sample Receiving and Preparation

Sample Preparation

Sample preparation converts the samples into homogeneous material for the various nutritional analyses. Drying and grinding are the essential operations. Sample preparation is conducted according to sample type and analyses requested.

Reference

• AOAC (Association of Official Analytical Chemists). 1995.

Drying Samples

In case fresh forage samples are wet when received they are dried overnight at 60 °C in an air-circulation oven to obtain air dried samples ready for grinding. Feces samples are dried at 60 °C in an air-circulation oven (Fig.3) for at least 48 hours prior to grinding. Milk and milk derivatives are prepared according to the analyses requested (see chapter 3). For dry matter see section 1.2.1.

Figure 3. Air-circulation oven for field samples

Equipment

• Air-circulation oven for large field samples (Fig. 3)

Grinding

Feed samples are ground to 1 mm particle size with a Wiley mill(Fig. 4). Samples for tannin analyses are ground to 0.5 mm particle size. Dried or frozen feces are first passed through a 2 mm mesh, then through a 1 mm mesh. Dried and ground samples are stored in airtight containers away from heat and light. Caution has to be taken to avoid insect damage.

Equipment

• Wiley mill (Fig. 4)

Figure 4. Wiley mill

How to take samples for analysis

The methods of sampling depends on the purpose for which the sample is collected.

Methods of taking sample:

1- Taking sample from green plants in field:

Sampling from the aerial parts of the plants in field selected random at least (10) or more sample sites depending on the size of the field and should be (2-3 Kg)amount.

Clip the aerial parts of the plants and it save in plastic bag. if the plant is large it may be necessary to take the sample to the laboratory and run it through a forage cutter to obtain suitable sample.

If sampling from the animal consuming forage use rumen cannula technique because is some cases it may be necessary to watch graze a sample to present the animal diet.

Note:

1-The moisture is high in green plants so we should decrease or reduce the time of taking samples to decrease the moisture lost from green plant also to decrease the changes happen due to enzymes the stay for long period in plants after cutting.

2- After reach of plants in plastic bags to laboratory we cut the green plants to 3-5 cm and mixed good then put in one group .Then we Take 20 samples from it again randomly and also mixed in one group and take 20 samples again until we reach to sample about 500-600gm in weight that sample put in plastic bags for analysis.

2-Taking samples from silage: Take a sample at random of silage from different sites , the weight of sample should be 4 kg , the sample take before and after fermentation to study the changes occur in material (silage) during and after fermentation.

3- Taking samples from grain and meal mixtures (concentrate):

Use a slotted single or hollow tube with pointed ends take at least 1 kg sample follows lay bag horizontally. Determine number of bags as follows from (1-10) bags .sample all bags, from (11) or more sample 10 bags at random.

After taking samples all samples collected in (1) group and divided by quartering methods each group divided into 4 equal group we take just 2 group from the 4 and divided other 2 .we contains in this process until we reach to 1 kg in weight then save the sample in plastic bag and send to laboratory.

4-Taking samples from hay and straw (accumulation):

We take small samples from 20 different places high and depth then we collected samples in (1)group and contain decrease the size until we reach to sample with (1 - 0.5)kg and grinding then save it in plastic bags for analysis.

5- Taking samples from hay and straw (bales):

If the number of bales less than 10 we take samples from all bales .if the number 10-20 we take samples from 10 .if the number more than 40 we take samples from 20 bales , the sample should be taken from ends and middle of each bale.

The samples collected and decrease gradually in size until we reach to 1to 0.5kg in weight the sample grinding and then save in plastic bag for analysis.

Laboratory samples cards:

At the time when samples reach to laboratory it's given a laboratory sample number.
It consists of:

1- Laboratory sample number.
2- Project number.
3- Experiment number.
4- Leader .
5- Sample description.
6- Signature of person doing work.

Sufficient data should be put to give the chemist an idea of what kind of sample is being analyzed and to complete the description required on the source form.