

Dr. Nazir Ahmad Khan



☰ Department of Animal Nutrition, Khyber Pakhtunkhwa Agricultural University Peshawar, 25130, Khyber Pakhtunkhwa, Pakistan. ☎ 00929216520 📠 00923469085054 @ nak126@gmail.com

Summary of Experience and Skills

- Knowledge and extensive research experience in fatty acids in forages, and lipid metabolism during ensiling
- Knowledge and research experience in modifying milk fatty acid composition of dairy cow through forages
- Planned, conducted and scientifically evaluated the results of feeding, production performance, milk composition and milk fatty acid composition trails in dairy cows
- Planned, conduct and interpreted digestibility, nitrogen balance and growth trials in sheep and goats
- Experience in grass and maize silage sampling, laboratory scale preparation and assessment of fermentation and nutritional quality
- Analyzed the fatty acid content of a large number of feed, blood and milk samples
- Experience in proximate chemical analysis, tannins and minerals analysis of feed stuffs
- Knowledge and experience in feed evaluation and formulation for ruminants
- Data analysis skills using General Linear Model and Mixed models, and multivariate analysis(Principal Component Analysis, Multiple Linear regression and Partial Least Square regression) in Statistical Analysis System
- Technical, scientific knowledge acquisition, communication and report-writing/scientific-publication skills

Education

- **Doctor of Philosophy (PhD) Ruminant Nutrition (2007-2011)**, Wageningen University, the Netherland.

Thesis title: Fate of fatty acids during ensiling: relationship with milk fat composition of dairy cows". This PhD thesis investigated the scope of increasing the content of polyunsaturated fatty acids (PUFA) in grass and maize silages, and established relationships between silage qualities on the one hand and the fatty acid content and composition, post-ensiling stability of PUFAs and milk fatty acid (FA) composition of dairy cows on the other hand. A total of five studies were conducted, three are already published, one is accepted and one is in the process of publishing. Some of the significant findings of these studies are listed here. The FA content and composition of grass and maize silages are highly variable, and this variation is primarily caused by differences in the maturity at harvest. Silages made from younger grass and maize has higher contents of C18:3n-3. In silage maize the contents of C18:3n-3, the predominant FA in stovers fraction, decreased consistently during 14 to 84 days after flowering (DAF). Whilst, the content of C18:1n-9 and C18:2n-6, the major FAs in ears (grains), increased up to 56 DAF and thereafter remained more or less constant. The maximum amount of PUFAs in silage maize can be harvested around 56 DAF, which is before the onset of the rapid leaf senescence. The oxidation of FAs during wilting of grass mainly depends on duration of the wilting period, wilting temperature only provokes small differences, whereas mechanical bruising of grass at cutting and light intensity during wilting do not affect the changes in FA content and composition. (Khan et al., 2011). Exposure of grass and maize silages to air for 24 h caused a quantitatively small (<0.06 g/g total FAs), but consistent decline in content of major unsaturated FAs with a concomitant increase in the proportion (g/g total FA) of C16:0. The increase in harvest-maturity of silage maize (300 to 420 g/kg fresh matter), decreased the content of C18:3n-3, total n-3 and n-6: n-3 ratio in milk fat of dairy cows (Khan et al., 2011, submitted). At present, farmers in the Netherlands are recommended to harvest silage maize at a DM content of 300 to 420 g/kg fresh matter. The current study

indicates that maize harvested at the lower end of this recommendation or the use of stay-green genotypes will result in higher C18:3n-3, total n-3 and increase in n-6:n-3 ratio in the milk fat of dairy cows.

- **MSc Animal Nutrition (2004-2007)**, Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan

Research: My MSc research-project was focused on the screening of 15 tannins-containing forage tree leaves as a crude protein supplement to the low quality diets of dairy goats. The nutrient composition, *in sacco* degradation kinetics and protein utilization of the tree leaves were evaluated. *Grewia oppositifolia* and *Ziziphus marutina* leaves showed promising results, and the potential of these leaves as a protein supplement to the low quality forages were tested in comparison with cottonseed cake in lactating Beetal goats (Khan et al., 2009), and growing lambs (Khan et al., 2011, submitted).

- **BSc Animal Sciences (200-2004)**, Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan


Awards and Honors

- **Overseas PhD Fellowship**, awarded by Higher Education Commission (HEC) Pakistan, on basis of international GRE score and academic performance (2007-2011).
- **Gold Medal**, awarded by Agricultural University Peshawar, Pakistan, for excellent academic performance and research project in MSc (2005-2007).
- **Gold Medal**, awarded by Agricultural University Peshawar, Pakistan, for excellent academic performance during BSc (2000-2004).
- PhD thesis chapters were evaluated as “**very good**” base on quality research and excellent publication record.

Peer Reviewed International Publications

- Khan, N.A., Habib, G., Ullah, G. (2009). Chemical composition, rumen degradability, protein utilization and lactation response to selected tree leaves as substitute of cottonseed cake in the diet of dairy goats. *Animal Feed Science and Technology* 154 (3-4) p. 160 – 168.
- Khan, N.A., Cone, J.W., Hendriks, W.H. (2009). Stability of fatty acids in grass and maize silages after exposure to air during the feed out period. *Animal Feed Science and Technology* 154 (3-4) p. 183 - 192.
- Khan, N.A., Cone, J.W., Fievez V., Hendriks, W.H. (2011). Stability of fatty acids during wilting of perennial ryegrass (*Lolium perenne* L.): effect of bruising and environmental conditions. *Journal of the Science of Food and Agriculture* 91 (9) p. 1659-1666.
- Khan, N.A., Cone, J.W., Pellikaan, W.F., Khan M.A., Struik P.C., Hendriks, W.H. (2011). Changes in fatty acid content and composition in silage maize during grain filling. *Journal of the Science of Food and Agriculture* 91 (6) p. 1041-1049.
- Khan, N.A., Tewoldebrahn T.A., Cone, J.W., Zom R.L.G., Hendriks, W.H. (2011). Effect of silage maize maturity and concentrate type on milk fatty acid composition of dairy cows. *Journal of Dairy Science* (**Accepted**).

Dr. Nazir Ahmad Khan

 Department of Animal Nutrition, Khyber Pakhtunkhwa Agricultural University Peshawar, 25130, Khyber Pakhtunkhwa, Pakistan. ☎00929216520 📠00923469085054 @ nak126@gmail.com

- Khan, N.A., Cone, J.W., Fievez V., Hendriks, W.H. (2011). Causes of variation in fatty acid content and composition in grass and maize silages. *Animal Feed Science and Technology* (**Accepted**).
- Khan, N.A., Habib, G., Ullah, G. (2011). Assessment of *Grewia Oppositifolia* leaves as feed supplement: nutrient composition, protein degradability, N metabolism and growth rate in sheep. *Tropical Animal Health and Production* (Submitted).

Contribution to International Conferences and Symposia

- Khan, N. A., Cone, J. W., Pellikaan, W. F., Fievez, V., Hendriks, W. H., 2008. Improving milk fatty acid profile of dairy cows through silages. In: proceedings of 33rd Animal Nutrition Research Forum, Wageningen, The Netherlands pp. 53–54.
- Khan, N. A., Cone, J. W. and Hendriks, W. H., 2009. Stability of fatty acids in grass and maize silages after exposure to air during the feed out period. In: proceedings of 60th Annual Meeting of the European Association for Animal Production, Barcelona, Spain, pp. 312.
- Khan, N. A., Cone, J. W., Hendriks, W.H., 2009. Stability of fatty acids in grass and maize silages after exposure to air during the feed out period. In: proceedings of 34th Animal Nutrition Research Forum, Melle, Belgium, pp. 13–14.
- Khan, N. A., Cone, J. W., Hendriks, W. H., 2009. Stability of fatty acids in grass and maize silages after exposure to air during the feed out period. In: proceedings of the 11th International Symposium of Ruminant Physiology, Clermont-Ferrand, France, pp 242–243.
- Khan, N. A., Cone, J. W., Fievez, V., Hendriks, W. H., 2011. Causes of variation in fatty acid content and composition in grass silages. In: proceedings of 36th Animal Nutrition Research Forum, Leuven, Belgium, pp. 73–74.
- Khan, N. A., Cone, J. W., Fievez, V., Hendriks, W. H., 2011. Causes of variation in fatty acid content and composition in grass silages. In: proceedings of 8th International Symposium on the Nutrition of Herbivores, Aberystwyth, UK.

Presentation and Communications Skills: Achievements

Oral Presentations

- Use of biomass: food, feed or fuel: stakeholder visions, in: Animal Science Seminar, Wageningen University, The Netherlands (2007).
- Improving milk fatty acid composition of dairy cows through grass and maize silage, in: 33rd Animal Nutrition Research Forum, Wageningen University, The Netherlands (2008).

- Stability of fatty acids in grass and maize silages after exposure to air during the feed out period, in: 34th Animal Nutrition Research Forum, Melle, Belgium (2009).
- Fatty acids content and composition in grass and maize silages, in: international Postgraduate Seminar Advance in Feed Evaluation Science, Wageningen, The Netherlands (2009).

Poster Presentations

- Stability of fatty acids in grass and maize silages after exposure to air during the feed out period, in: XI the International Symposium of Ruminant Physiology, Clermont-Ferrand, France (2009).
- Changes in fatty acid content and composition in silage maize during grain filling, in Animal Science Day, Wageningen, The Netherlands (2010).
- Causes of variation in fatty acid content and composition in grass silages, in: 36th Animal Nutrition Research Forum, Melle, Belgium, (2011).

Memberships

- Member Animal Science Associated PhD Council (2008-2009), Wageningen University, The Netherlands.
- Member of the Student Welfare Council (2001-2004), Agricultural University, Peshawar, Pakistan

Language Skills

- English, expert level more than 12 year experience
- Urdu, expert level more than 20 year experience

Extracurricular Activities

- Swimming, sports and fitness
- Travelling and photography
- Farming and animal production