Scientists develop crop for livestock in dry climates

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(PhysOrg.com) -- Scientists at the University of Liverpool are working with international partners to develop new forage crop for the hot and dry climate of regions such as Pakistan and Saudi Arabia.

Maintaining a continuous supply of quality food for livestock in extreme climate conditions is an increasing problem worldwide. Researchers at Liverpool, in collaboration with partners in Pakistan, Saudi Arabia and the Netherlands, are examining species that are already tolerant to heat and drought to develop genetic tools to help select the best varieties for animals living in desert regions.

In countries such as Saudi Arabia and Pakistan farmers feed their livestock by moving them between available wild grasslands, or cutting the food crop to take to the animals. Some plants, however, are better quality than others. There has been many programmes using genetics to

breed wild grasses into higher yielding forage crops for cool and wet climates like the UK, but there has not been much development in this area for hot and dry regions. As a result, farmers do not have access to the varieties of crop that could make a difference to the lives of their herd.

Researchers at Liverpool are using next generation DNA sequencing technology to obtain molecular genetic markers for easier selection of the best varieties of a grass called Panicum turgidum, also known as desert bunchgrass or taman. This plant is already used for livestock feed, but the new project will allow identification of the best varieties of the grass for hot and dry regions.

Dr. Anthony Hall, from the University's Institute of Integrative Biology, said: "Identifying key genetic traits that will produce better yield is commonly employed in the agricultural industry, but DNA technology and the expert knowledge of particular landscapes isn't always available in the same place. This is why our partnership is so significant; we can provide the genetic tools and DNA analysis at the University's Centre for Genome Research, whilst our colleagues in Pakistan, Saudi Arabia and the Netherlands have the ability to evaluate the physiology and performance of the plants where they are most needed."

Dr Meriel Jones, also from the University's Institute of Integrative Biology, said: "In some hot and dry areas of the world, crops have been grown using irrigation from fossil water or water diverted from rivers. This is often not sustainable, however, particularly as underground aquifers will not be replenished. Irrigation has an important role, but it is also essential to develop forage that can cope with the extremes of the climate over a long period of time."

The collaboration will also contribute to scientific understanding of why some plants are able to grow in hot, dry and saline conditions whilst

others are not, by analysing species that have evolved the ability to survive in extreme climates.

The research, funded by King Saud University, Saudi Arabia, is in partnership with the University of Agriculture, Pakistan and the University of Amsterdam, Netherlands.

Provided by University of Liverpool