

**Title:** Nutritional Value of Pearl Millet as Poultry Feed

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### *Summary*

Although the change of mix in Australian grain production is likely to be of considerable value to the grains industry, the combined effects of changes in production and rising domestic feed demand are likely to reduce Australia's ability to be a net exporter of feedgrains, particularly from eastern Australia. Consequently, it is most likely that Australia will have to import significant quantities of feedgrains which will in turn lead to higher prices.

It is therefore essential that research be undertaken to find alternative feed sources for livestock, especially poultry, to reduce feed cost increases and maintain an internationally competitive poultry industry.

The potential benefits from the application of existing knowledge and from further research in pearl millet are substantial for feed grain crops in warm-temperate agriculture. Varieties of pearl millet in the USA have shown that the grain is at least equivalent to maize and superior to sorghum in terms of yield and nutritional value. In Australia, pearl millet has been identified as a suitable alternative to sorghum in low rainfall and sandy areas.

As current Australian millet varieties have never been evaluated as a feed grain for poultry, the main objective of this project was to examine the potential of two millet varieties currently available in Australia (Katherine pearl millet and Siberian millet) as poultry feed ingredient.

Methodologies included performing chemical analyses on these two grains to measure the protein, fat, fibre, starch, phosphorus, calcium, gross energy and amino acid content. Feeding experiments were also conducted on broiler and layer birds to measure the metabolisable energy content and the digestibility of amino acids in the two millets. Finally an inclusion level experiment was conducted to determine the level of inclusion of the millets in the diets of layer birds for satisfactory performance.

The layer experiment showed that Katherine pearl millet could be incorporated in the diets without any adverse effect on layer performance. Since the millets contain high levels of fibre this could be a limiting factor, however the utilisation of fibre could be improved with the use of specific food enzymes. In addition, inclusion of millet into the diets of layer hens showed no effect on egg production, feed conversion, egg weight, egg mass, specific gravity and bird final body weight.

Since the Grains Research and Development Corporation is funding research on the development of a pearl millet feed grain industry for Australia, it is recommended that poultry nutritionists be involved in the screening of suitable cultivars. The interaction of plant breeders with poultry nutritionists will assist in selecting lines that have high nutritive values.