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## Potential Use of Agro-Industrial By-Products as Dairy Cattle Feed in Northern Thailand.

CHOKE MIKLED\*, UDO TER MEULEN\*\*, THERDCHAI VEARASILP\*\*\*

*\*Chiang Mai University, Department of Animal Science, Faculty of Agriculture*

*\*\*Goettingen University, Department of Tropical Animal Nutrition, Institute of Animal Physiology  
and Nutrition*

*\*\*\*Chiang Mai University, Department of Animal Science, Faculty of Agriculture*

### Abstract

Dairy cattle raising has long been practiced under smallholder systems for over four decades in Chiang Mai Province, Northern Thailand. Under integrated farming systems the farmers established pasture only on a small area less than 0.3 ha. Apart from using pastures agro-industrial by-products play very important roles as alternative feed resources for dairy cattle. The series of study were to investigate the potential use of agro-industrial by-products from the factories in the surrounding areas as dairy cattle feed. The chemical composition and nutritive values of the by-products were analyzed by conventional methods and in sacco nylon bag technique and Hohenhein gas test technique were also used. It was found that some of the by-products such as fresh soybean pod husk, passion fruit peel were relatively high in CP and energy. It could be directly used as sources of roughages or in the form of silage such as passion fruit peel silage and passion fruit peel +4 % rice bran silage. Some other by-products such as dry malt residue from the brewery and soy source residue from soy source factory were relatively high in CP contents so they would probably used as sources of protein up to 20–30 percent in the concentrate mixtures. The preliminary studies on using dry malt residue and soy sauce residue as sources of protein showed a tendency of higher milk production and could reduce the cost of feed up to more than 20 percent. It could be concluded that smallholder dairy systems in Chiang Mai areas are rely mainly on agro-industrial by-products as basal feed resources and established pasture to a lesser extent.

**Keywords:** Agro-industrial by products, dry malt residue, feed resources, fresh soybean pod husk, passion fruit peel, soy sauce residue