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Plant-derived ingredients as protein sources in aqua-feeds

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Abstract

As the human population continues to expand, its reliance on farmed fish production as an important source of protein will also increase. Aquaculture contributed ca. 40% to the total human food consumption of about 101 million metric tonnes in 2002. FAO estimates that aquaculture will dominate food fish supplies by the year 2030 and more than half of the fish consumed is likely to originate from this sector. This projected increase in aquaculture production would demand a concomitant increase in the production of aqua-feeds. The projected total production of aqua-feeds in the year 2010 is as high as 33 mmt against a production of about 17 mmt in the year 2001. The requirement of aquaculture feeds is likely to be further increased by the increasing trend of intensification of farmed production of omnivorous species in Asian countries, particularly China. Fishmeal is the most suitable source of protein in fish feeds. Environmental concerns, availability problems and high cost of fish meal have resulted in attempts at its replacement in fish feeds with alternative protein sources. Several plant derived protein sources such as soybean meal, cottonseed meal and canola meal are being used to replace fishmeal in aqua-feeds. Lack of essential amino acids, especially methionine, cystine, lysine and tryptophan, presence of antinutritional factors, lower palatability and problems with high fibre contents, especially in leaf meals, have been negative factors as far as inclusion of plant ingredients in fish feeds are concerned. The talk discusses these aspects and the importance of the development of feed ingredients from non-conventional plants whose production growth can cope up with the projected fast growth of the aqua-feed sector.

Keywords: Aqua-feeds, fish meal, plant derived protein sources, protein quality, antinutritional factors, non-conventional plants