Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
Resolving problems affecting the processing of dried marrowfat peas for fried foods:

Hard-seededness and cooking temperature and time

A thesis

submitted in partial fulfilment of the requirements

for the degree of

Masters of Food Technology

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ABSTRACT

The Midland Seed Ltd, a top agricultural seed producer in New Zealand, wishes to increase their level of technical knowledge regarding the processing of peas to assist with solving production problems. In this study, analyses were conducted to resolve if hard-seeded peas or the frying parameters caused the textural irregularities in fried marrowfat peas. Marrowfat peas (*pisum sativum* cv. Midichi and Midlea) from 16 different harvest locations and years (2014 to 2017) were subjected to tests such as hydration capacity, and sizing of peas were examined to ascertain how much hard-seeded peas were surfacing in a line batch and in different sizes (<6.7mm, 6.7-7.1 mm, 7.1 – 8.0 mm, and > 8.0mm) upon soaking (in different soaking times 12, 18 and 24 hours) and frying at 160°C for 12 minutes. Furthermore, frying conditions including, oil temperature, pea to oil ratio, were explored at a laboratory scale to obtain the most suitable frying parameters capable of producing fried marrowfat peas with consistent and highly acceptable organoleptic properties. It can be concluded from this study that the very low frequency of hard seeds found in marrowfat peas was not the cause of texture inconsistency generally. However, it was shown that cooling the oil to below 130°C, when peas were added to the oil, slowed temperature recovery of the oil and significantly increased pea hardness to unacceptable levels. Marrowfat peas fried at 160°C for 12 minutes, with a pea to oil ratio of between 1/20 and 1/40 resulted in peas consistently fried to a highly acceptable quality.
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