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1. INTRODUCTION

The mandate of the University of Nairobi is teaching, research, consultancy and outreach.

Potato processing research in the University of Nairobi is done in the Department of Food Science, Nutrition and Technology that has been in existence for about 45 years.

Potato processing research execution is mainly done by food science and technology as well as food safety and quality postgraduate students.

An appreciable quantity of research work on potato processing has been done over the years and its outcome exists in students theses/dissertations and published scientific papers.
2. SITUATION ANALYSIS

Adequate supply of fresh (ware) potato is essential for successful operation of processing enterprises. Abongô et al. (2010a) evaluated the characteristics of fresh (ware) potato traders in Nairobi and Nakuru towns, Kenya. They found that the potato varieties sold by most sellers were Cangi (42%) and Tigoni (34%). The average daily sales per trader was 200 kg.

Abongô et al. (2010b) studied the characteristics of the Kenyan potato crisps industry as well as the constraints in processing and marketing of potato crisps. They found that:

- the industry relied on one potato variety (Dutch Robyn).
- Constraints included raw potato price fluctuations, scarcity and poor quality of potatoes, and lack of facilities, skills and information on raw potato storage.

Miriti (2015) determined the quality characteristics (moisture content, oil content and colour) of French fries consumed in Nairobi. The oil content was 12.14 – 27.74% while the moisture content was 33.92 – 63.67%.

3. POTATO FLOUR PRODUCTION AND UTILIZATION

Kabira (1990) showed that it was technically and economically feasible to dry potato slices for flour production in a simple solar drier utilizing natural air flow that he designed and constructed. He demonstrated that this flour could be incorporated into common local foods, for example to reduce the quantity of wheat flour in bread and other baked or fried products.

4. PRODUCTION OF FRENCH FRIES (CHIPS)

Abong et al. (2009a) determined the influence of potato cultivar and stage of maturity on oil content of French fries (chips) made from eight Kenyan potato cultivars. The potato cultivar had a significant influence on oil uptake, with Dutch Robyn having the lowest oil uptake. Harvesting at 90 days after planting resulted in a significantly higher oil content than harvesting at 120 days after planting.
Abong’s et al. (2009b) compared the nutrient contents of French fries from fresh potatoes and those from frozen potato chips and concluded that processing from frozen potato chips does not adversely affect the nutritional content of French fries.

Evaluation of Kenyan potato cultivars by Abong’s et al. (2009c) for suitability for processing into fresh and frozen French fries established that five varieties (Tigoni, Desiree, Dutch Robyn, Kenya Karibu and Kenya Sifa) and clone 391691.96 were suitable for processing into French fries.

Wekesa (2014) studied the influence of diffused light seed storage (DLSPS) and production location on physicochemical characteristics and suitability of selected Kenyan potato varieties for processing into French fries. DLSPS and production location affected physicochemical characteristics and suitability for processing into French fries, DLSPS having a positive influence.

5. PRODUCTION OF POTATO CRISPS

Abong’s et al. (2010c) evaluated the suitability of 24 Kenyan potato cultivars (18 varieties and 6 clones) for some physicochemical properties and suitability for processing into crisps. Dutch Robyn, Tigoni and Kenya Baraka varieties and 4 clones were found suitable for processing into potato crisps.

Abong’s et al. (2010d) determined consumption patterns, diversity and characteristics of potato crisps in Nairobi. They found that potato crisps are mostly consumed by children, youth and women. With the exception of thickness, most brands had characteristics (colour, size, moisture content, salt and oil content) that conformed to the local crisps standards.

Abong’s et al. (2011a) evaluated the influence of frying temperature, packaging and storage temperature on ascorbic acid content of crisps from four potato cultivars. They found that low frying temperature, aluminium package and storage at temperatures below 30°C resulted in optimum retention of reduced ascorbic acid.

The effects of frying temperature and slice thickness on oil uptake and sensory quality of potato crisps processed from four Kenyan cultivars were studied by Abong’s et al. (2011b). They found that the oil content of potato crisps increased with decrease of slice thickness, frying temperature and fresh potato dry matter content.

Abong’s et al. (2011b) conducted research on the effect of frying temperature and slice thickness on texture, colour and organoleptic properties of crisps from four Kenyan potato cultivars. There was a significant increase in texture with increase in frying temperature and slice thickness. Colour scores significantly decreased with increase in slice thickness. Potato cultivar significantly influenced L*a*b* colour scores and sensory scores.
Wekesa (2014) determined the influence of diffused light seed storage (DLSPS) and production location on physico-chemical characteristics and suitability of selected Kenyan potato varieties and their suitability for processing into crisps, DLSPS having a positive influence.

6. CHEMICAL SAFETY OF FRENCH FRIES AND POTATO CRISP

Ogolla (2013) studied acrylamide contamination in commercial potato crisps in Kenya; acrylamide content, levels of intake and effect of processing parameters on the content of acrylamide in crisps from local cultivars. The levels and intake varied with the market brands and potato variety and significantly increased with frying temperature and slice thickness.

Miriti (2015) also determined the level of acrylamide in French fries consumed in Nairobi and found levels varying from non-detectable to 2309 µg/kg, these levels were much higher in low-end outlets than in high-end outlets.

Miriti (2015) also carried out quantitative risk assessment of exposure to acrylamide through consumption of French fries in Nairobi. For those who consume French fries from the low-end outlets, she found exposure levels that warrant investigation and implementation of the most suitable mitigation measures.

7. CONCLUDING REMARKS

Potato processing research in the University of Nairobi that started in the 1980s accelerated in the last decade. The research that has been completed has covered a number of areas including situation analysis, evaluation of potato varieties for suitability for processing, process development, product development, and product safety. New research is in progress and there is no doubt there is still considerable room for scientific investigations on potato processing and related issues.

8. REFERENCES


