

TECHNICAL SHEET

IMPROVED ABLO VAT STEAMER

Presentation of the CUVE ABLO steamer (Zannou et al, 2019)

CUVE-ABLO, with a production capacity of 300 Ablo pellets per 20-minute cooking session, has a built-in chimney for solid fuels (firewood, charcoal, briquette, etc.), a series of six perforated trays and a tank. CUVE-ABLO is presented as follows - a stainless steel tank of 1.5 mm thick, equipped with two handles, with a capacity of 70.7 liters of water, diameter 600 mm and Legal Deposit No. 11176 of 27/03/2019, 1st quarter, National Library (BN) of Benin-ISBN: 978-99919-75-84-9 6 of a height of 250 mm, in which is inserted the series of six trays perforated each; - each tray made of stainless steel sheet of 1 mm thick, equipped with two handles, with a bottom perforated with a hundred holes of 10 mm in diameter equidistant from 50 mm; the six trays inserted one inside the other, the sixth of which is closed by a cover held in place by three clips; the whole is inserted in the tank; - a cylindrical firebox fitted with two handles, made of black sheet metal 3 mm thick, 620 mm in diameter and 400 mm high, with three legs 100 mm high; this firebox is for solid fuels (firewood, coal, briquettes, etc.); it has a chimney 2.5 m high and is equipped with an air vent. It has a chimney of 2 m height, surrounded by a safety grid avoiding accidents of burns to the manipulators and closed by a lid; it allows a rational use of the fuel; - about fifty moulds in stainless steel sheet of 0,8 mm thickness, with about fifteen undulating patterns leaving imprints on the cooked pellets, of truncated cone shape, of 30 mm height, on a large base of 40 mm and a small base of 25 mm, is arranged on each tray.

Presentation of ABLO

Ablo, a slightly sweetened wet bread produced from the fermented dough of maize or rice, provides substantial income for women processors (Dossou et al., 2011; Bokossa et al., 2013 cited by Houssou et al, 2015). This pellet-shaped wet bread is widely consumed in Benin, especially in large cities (Dansou, 2013; Aboudou et al., 2014; Houssou et al., 2015). The main stages of its manufacture are as follows: -i- the production of corn or rice dough followed by its fermentation; -ii- the removal with a scoop of the fermented dough deposited in stainless steel sheet molds lined with vegetable leaves serving as packaging; -iii- the whole deposited in the cooker for its steaming to obtain wet bread balls called ablo.

Operation of the CUVE ABLO (Zannou et al, 2019)

To produce Ablo with CUVE-ABLO, proceed as follows: - fill the moulds lined with vegetable leaves with the fermented dough with a measuring spoon - place 50 moulds filled with the fermented dough made from corn or rice in each tray - insert the trays into each other - put 30 liters of water in the vat and close it with the lid, then bring it to a boil over the fire; - open the lid as soon as the water boils and insert the series of six trays in the vat and put the lid back on. After 20 minutes, all the Ablo balls are cooked. Legal Deposit N° 11176 of 27/03/2019, 1st quarter, Bibliothèque Nationale (BN) du Bénin-ISBN : 978-99919-75-84-9 7 - remove the trays one after the other from the vat wearing protective gloves. - Remove the cooked Ablo pellets from their molds and put them in the packaging for marketing.

Different components of the CUVE ABLO

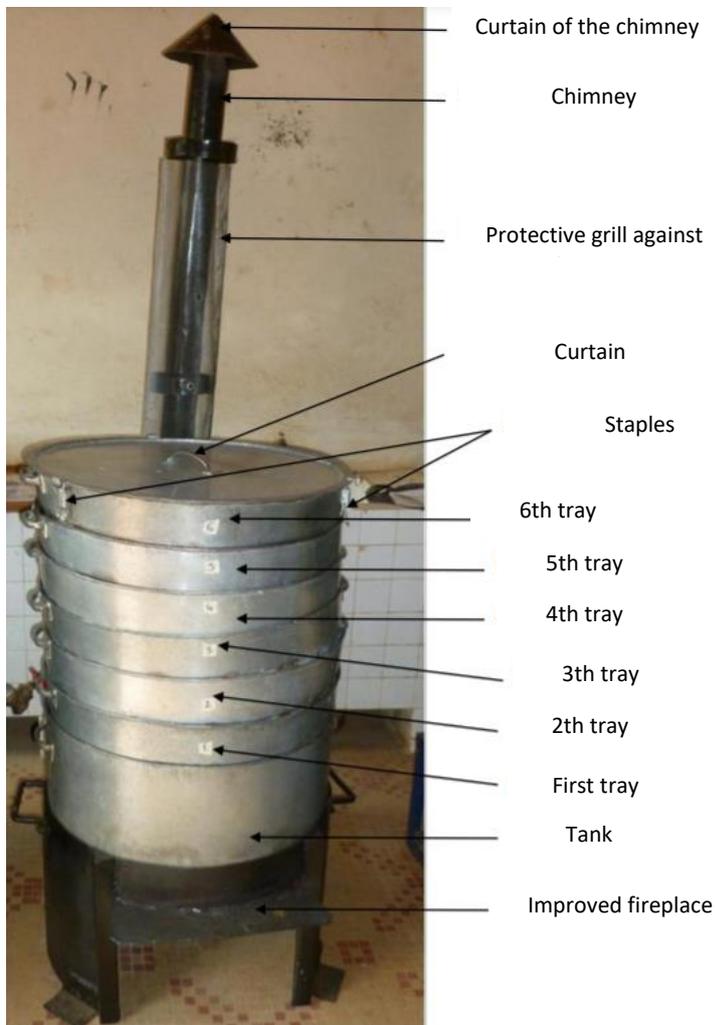


Figure 1: Different components of the CUVE ABLO (source : Houssou et al, 2015)

Characteristics of the technology

Ablo steamer; processing capacity: 300 Ablo pellets per sitting; steaming time: 20 min; construction materials: ordinary steel and stainless steel; number of operators: 2 persons.

Target of the technology

Medium-sized production units of Ablo.

Area of application of the technology

All of Benin and the sub-region

Stage of development or deployment of the technology

Some prototypes have been deposited with processors in southern Benin

Bibliographic references

Aboudou A., Akissoé N., Mestres C. et Hounhouigan D. J. (2014) : Optimisation de la fermentation en milieu semi-solide pour la production d'ablo, pain cuit à la vapeur d'Afrique de l'ouest. *Journal of Applied Biosciences* 82:7469– 7480 ISSN 1997–5902.

Bokossa I. Y., Banon J. B. S, Tchekessi C. K. C., Dossou-Yovo P., Adeoti K. et Assogba E. (2013) : Evaluation socio-économique de la production de Ablo, une pâte de maïs fermentée du Bénin. *Bulletin de la Recherche Agronomique du Bénin*. Numéro spécial.

Dansou V., Houssou A. P., Soumanou M. M. & Mensah G. A. (2015) : Utilisation de variétés locales de riz pour la production du Ablo au Bénin, *Annales des sciences Agronomiques*, Vol 19 spécial (2) 4ème partie ; 575-588pp.

Dossou J, Osseyie G, Kodjo F, Ahokpè K. et Odjo S.D.P. (2011) : Evaluation des procédés traditionnels de production du ablo, un pain humide cuit à la vapeur, au Bénin. *Int. J. Biol. Chem. Sci.* 5(3) : 953-967.

Houssou P. A. F., Ahoyo Adjovi N. R., Hounyèvou Klotoe A., Dansou V., Olou D. B., Ekpo K. J., Metohoué R. Z., Akissoé N., (2015) : Guide pratique d'utilisation du cuiseur à vapeur amélioré de Ablo (CUVEABLO) au Bénin. Fiche technique. Zannou (2019) : Guide pratique de fabrication de «CUVE-ABLO » ; Fiche technique ; PTAA ; MAEP ; INRAB ; 21p.

Web sites consulted

https://publications-chercheurs.inrab.org/uploads/fichiers/lots1/Fiches%20techniques/AHOYO/FT%2006_Guide%20pratique%20d'utilisation%20cuiseur%20vapeur%20Cuve_Ablo.pdf ; 06/10/2021 at 11h50

<https://publications-chercheurs.inrab.org/uploads/fichiers/recent/d1355c1633468d559891c3255984a9f7.pdf> ; 06/10/2021 at 12h51

Other references

Regional Center of Specialization on Maize ; HEADQUARTERS INSTITUTION: CENTRE NATIONAL DE RECHERCHE AGRONOMIQUE (INRAB); NSC MEMBER INSTITUTIONS: At present, the Maize NSC is led by CRA Sud, CRA Centre, CRA Nord, CRA Agonkanmey, FSA/UAC, FAST/UAC, REDAD, OPA (Producers and Processors), DICAF, IITA. Host country: Benin; Coordinator: Dr. Marcellin ALLAGBE; Email: allamarcel@hotmail.com ; Telephone: +229 95 40 62 38 / +229 67 15 26 25