Policy brief on frameworks for food standards and norms related to post–harvest management of staple grains in Benin

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Scaling-Up Post-Harvest Management of staple grains by Implementing Cost-Effective Policy Actions focused on Food standards/norms in Benin National Agricultural Policy Framework (PSRSA)

Five main lessons

1. Establishment of national food standards and norms faces major challenges in terms of policy harmonization and framework organization. In this respect, there is a need to develop complementarities and synergies between the different structures involved in the food safety at national and regional levels.

2. There is a need for effective appropriation of norms and food laws by actors of the added value chain. A substantial work has been done to address grains’ PHM in terms of storage structures to reduce post-harvest losses, but actions related to drafting and implementation of food standards/norms and regulations seem to be neglected. The implementation of existing norms and regulations by technicians and by farmers remains low due to institutional bottlenecks, financial constraints and low commitment of government to address PHM policy focused on food quality.

3. Political dialogue must be strengthen around the updating of the agricultural policy. For example create and animate online forum on PHM regulatory frameworks, standards and norms. In this respect, within the framework of the creation of the national fund for agricultural development (FNDA), a budget line should be devoted to PHM supporting activities regarding drafting, updating, diffusion and implementation of norms, standards and regulations.

4. Make standards and norms and regulations on PHM available in appropriate local languages for farmers and consumers. For this, PHM innovation platform would need to be set up in each region of the country with their national apex organisation located at the ABeNOR. The National Council for Food and Nutrition (CAN) should advocate for this while leading the implementation of PHM component of the PSRSA.

5. Strong government commitment through adequate budget allocation to applied PHM research focused on staple grains and to specialized extension services. In addition, the research findings should be exploited to draft adequate norms and standards regarding the real needs of smallholder
farmers and small and medium scale food enterprises specialized in grains commercialization and processing.

**Addressing the Post-Harvest Management of Staple grains in Benin and Sub-Saharan countries**

Grains, especially cereals and legumes form a significant food source in the Sub-Saharan region. It is estimated that more than 75% of the local cereal production is provided by small scale farmers (FAO, 2011). According to Gandonou et al (2010), the production of maize in Benin represented ¾ of staple grains and its consumption is estimated at about 96 kg/capita/year. Because, cereals form a major part of the staple food of the sub-Saharan region, it is important that food security and safety concerns be identified so that appropriate control acts can be taken to prevent post-harvest losses, hunger and human health hazards. It is also considered that food safety and quality management is becoming increasingly important at both national and international levels. Access to export markets may be limited where producers are not able to comply with international food safety requirements (for example FAO/WHO Codex) and those of importing countries. To date, the two major health concerns related to cereals in Africa are contamination with pesticide residues used in maize production and storage, and fungal toxins that contaminate maize during postharvest periods especially the aflatoxins (Kimatu et al., 2012).

The prime aim of all national food control systems is, or should be, the protection of the health of consumers within the country. In developing countries there is also a strong focus on the strengthening of the country’s ability to export food and hence to generate foreign exchange (Mutukumira and Jukes, 2003). In many developing countries including Benin, insufficient priority is given to the development of effective food safety control systems for both domestic and export markets. Little attention is paid to the respect of the food standards/norms related to post-harvest management of staple grains (findings of our survey).

Hereafter, the importance of food standards/norms is highlighted and the main constraints to the respect of norms in Benin are briefly reported on before the strategy for a policy document as well as other recommendations are provided.

**Scope of the Problem**

Sub-Saharan Africa countries in general and Benin in particular are big cereal importers (Gandonou et al., 2010; Honfoga et al., 2014); as such they need adequate and efficient food standards to handle the imports (Mutukumira and Jukes, 2003).
According to Global Local (2005), recent studies carried out in West African countries, such as Benin indicate chronic exposure of population groups and fetuses to dietary aflatoxins. Moreover, children exposed to aflatoxins may experience stunted growth or be chronically underweight and thus be more susceptible to infectious diseases in childhood and later life. In addition, aflatoxins are recognized as potential carcinogens, teratogens, mutagens, immune-suppressants and have oestrogenic effects in humans (Amaike and Keller, 2011).

Besides, the mediocre quality of certain local products harms their competitiveness with foreign products (Photo 1). In a context of liberalization, improving the quality of those local products can help increasing their competitiveness. If quality is not improved, there is a risk that consumers will turn increasingly to imported products. The establishment of quality standards and their compliance can also be a response to trade protection concerns, and they can be expressed as sector-entry regulation (Authorizations, supervision, operator quotas, etc.).

The importance of food standards/norms can therefore be easily understood since they facilitate the provision of safe products to consumers and increase local product competitiveness. In spite of their importance, food standards/norms are not respected as shown by our assessment findings in Benin (Anihouvi et al, 2014).

Major constraints include: i) lack of standards/norms and regulation related to PHM management of staple grains, ii) poor observance of existing standards/norms and regulation by farmers, (iii) mismatch of existing standards/norms and regulation with the needs of small producers, and iv) low integration of national and international research results into sectorial agricultural policies and strategies. Faced with such a situation, it is important to initiate actions for improvement.

Consequences of inadequate PHM system

- Losses of products after harvesting and food insecurity
- Poor quality of staple grains (attack by moulds and production of aflatoxin)
- Cases of food poisoning and other types of diseases
- Staple grains less competitive.

Photo 1: maize (a, b) and peanut (c) infested by moulds
What did we do?

A field investigation study was conducted in Benin to generate evidences to inform the policy and decision making process on how the lack of food standards and norms related to PHM of staple grains will affect food security in terms of food quality and competitiveness of staple grains at national and regional levels. This was followed by the sensibilization workshop and national policy dialogue on frameworks on food standards and norms in PHM.

What did we learn?

In Benin, agencies of standardization and regulation (Beninese Agency of Standardization and Quality Management “ABeNOR”, Executive Board of Quality Promotion and Packaging of Agricultural products “DPQC”, Executive Board of Food and Applied Nutrition "DANA", and Beninese Agency for Food Safety "ABSSA” are all under the Ministry of Agriculture, Livestock and Fisheries and tend to do the same work. This leads to an overlap of their fields of expertise with related internal conflicts. Thus, some structures happen to play the same role in the field. Attribution conflicts are therefore regular. While applying the existing laws/standards some are misinterpreted and others are not taken into account. This state of affairs leads to some controversial situations, difficult to handle by the regulation authorities. Executive orders sometimes are contradictory. Moreover, the denomination of leading structures is frequently changed and attributions or assignations are transferred from some tutoring bodies to other one. Some technical directors in charge of drafting of departmental order at the Ministry of Agriculture, Livestock and Fishery are more committed into private ends rather than into playing their role. Technical personnel in some key institutions are non-qualified due to the fact that administration is politicized; furthermore, structures are short of professional competence. Most of the time, texts (departmental order, laws, regulation, decree, ordinance) related to the institutional framework are not properly developed. Those that seem to be well known are not respected for two main reasons. The first is related to the fact that text designers appear to receive pressure from some donors seeking to entrench the various texts on standards of their home countries. The second reason is that, in quest of their own interests some political leaders do not comply with the texts. All the above mentioned situations lead to poor management of food norms and standards and consequently poor PHM of staple grains (Photos 2, 3, 4, 5 and 6). Post-Harvest Management (PHM) is therefore weakened in Benin due first of all to the poor management of institutional framework. In order to avoid losses occasioned by
the poor PHM, we need to improve the management within the institutional framework. In this respect, all the stakeholders have a role to play.
From the national dialogue, it appeared that to improve Benin institutional framework for the implementation of technical regulations in post-harvest management

- Firstly, text designers (standards and regulations drafters) should review the existing texts and take them into account while designing new ones. Besides, text designers must ensure that they design relevant texts, responding to specific problems of the stakeholders. In this respect, they should update some existing texts and may be overhaul others. For example, as regards to mycotoxins in staple grains, according to Benin decree n°362 (2007), any cereal should normally complied with the requirements prescribed in table 1 below before being authorized for human consumption. Storage and preservation of harvested maize in Benin is poorly managed, and storage insect pests and fungi are the main causes of losses (Adegbola et al. (2012). But at the same time the traditional protectants (leaf powder, grain powder, oil) and synthetic insecticides used by the farmers are not standardized or formalized in regulations to force their implementation. Furthermore, it has been demonstrated that the application of synthetic insecticides (mixture of 1.5 % Pirimiphos methyl and 0.05 % Deltamethrin) for the storage of cowpea was efficient but with 1.28% induced weight losses (Cherry et al., 2007), but since these findings are not implemented by farmers because of lack of regulations to force it use.

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Maximum content (ppm)</th>
<th>References</th>
</tr>
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<tbody>
<tr>
<td>Aflatoxin B1</td>
<td>2</td>
<td>Departmental ordinance n°362/maep/d-cab/sgm/drh/dp/sa , October 30th, 2007,</td>
</tr>
<tr>
<td>Aflatoxin (addition of B1, B2, G1+G2)</td>
<td>4</td>
<td>fixing the maximum contents for certain contaminants in the foodstuffs in Republic of Benin, published in JO n°9 May 1, 2008</td>
</tr>
<tr>
<td>Ochratoxin A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Deoxynivalenol</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Zearalenon</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Fumonisin (B1 + B2)</td>
<td>400</td>
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- Secondly, state leaders should avoid the frequent changes of structures denomination as well as tutoring bodies’ replacement. Those changes must be done only for relevant and well defined criteria. Technical structures responsible should be more committed into playing their role and avoid private ends. State leaders should appoint the right person at the correct position. Responsible technical personnel must be well-qualified in terms of inspection, control, laboratory analyses and drafting of norms and regulations.
- Thirdly, text designers must define proper policies to manage the texts they designed. They should computerize them and put them online for stakeholder interaction and better availability. State leaders should provide to the text designers, budget line for implementing good policies in terms of the way to archive the texts. Politicians should take into account the opinions of researchers, engineers, technicians and farmers. For example, grain conservation using neem concentrates has been developed by women in some villages. Efforts were made to disseminate bottled neem extracts, but feedback from users remained scanty. Adegbola et al. (2012) reported that in Benin, cowpea may be stored in the pod in traditional granaries or in grain facilities such as polyethylene bags, barrels treated with commercial or traditional protectants. Some of the traditional protectants include botanicals such as neem products (leaf powder, grain powder, oil), and powders from *Anacardium occidentale*, *Nioctiana tabacum*, and *Hyptis suaveolens* leaves, which have been found to be experimentally effective. Unfortunately those interesting research findings or experiences from farmers are not translated into norms and regulations to favour their diffusion and implementation in order to improve the storage and the quality of staple grains (Photo 7). In addition, politicians must avoid interfering with purely technical issues. In this respect, administration structures must be depoliticized. They should design new texts as well in order to fill the exiting gaps.

![Photo 7](image)

**Appropriation of norms and food laws by actors of the added value chain**

According to the findings of the survey, in Benin food standards/norms and food laws related to post-harvest management are not known by the actors of the grain value chain. This situation has resulted in the weak competitiveness of local products on the regional and international markets. Besides, at local level, foods that are not respecting safety norms are increasingly littering the markets. Some cases of food poisoning due to pesticide contamination or residues of pesticides are often observed in some regions of the country. To improve this situation, it is necessary to:
(a) **Involve all concerned actors in the development of the texts on norms and regulations**

The consultation of actors along the added value chain gives each of them the opportunity to express their views in the process of developing standards and regulations. This allows them to feel more involved and able to implement more easily the food standards/norms and regulations. Furthermore, ignorance of the various texts by concerned actors which is currently observed should be addressed.

(b) **Disseminate food standards/norms and regulation texts**

The dissemination of food norms/standards should help citizens to be informed about their existence. Dissemination should be done not only in French, but also in various local languages because the major part of the population of Benin is illiterate. Therefore, they are not able to read and listen and understand French or English. Media (TV, radio etc.) should be used for the dissemination of norms and texts after the key information included in these documents are translated into some of the local languages in order to reach more people.

(c) **Sustain the actors in the implementation of foods standards/norms and regulation texts**

Benin government could support the value chain actors in the implementation of food standards and compliance with regulations. This can be done: (i) through capacity building of extension agents, responsible for monitoring and enforcement, (ii) raising awareness of the various stakeholders on the benefits of the application of standards and regulation texts.

(d) **Reduce the costs of the normalization especially for small and medium enterprises (SME)**

Standards developed by standardization structures are not free and are sold at relatively high prices. Thus they are not accessible to all actors in the value chain. Therefore, very few people are aware of the existence of standards in order to put them into practice. The state could subsidize standards to facilitate access for producers and SME.

**Rights and obligations of consumers on food safety along the food chain**

It is not unusual to observe the marketing of unsafe foods on Beninese markets (rice, maize, peanut etc.), concurrency with good quality products which is unfair. Generally, these poor quality products are sold at a lower price. This leads the consumer to prefer these unsafe products to others with acceptable quality. The fundamental reason for this situation is the ignorance by consumers of food quality standards/norms, their rights to a healthy diet and the risks associated with the consumption of unsafe foods.
United Nations has dedicated 15 March as World Day of consumer rights. Indeed, the global issue of unhealthy diet is becoming a familiar issue. Bad food habits are causing more and higher mortality, averaging more than ten million deaths per year. Consequently, we can safely say that there is a clear violation of consumer rights with regard to food safety, which is manifested through food poisoning resulting from poor post-harvest management. This violation of consumer rights continues because of the ignorance of producers and consumers of the regulations and quality actions to implement. Faced with this troubling picture, it is urgent that authorities should care more than in the past to reduce the catastrophic effects on the consumer’s health. This implies a new gait for the public powers: to construct a quantitative assessment of the risks and to manage the uncertainty. A citizen Watch is important. It is also important to raise awareness and to sensitize consumers about their rights and obligations. Consumer associations should bind themselves to play fully their part.

Conclusions and recommendations

Post-harvest losses (PHLs) are largely compromising rural communities’ efforts to achieve a sustainable food security in SSA. Because of the place that cereals and legumes occupy among the staple foods in sub-Saharan Africa and in Benin, it is important to take actions to prevent food post-harvest losses and human health concerns such as contamination with pesticide residues used to control crop pests and storage, and fungal toxins that contaminate maize during pre and post-harvest periods. Recently, from 2010 to 2012, efforts have been undertaken to improve the system by creating new frameworks. Nevertheless, program initiatives on food standards related to PHM in Benin are still very weak or inexistent. Major constraints have been analysed in this brief, the main ones including. Recommendations from the dialogue held in Benin with the various stakeholders and the policy makers include:

- Develop complementarities and synergies between the different structures involved in the food safety;
- Strengthen political dialogue around the updating of the agricultural policy;
- Create and animate online forum on PHM regulatory frameworks;
- Make standards and texts on PHM available and in appropriate local languages for consumers;
- Strong government commitment through adequate budget allocation to applied PHM research and activities focused on norms, standards and regulations of staple grains and to specialized extension services.
REFERENCES


