

FOOD SECURITY AND EFFECTIVE FOOD STORAGE IN NIGERIA: THE PLACE OF GOVERNMENT INTERVENTION

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Abstract

The paper discusses the importance of agriculture to a people, its economy and its place at achieving food security for nations, Nigeria inclusive. Furthermore, it talked about food security and insecurity and its indices. It delved into prospects for increased agricultural production and how this can be achieved. Again, it discussed efforts that have been put in place by past Nigerian governments at meeting food need of Nigerians and making the country food secured. It maintained that food shortages in Nigeria are due not primarily to underproduction but agreed that more crops should be grown to meet production shortfall. The study adopt secondary source of data, and also the paper indicted that lack of adequate postharvest practices as the chief bane of food security in Nigeria and posits that more should be done to see that food are adequately stored after they are produced to nip wastages and scarcity in the bud. Finally, it recommended that public policy makers must as a matter of urgency see food as component of welfarism, and as such develop sufficient political will to achieve (i) increased food production; (ii) evolve food policy and (iii) eventually attain food security for all. And also agricultural support programmes, projects, and research institutes that have Nigerian Stored Products been put in place be spurred towards stepping up production and do, even much more at storage.

Keyword: Food security, intervention, effective storage

Introduction

Histories have shown that no nation has actually become great without developing its agriculture and its concomitant institutions (Isife and Albert, 2009). According to FAO (1992) globally there is enough food for all, but more than 780 million people are chronically undernourished worldwide. Nigeria has the highest number of undernourished people in West Africa (FAO, 2003), and according to Idachaba (2004) over 40% of Nigerians are food insecure. However, agriculture production was the mainstay of Nigerian economy and a source of food; in the colonial Nigeria, and briefly after independence agriculture played a dominant role in the nation's economy from the standpoint of adequate food for its population, rural employment, raw materials for its industries, source of public revenue, source of foreign exchange and internal market for agricultural related tools. According to Akande (1998) at independence agriculture was able to match the expectation ascribed to it as regards food security; agriculture contributed 67% of gross domestic product (GDP) in 1960/1961. Ogen (2003) posits that during the first ten years after independence Nigeria could be seen as an agricultural economy because agriculture was the engine of growth of its overall economy, during this time Nigeria was the world's second largest producer of cocoa, and highest producer and exporter of palm-kernel and palm-oil.

Concept of food security

This section of the paper takes off with the above premise as postulated by Babbie (1998). Without necessarily being definitional, we intend to conceptualize food security. This becomes imperative in the sense that it has assumed the status of an "essentially contested concept" (see, Gallie, 1962). Whereas, food security in its most basic form is defined as the access of all people to the food needed for a healthy life at

all times (FAO and WHO, 1992 cited in Eide, 1999). Though, in a simple language, a country is food-secure when majority of its population have access to food of adequate quantity and quality consistent with decent existence at all times (Reutlinger, 1985; Idachaba, 2004). What is implied in this definition is that food must be available to the people to an extent that will meet some acceptable level of nutritional standards in terms of a calorie, protein and minerals which the body needs; the possession of the means by the people to acquire (access) and reasonable continuity and consistency in its supply (Davies, 2009). In other words, food security can be taken to mean access by all people at all times to sufficient food for an active, health life (Reutlinger, 1985). Its central elements are: (a) the availability of food and (b) the possession of the ability for its acquisition (Adeoti, 1989). Food insecurity on the other hand represents lack of access to enough food and can be either chronic or temporary. In chronic food insecurity, which arises from a lack of resources to produce or acquire food, the diet is persistently inadequate (Adeoti, 1989).

It should be noted that availability of food alone does not seem sufficient to explain the attainment of food security in a country. Food can be available in a country because of ineffective agricultural policy; good harvest in a particular year or massive importation of food; or food handout (aid). Massive food import, particularly by developing countries, usually has negative effect on foreign reserves and causes budgetary hemorrhage (Davies, 2009), while food which is sometimes used as an economic instrument in the service of political goal of the donor countries (Ikoku, 1980), may even discourage food production activities in the recipient countries. Any country that needs massive food input or food aid before its citizens could feed would have only a short term solution to its food crisis but would not be food-secure for all times because the feeding of the people in that country will be dependent on the willingness and sometimes the ability of the external suppliers. Some countries may and do import food to offset production shocks and cover the short-fall in domestic food supplies (Lavy, 1992), encourage consumption of some food items or even assist the export trade of a particular target state with which they have bilateral trade agreements. Import of food by such countries may not necessarily be undertaken to solve any severe food shortage problem. To that extent, these countries are not food-insecure.

The inability of food supply to match up with demand is attributed to low productivity in agriculture leading to a shortfall in domestically produced food in Nigeria. To supplement the shortfall in domestic food production, Nigeria depends so much on food importation, the increase in food import. Percentage of food import increased from 1.6% in 1991 to 30.6% in 2011 and decreased to 17.8% in 2013 while food export also witnessed an improvement between 2012 and 2013. This may be attributed to different agricultural policies/schemes established by the government. But the gap between food import and food export is a clear indication that domestic agricultural production is not sufficient for the domestic food needs as well as raw materials for our industries.

Food security should not be seen only from the perspective of availability as earlier mentioned either in quantitative or qualitative terms. Food hygiene and safety should also be given important consideration in order to protect the health of the people. Food, for instance, may be available but the source from which the food is produced or processed may be unhygienic or that the chemical substances used to produce or preserve the food may constitute a health hazard. Health and safety consideration therefore becomes important in food production. For instance, given the likely general misuse of chemicals due to illiteracy and crass ignorance, particularly in developing

countries, some chemicals used for treating livestock diseases indiscriminate application of pesticides to treat crops diseases or control pest and other agricultural parasites, may be harmful to humans much later after the consumption of the agricultural products (Sinha, 1976). In essence, a country should be considered as food-secure when food is not only available in the quantity needed by the population consistent with decent living, but also when the consumption of the food should not pose any health hazard to the citizens (Davies, 2009).

The new thinking in the extant literature on food security not long ago is the nexus between the concept and human rights. On 10 December 1948, the United Nations General Assembly proclaimed the Universal Declaration of Human Rights and called it a common standard of achievement for all peoples and all nations. One of these rights is the right to adequate food and to be free from hunger, which is set out in the Universal Declaration (Article 25), in the Covenant on Economic, Social and Cultural Rights (Article 11), in the Convention in the Rights of the Child (Articles 24 and 27), and in numerous other instruments (see, Eide, 1999:2). International human rights law has thus firmly established that everyone has a right to adequate food and a fundamental right to be free from hunger. These rights are assumed to be universal, though clearly they are not -yet globally enjoyed. While there has been a long process to make these rights universal since 1948, much remains to be done. Eight hundred million human beings around the world suffer from severe malnutrition, for them, food security is non-existent. This represents a severe weakness in existing human rights policy (Eide, 1999). In the words of Jenkins and Scanlan (2001), food is the most basic of human needs and is central to the discussion of human rights and social development.

In the same vein, food security has been promoted by the United Nations as the most basic human need and as a central indicator of absolute poverty and physical well-being. Food security refers not only to an adequate aggregate supply of food, but also means that “all people at all times have both physical and economic access to basic food”. This requires not just enough food to go around. It requires that people have ready access to food UNDP, (1994) also cited in Jenkins and Scanlan, 2001), this is measured using two indicators: (1) food supply is measured as the mean daily per capita supply of calories and protein (FAO 1996) and (2) the child hunger rate is measured by the percentage of children under age 5 who are undernourished (UNDP, 1994). It is in this context that Clover (2003) averred that ‘no human right has been so frequently and spectacularly violated in recent times as the right to food’. Africa which reversed from being a key exporter of agricultural commodities into being a net importer, has the highest percentage of undernourished people and has shown less progress on reducing the prevalence of undernourishment in the last 30 years. Chronic food insecurity now affects some 28% of the population that is nearly 200 million people who are suffering from malnutrition. Acute food insecurity in 2013 is affecting 38 million people in Africa who are facing outright risk of famine with 24,000 dying from hunger daily. Famines are the most visible and extreme manifestation of acute food insecurity. Of the 39 countries worldwide that faced food emergencies at the beginning of 2013, 25 are found in Africa. It is vital to add that Sen (cited in Clover, 2003) has been credited with initiating the paradigm shift in the early 1980s that brought focus to the issue of access and entitlement to food. Food insecurity is no longer seen simply as a failure of agriculture to produce sufficient food at the national level, but instead as a failure of livelihoods to guarantee access to sufficient food at the household level. Today, most common definition begin with individual entitlement, though recognizing the complex inter-linkages between the individual, the household,

the community, the nation and the international community (see, Clover, 2003:7). In the 1996 Rome declaration on world food security, food security is defined as:

Food that is available at all times, to which all persons have means of access, there is nutritionally adequate in terms of quantity, quality and variety, and is acceptable within the given culture (cited in Clover, 2003:7).

Availability, access and affordability are all elements of food security complex issues that encompass a wide range of interrelated economic, social and political factors – internal and external which challenge Africa’s ability to address food security.

In a perceptive work, Menghestab Haile (2005) identified a number of factors that are responsible for the precarious food insecurity, in Africa. They are: low agricultural productivity, lack of agricultural policies, poor infrastructure and high – transport costs, lack of appropriate marketing strategies, frequent extreme weather events, high disease burden including HIV/AIDS, weak financial support systems, lack of safety net systems and political conflicts. The greatest challenge facing food security in Africa too for Smith(1998) is poverty. We now proceed to the evaluation of Nigeria’s food security situation.

Imperative of food security in Nigeria’s nascent democracy

In the preceding section, we have comprehensively addressed Nigeria’s agricultural policy along with the accompanying pitfalls. But in the extant literature, there is a wide difference between food policy and agricultural policy. While agricultural policy is targeted at an expanded food production, food policy has as its goal consideration for minimum multinational standards that will guarantee food security. While expansive agricultural policy is being pushed, there is also the need for a national food policy which seeks to assure all citizens access to food supply that is reasonably priced, relatively safe, adequate in quantity and nutrition (Claffey and Stucker, 1982, and Nyangito, 1999) opined that, Nigeria has no food policy perhaps because there is little appreciation of its contemporary role to agricultural system and practices to promote relative self-sufficiency in food production. To put the matter in perspective, a food policy properly formulated will encompass diet policy that shows for example, the relationship of good diet with good living as well as causal link between inappropriate or insufficient diet and major and common debilitating diseases. With the current knowledge of human nutrition, a food policy will be guided by what the human body requires and which particular food items provide it, all of which are pre-requisites for effective food choices by the people.

Furthermore, a food policy, unlike agricultural policy, should stipulate safety guideline for food production in the growing food industry, it will crystallize in food safety regulations such as the minimum requirements of basic nutrients that must be present in the food, the conditions under which the food is produced, its packaging and even the advertisement to promote the consumption of the food. Similarly, safety guidelines embedded in food policy should prohibit very harmful practices that may occur in the dairy industry and meat processing factories, as well as the use of carcinogenic food additives and food enhancer that are routinely used by bakers to preserve food or improve its taste (Davies, 2009). Pesticides, therapeutic drugs and chronically compounded feeds for crop production and improved nutrition for livestock

respectively are some of the inputs which expert's in agriculture regularly advise and encourage farmers to use while the government sometimes makes them available at subsidized price. But the manufacture, distribution and the application of these agrochemicals can hardly be effectively monitored or controlled without first formulating a good food policy that incorporates safety concerns (Oniang and Allotey, 1999). What this tantamount to is that the goal of food security will remain unattainable if all that matters to the government is simply making food available in the quantity desired by the people but its consumption is capable of causing the consumers all sorts of ailments, then that country cannot be listed among those that have achieved food security. It is against this background that National Food and Drug Administration and Control (NAFDAC) was established not long ago. However, much as this agency is working hard to be effective in preventing food poisoning and fake drugs, there are a number of reasons why it has not been able to achieve much viz:

- (a) Its emphasis in terms of its operations and its laboratory facilities has been in ridding the country of fake, substandard and expired drugs, manufactured in or imported into the country;
- (b) It is not proactive enough in beaming its search light in the production, sale and distribution of foods as it tirelessly add commendably does on fake and expired drugs; and
- (c) Its activities overlap with those of the Standard Organization of Nigeria (SON) another regulatory agency, empowered to set standard for all consumer products, including food, drugs, cosmetics, tires, cables etc. Thus, it is imperative that Nigeria gets a comprehensive food policy that focuses on quality rather than quantity. This may go a long way in boosting life expectancy.

Food security challenges in Nigeria and efforts at its eradication

Domestic food production is on the rise in Nigeria but it is not enough to meet the national food demand, worst still losses of produced crops are on the rise because processing and storage of crops are not adequately done. Nutritious food are limited by low income, and poverty; most nutrition food are often expensive, food intake and nutritional well-being of many households are of relatively low quantity, and are affected by their low economic status. Between 1975 and 1970 the percentage share of agriculture in total GDP was 54.8%, this however, dropped to 38.6% between 1971 and 1975, and reduced further to 21.1% 1976-1980 (Oriola, 2009), according to FAO (1997) households' food insecurity, under nutritional and micro nutrient deficiencies are found throughout Nigeria. Oriola (2009) also mentioned that since independence most Nigerian administration strive to attain food security; in the 1960s the country relied on agriculture to provide infrastructure and run services until the end of the first republic through the military regime of 1976, then it became sufficient agriculturally that crop seedlings were exported to other countries like Malaysia.

In 1973 the government embarked on the National Food Programme (NAFPP), this was a voluntary scheme launched in Nigeria to make the country self-sufficient and food secured. Operation Feed the Nation (OFN) was launched in 1976, it's sought to increase local food production and thereby reduce food imports, citizen were encouraged to cultivate empty plot of lands to boost agricultural production. The Agricultural Development Project (ADP) were initiated in the mid-1970s as Nigeria oil production revenues were on the rise, the project was designed to increase crop production through rural development, its focuses on improved technology, increased supplies of farming inputs, and improvement of infrastructure. The River Basin

Development Authorities (RBDA) were established to undertake the development of ground water resources and maintain dams, dykes, wells or boreholes, irrigation and drainage systems to boost agricultural production. National Seed Service (NSS) was established in 1975 and has the mandate of producing certified seeds as well as to arrange for seed certification. Furthermore, the National Seed Policy (NSP) was established in 1992 to provide guidelines for the development of seed subsector; it seeks to support varietal improvement, testing, registration, release, multiplication of released seed varieties, and improve the quality of seeds sold to farmers. Agricultural Credit Guarantee Scheme (ACGS) was established in 1977 to provide guarantee on loans granted by banks to farmers to boost agricultural production and agro-allied processing. In 1986 the Directorate of Food, and Rural Infrastructure (DFFRI) was established to influence the performance of agricultural related project in rural areas to boost food production. Green Revolution was launched in 1980 to ensure self-sufficiency in food production and introduce modern technology into the Nigerian agricultural sector. The Structural Adjustment Programme (SAP) was established in 1986, it aims at restructuring and diversifying the production base of the economy so as to reduce the over dependency on the oil sector and imports. Again, Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB) was established in the year 2000 and tasked basically with financing at both the micro and macro levels, it was mandated to meet the funding requirements of Nigerians in the agricultural sector to foster increase food production and subsequent food security. National Agricultural Development Fund (NADF) was established in 2002, the body was tasked to be involved in agricultural research and development, and it was designed to promote the development of the agricultural sector. The National Food Reserve Agency of Nigeria (NFRA) was established in 1977 and given the mandate to feed the Nigerian nation, export food to other countries, and produce processed agricultural products that would do well in international market. It was also saddled with the task of enlightening Nigerian farmers to produce sufficient food commodities in reserve for difficult times. Lastly, in 2005 the government assisted by the World Bank established the Fadama project, it was designed to enhance agricultural production and value addition to small holders and rural entrepreneurs in the states under the Fadama programme; the Fadama programme is to provide support for water management systems in low lying flood plains, so that farming can continue in the dry seasons. The project brought about the adoption of simple, low cost irrigation technologies that helped farmers achieve substantial rise in production of horticultural crops.

As part of effort to make Nigeria food secured the government established various agricultural research institutes. Institute for agricultural Research was established in 1924 to take care of genetic improvement and development of production and utilization technologies for sorghum, cowpea, cotton, groundnut, and sunflower and the improvement of farm based farming system in Nigeria. National Cereal Research Institute was established 1975 for the genetic improvement and production of soybean, rice, sugarcane, and sesame. The Lake Chad Research Institute was established in 1960 for the genetic improvement and development of production technologies for wheat, millet, and barley. National Root Crop Research

Institute was established in 1976 for the genetic improvement of yam, cassava, cocoyam, Irish and sweet potato and ginger. Cocoa Research Institute of Nigeria was established in 1964 for the genetic improvement of the production and local utilization of cocoa, cashew, kola nut, coffee and tea. National Institute for Oil palm Research was established in 1937 to research into the genetic improvement, production and

processing of oil palm, date palm coconut, and ornamental palms. Furthermore, in 1977 the government established the National Animal Production Research Institute and mandated it to carry out research into the production of food animals' species and forages. Interestingly, Nigeria food problems does not lie basically with food production per se, rather it lies with what is done to crops after their production; the food problem in Nigeria is due largely to the inability to preserve food surpluses during the short harvest periods rather than to low production. According to FAO (2001) when compared to other African countries, Nigeria has one of the highest per capital food output; it accounts for about 70% of world production of yams (Osunde, 2008) and 19% of global market share for cassava (Hillocks, 2002). According to Earth Trends (2003) Nigeria produces 8.41%, 1.09%, 2.85%, and 0.38% of world production of root and tubers, cereals, legumes, and meat respectively. Food losses have a great bearing on food availability and security (FAO, 2016), painted a dire picture of the situation when they posit that 20%-30%, 5%, 10%-20%, and 20%-67% of maize, rice, cassava, and yam are lost respectively at post-harvest-stored levels in Nasarawa State. Furthermore, they maintained that 35%-100%, 20%-80%, 20%-95%, 20%-50%, 70%, and 40%- 100% of plantain, banana, citrus, tomatoes, pineapple, and pawpaw are lost respectively at post-harvest levels.

Table 1: Estimate of losses in stored food products in Nigeria

Crop	Estimated % losses
Legume	30-40
Maize	20-30
Rice	5
Cassava	10-25
Yam tubers	20-67
Dried yam	5-10

Source: FAO. 2016

Table 2: Estimate of losses due to handling and storage of fruits and vegetables in Nigeria

Commodity	loss of experience in %
Plantain	35-100
Banana	20-80
Citrus	20-95
Tomatoes	20-50
Pineapple	0-70
Pawpaw	40-100

Source: FAO. 2016

Table 3: Value of Import and Export of Food in Nigeria % 1991 – 2013

Year	1991	1996	2001	2006	20011	2012	2013
Import % of merchandise	1.6	17.5	21.7	18.0	30.6	22.7	17.8
Export % of merchandise	1.5	1.7	0.0	0.1	1.8	5.3	5.1

Source WDI 2016

Depending so much on food importation is not good for any economy, it could only lead to vulnerability and in case of down turn in the economy as the country is experiencing recently, the country will be left with no option than to depend on food

aid. This situation further exposes the country to a chronic food insecurity condition. Since 2000, the prevalence of undernourishment in Nigeria has been decreasing even though the country did not achieve the millennium development goal of eradicating poverty and hunger in 2015. The downward trend in the prevalence of undernourishment maybe attributed to the improvement in food production during the period. The proportion of undernourished in total population decreased from 20.8 million in 1992 to 8.9 million in 2008 and increased again to 11.9 million in 2015. The quality of the diet of the nation shows an imbalance as a result of heavy dependence on root crops, tubers and cereals. Major contribution to availability of food does not come only from agricultural crops, fisheries, but forest products also have high nutritional content. Forest foods and aquatic animals are highly nutritious and can be used as supplement for food lacking essential vitamins and minerals. It is estimated that between 15% and 20% of animal protein consumed is derived from aquatic animals (FAO, et al., 2013). In Nigeria, forest foods constitute an important share of our diets such as nuts, wild animals and insects, but over dependence on wood as fuel for cooking and preserving food leads to deforestation thereby worsening the food availability situation in the country. DES derived from cereals, roots and tubers increased from 113% in 1992 to 123% in 2015 indicating an improvement in dietary supply. The minimum dietary energy requirement increased from 1710Kcal in 1992 to a paltry 1730Kcal in 2008 yet far less than 1800 Kcal (7500KJ) average minimum daily energy requirement per person as recommended by FAO, et al (2013). The current calories value can be attributed mainly to carbohydrate consumption. Other food values such as proteins, vitamins and minerals fall far below the component directory requirements.

From the foregoing, we can say categorically that more efforts should be channeled towards food storage in Nigeria rather than to production since available statistics show that an alarming percentage of crops that are produced in Nigeria are lost at one stage or the other at post-harvest– storage levels. The FAO (2011) corroborates this when it maintain that the issue of food losses is of high importance in the efforts to combat hunger and improve food security. The Nigerian Stored products Research Institute (NSPRI) was established in 1954 to conduct research in all aspects of post-harvest handling and storage of all agricultural crops, though it was initially mandated to focus its attention on export crops. At independence it was given the mandate to research also into local food crops via improvement and maintenance of quality of perishable crops. It has developed the use of the ventilated yam barn for the storage of yam tubers, techniques for preserving fresh cassava roots, development of waxes for the treatment of citrus, and techniques for the production of pineapple, mango, okra, tomato, and pepper etc. into more stable forms. Under its mandate of improvement and maintenance of quality of durable crops, it has developed systems for storing grains at domestic and commercial levels. It has developed techniques for maintenance of the quality of grains at warehouse level. Again, it has perfected the inert atmosphere techniques for grain storage. Under its mandate to improve and maintain the quality of tree crops it has developed techniques for checking mycotoxin and aflatoxin in cashew, cocoa, and also groundnut. It has developed techniques for storing and extending the shelf life of seed potato and ware potato by the use of diffuse light store; this can store seed and warehouse potato for up to 4-5months. It has developed the cassava stem storage structure for storage of cassava stem, and dryers for meat and fish products. It has the mandate to improve capacity building in post-harvest technology for artisans in the fabrication of packaging and storage structures, on this, it has advised on problems associated with stored products, it has provided extension services to NGOs on

construction and uses of different dryers and trained interested small farm holders on food preservation.

Conclusion and Recommendations

Food insecurity in Nigeria is not solely tied to underproduction (Nigeria produces 8.41%, 1.09%, and 2.85% of global production of roots and tubers, cereal, and legumes respectively) though there is need to step up production, this is in tune with the assertion of CBN (2001) that the rate of increased food production of 2.5% per annum does not measure up with the annual population growth of 2.8%. Stepping up production is, however, not a panacea or silver bullet for food insecurity in Nigeria, thus, an all-encompassing, holistic approach needs to be employed and advantages accruing to this synergy would be gotten. The increased production of rice, cassava, maize, and yam since the 1980s according to Shimada (1999) has been extra ordinarily high, also Hall (1968), Adeniyi (1997) and Agboola (1980) posit that self-sufficiency in food in Nigeria can only be achieved if all efforts at increasing crop production is matched with greater efforts at postharvest technology to save crops that are produced from spoilage and wastage. More so, Nigeria is one of the leading producers of plantain, okra, tomatoes, and the leading producer of yams and cassava but 30%-50% of these are lost due to poor post-harvest practices (Aworh, 2010). Hence, there should be maximum investment in storage technology, more production should be stimulated, and wastages that occur due to hoarding should be checked. Income affects household food security which in the long run affects national food security, for this reason, households' income should be raised (Omonona and Agoi, 2007). Dependency ratio (the proportion of households' members that are not working to those working) affects food security status of households and the nation at large and this should be looked into. Furthermore, people should be gainfully employed and this would impact positively on food security of the country. Ogwumike (2004) maintained that for Nigeria to be food secured it has to increase the production of some staple foods which can lift the nation out of food self-insufficiency and insecurity. National food security is about self-sufficiency, self-reliance, availability, affordability for all year round consumption and reserve, this could be achieved with effective linkages and synergies among food security programmes as discussed earlier, it is only when this is achieved that the benefit of establishing these would be achieved on sustainable basis (Oyebanji, 2005).

On a final note, the greatest recommendation of this paper to avoid recapitulation is that public policy makers must as a matter of urgency see food as component of welfarism and as such develop sufficient political will to achieve (i) increased food production; (ii) evolve food policy and (iii) eventually attain food security for all. And also agricultural support programmes and research institutes that have been put in place by the government should be spurred towards fully stepping up production and do much more in the quest to store what is produced to minimize post-harvest losses, this will in the long run lead to the attainment of the much desired household and national food security that we long for.

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