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An FAO e-mail conference on exploring the contribution of small farms to achieving food security and improved nutrition: The moderator's summary

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Executive Summary

On 10-23 October 2016, the Food and Agriculture Organization of the United Nations (FAO) hosted a moderated e-mail conference on "Exploring the contribution of small farms to achieving food security and improved nutrition".

This document provides a summary, prepared by the conference moderator, of the main issues discussed by the participants. Before the conference began, participants received the Background Document which, *inter alia*, described 15 questions to be addressed in the e-mail conference, organized under four main themes.

The first theme, about how to define small farms, received a lot of interest. Participants shared their knowledge and viewpoints about the appropriate farm size threshold (in hectares) or other additional criteria that might be used to define small farms. From the discussions it was very clear that there is no global definition of small farms and that any definition needs to be based on the regional/national realities. Definitions involving only the criterion of farm size have universal appeal as they are relatively easy to apply and allow simple comparisons across countries and regions. However, they

don't capture all the complexities of farming. Definitions involving use of additional criteria to farm size are more comprehensive, particularly those including indicators of the farm economic output, but data availability is often a limitation.

The second theme, about using a food systems approach to study the contribution of small farms to food security and nutrition, received little attention in the conference. This may suggest that little research work has been done on small farms using a food systems approach.

The third theme was about small farms and their role in food security and nutrition. Participants from several developing countries shared their experiences and underlined the important contribution that small farms make to food security and nutrition, producing abundant quantities of nutritious food which feed families and communities in the rural areas of their countries.

Regarding the contribution of small farms to the four dimensions of food security, participants highlighted the contribution to the food availability and food stability dimensions. For the latter, examples were provided where self-consumption from small farms had provided an important buffer in times of economic turbulence.

Regarding the participation of small farmers in the rural non-farm economy and whether it increased the contribution of small farms to food security and nutrition, there was agreement among participants that it did. The main reasons cited were that the additional income could be used to buy food for the family whenever needed and to ensure the running, or even upscaling, of the farm.

Participants also highlighted the wide diversity of crops and livestock produced by small farms and discussed whether production diversity led to more balanced, diversified household diets. There was no consensus on this, but responses suggested a positive association.

For the fourth theme, participants were asked about which of the three sustainability dimensions - environmental, social and economic – small farms contribute most to sustainable food security and nutrition. Most responses focused on the environmental dimension. They showed that small farmers may follow sustainable strategies in some situations but not others and indicated clearly the importance of an appropriate enabling environment to encourage small farmers to produce sustainably.

Participation in the conference was open to everyone and those who joined came from different parts of the world and different walks of life. There were 462 subscribers, of whom 59 (i.e. 13%) submitted at least one message. Of the 99 messages that were posted, 31% came from people living in Africa; 28% from Europe; 22% from Asia; 9% from Latin America and the Caribbean; 8% from North America and 1% from Oceania. The majority of messages (63%) were posted by people living in developing countries. They came from people living in 29 different countries. The greatest number were from people living in India, Nigeria, Mexico and Ghana, followed by Cameroon, Pakistan, Poland and the United Kingdom. Half of the messages came from people working in universities; 20% from people in research organizations; and roughly 10% each from people working in private companies, non-governmental organizations or other areas.

1. Introduction

FAO hosted this e-mail conference as one of its contributions to an EU-funded Horizon 2020 research project on “Small Farms, Small Food Businesses and Sustainable Food Security” (SALSA, www.salsa.uevora.pt/en/). In the SALSA project, FAO is collaborating with 16 European and African partners to develop a better understanding of the current and potential contribution of small farms and small food businesses to food security and nutrition in an increasingly globalized and uncertain world. The project began in April 2016 and runs for 48 months.

The aim of the FAO e-mail conference was to allow stakeholders worldwide to share their experiences and up-to-date knowledge regarding a number of issues related to the contribution of small farms to food security and nutrition.

The conference ran from 10 to 23 October 2016. A total of 462 people subscribed, of whom 59 (i.e. 13%) submitted at least one message. In their first message to the conference, participants were asked to briefly introduce themselves and they typically provided their full work address and a description of their professional background and current occupation. Based on this, an analysis was carried out by country, geographical area and work. Note, the analysis is based on where people are living and not where they come from originally.

Of the 99 messages that were posted, 31% came from people living in Africa; 28% from Europe; 22% from Asia; 9% from Latin America and the Caribbean; 8% from North America and 1% from Oceania. The majority (63%) were posted by people in developing countries.

The messages came from people living in 29 different countries. The greatest number came from people in India (15 messages), Nigeria (9), Mexico (7) and Ghana (6) followed by Cameroon, Pakistan, Poland and the United Kingdom (5 each) and by Canada, Portugal, Spain, Uganda and the United States of America (4 each).

Participants in the conference also came from a wide range of work environments. Of the 99 messages, 51% were from people working in universities; 20% from people in research centres or research organizations; 11% from people working for private companies; 8% from people in non-governmental organizations; 4% from people who are farmers and/or work for a farmer organization; 3% from people working for the government and 3% from a freelance journalist.

2. Summary of the main issues discussed in the conference

For people wishing to consult the original messages, it is recommended to visit http://www.fao.org/fileadmin/user_upload/research_extension/docs/smallfarmmessages.pdf (750 KB), where the messages have been formatted for easier reading (e.g. the moderator’s comments are in italics). Alternatively, they are available at <https://listserv.fao.org/cgi-bin/wa?A0=Small-farms-L> where the message archives are searchable, with a 'free text' search button on the right hand side of the webpage. The original messages can also be viewed in chronological order at: <https://listserv.fao.org/cgi-bin/wa?A1=ind1610&L=Small-farms-L&O=D&H=0&D=0&T=1>

Messages were numbered from 1 to 99 in order of posting to allow easy cross-referencing during the conference. Some of the individual messages are referred to in this document, where the number of the message is provided within brackets after the author’s surname. All of the messages posted during the conference can be read in their entirety using the web links provided above.

Before the conference began, the moderator sent the participants the Background Document (Ruane and Knickel, 2016, <http://www.fao.org/3/a-bp488e.pdf>). The document provided a brief overview of some key issues regarding food security and nutrition and small farms. Section 3 of the document also described the 15 questions that participants were asked to address in the e-mail conference. The questions were organized in groups addressing four main themes.

The first group included three questions related to the theme of defining small farms - such as the appropriate farm size threshold or other additional criteria that might be used to define small farms. The second group included three questions about studying the contribution of small farms to food security and nutrition using a food systems approach. The third group included seven questions about the theme of small farms and their role in food security and nutrition - looking at issues such as the importance of small farms for food security and nutrition and the four dimensions of food security; the impact of the rural non-farm economy on the contribution of small farms to food security and nutrition; and production diversification in small farms and household diets. The fourth group included two questions focusing on the theme of sustainability - about how small farms can contribute to food security and nutrition in a sustainable way.

In this document, the goal is to provide a brief synthesis of the main issues that were discussed under the four main themes. Some questions in the Background Document received little attention in the conference and so are not covered here.

2.1 Defining small farms

The Background Document noted that there is no universally accepted definition for a small farm (or a smallholder), although the most common criterion used for this purpose is farmland area and that, ideally, additional criteria would be used, such as the number of people working part- or full-time on the farm; the number of commodities produced and degree of specialization; and farm income or sales.

The questions regarding the appropriate farm size (ha) threshold to use for defining small farms (Question 3.1.1 in the Background Document) or the additional criteria that could be used for this purpose (Question 3.1.2) were eagerly discussed by participants.

The exchanges made it very clear that there is no global definition of small farms and that any definition needs to be based on the regional/national realities (see e.g. Yeboah, 44; Chander, 46). Definitions involving only the criterion of farm size have universal appeal as they are relatively easy to apply and allow simple comparisons across countries and world regions. However, they don't capture all the complexities of farming. Definitions involving use of additional criteria to farm size are more comprehensive, particularly those including indicators of the farm economic output, but data availability is often a limitation.

2.1.1 Farm size (ha)

Regarding farm size, a threshold of about 2 hectares was considered appropriate by several participants in developing countries (e.g. Edewor, 77; Olusegun, 93). For example, the classification of farm sizes from the Government of India states that farms are marginal, small, semi-medium, medium or large if they have <1 ha, 1-2 ha, 2-4 ha, 4-10 ha or >10 ha of land respectively (Jangid, 66; Onima, 70). Gausi (73), from Malawi, thought this classifications gave a "clear, straightforward and encompassing" answer to the threshold to use for small farms. Jangid (66) also noted that the number of small farms was increasing in India, where the average farm size had fallen from 2.28 ha in 1970-71 to 1.15 ha in 2010-11.

Other participants mentioned a slightly higher threshold for small farms – up to 6 ha in southern Africa (Nkomboni, 23) and 5 ha in Nigeria (Peter-Onoh, 90; Igbine, 98). Farm sizes vary around the world. For example, average farms in northern Finland have less than 10 ha of arable land and about 80 ha of forest (Raheem, 55) and 46 ha in Ireland (Murtagh, 81). Soybean farms in the Argentinian Pampas are small if under 100 ha (Gonnella, 91).

2.1.2 Additional criteria to farm size

The limitations of using farm size alone as a criteria to define small farms were described in the Background Document and also by some participants (e.g. Ortiz-Miranda, 53; Chander, 56). For example, Qadir (32, 39) highlighted the importance of irrigation and market access for the financial well-being of the farmer and argued that the definition of farm size should include these two factors as well as farm size. For example, if the threshold for a small farm was 10-20 ha in rainfed areas, it might be 1-5 ha in irrigated areas.

Additional criteria to farm size that were proposed included access to operational resources such as power tillers (Tinsley, 13); the quantity of crop or livestock outputs (Shaibu-Salami, 45); irrigation infrastructure (Chander, 34; Qadir, 39); the type of farm, e.g. crop (low- or high-value), livestock or horticulture (Yeboah, 44; Murtagh, 81; Gonnella, 91); the type of farmland, e.g. desert or fertile (Chander, 56); as well as production system (commercial or subsistence); amount of capital; type of technology used; and level of market integration (Vercillo, 36).

Vercillo (36) also noted that a lot of basic demographic data and evidence is lacking about who the smallholders actually are and that policies and programmes targeting them need to ensure they are not missing them or making it worse for particular kinds of smallholders. Redman (48) supported these comments and suggested that it implies the need to work with structured “typologies of small farmers” rather than just “definitions”. Serraj (72) followed up on this and provided some references to recent Consultative Group on International Agricultural Research (CGIAR) work on the issue of typologies.

To attempt to go beyond the farm size criterion and to include productive assets and natural resources, Ortiz-Miranda (53) supported the suggestion by Czyzewski (22, 33) to use a measure of the economic dimension of the agricultural activity as the criterion for defining small farms. Czyzewski (33) proposed that standard output (SO), i.e. the average monetary value of the agricultural output at farmgate prices of each agricultural product (crop or livestock) in a given region, be used for this purpose. Qadir (39) argued that the SO approach might be suitable for Europe but not in his country, Pakistan, or other developing countries, where the farming community might be less open to sharing their economic data.

The potential challenges of defining small farms at the grassroots level were illustrated by Vercillo (36, 37) who described the practical approach she used (beginning with qualitative participatory methods) to study small farms in northern Ghana. For example, her work indicated that some farmers did not consider production of livestock or certain foods as farming.

Tisenkopfs (87) also described the practical case of Latvia, where there is no ‘official definition’ of small farms but policy-makers need a definition of small farms for the government support programme for small farms. Quantifiable criteria are available (farm SO, farm size and employment, expressed in agricultural labour units) but the aim was to develop a more holistic definition of small farms in a project carried out in 2014-2015. At the end, an extended definition of small farms was proposed which included additional criteria to the economic ones, like: family labour; family land ownership; prosperity; well-being; resilience; knowledge and learning. He said that stakeholders appreciated these qualitative criteria although they felt that further clarification and discussion was needed. He concluded: “This experience suggests that definition and criteria of small farms is an object of multiparty discussion and agreement in a given national context and they depend on the vision of small farms’ role in rural development and agri-food systems”.

Not everyone was in favour of using additional criteria. Gausi (73) liked the farm size criteria and did not agree with using other criteria to define small farms, arguing: “If further classifications are included in this definition, such as crops grown, livestock kept, income from sale of crops/livestock, estate farming, irrigation farming, farm mechanization etc., the definition will become complicated and leave out some ‘small farms’ that may not fall under any of these classifications”. Because of issues like productivity per ha, Chander (56) argued that classifying farmers solely on farm size seemed unjustified but it was commonly accepted, “probably for the want of a valid method”.

2.2 Small farms within a food system

There was relatively little discussion on this theme in the conference, which may suggest that little research work has been done on small farms using a food systems approach.

One of the major outputs of the SALSA project will be an in-depth analysis of the contribution of small farms (and small food businesses) to food security and nutrition in 30 different geographical regions in Europe and Africa using the food systems approach. Such an analysis will be difficult because of the complexities of food value chains (particularly involving small farms which may use both formal and informal networks) for different farm products. For example, some farm inputs (fertilizers, feed etc.) might originate outside the region and some farm outputs (both primary and processed) might be consumed outside the region. To allow discussion on such issues, three questions on the theme of small farms within a food system were included in the Background Document.

Knickel (51) described an approach that could be used in the SALSA project to assess the relative importance of small farms in quantitative terms (as well as providing a qualitative description) in 25 European and 5 African regions. Through this approach, he suggested that it provided the “opportunity to illustrate the diversity in situations and possibly identify patterns, commonalities and differences. And, maybe more importantly, it might also show that small farms do actually play a very significant, sometimes underestimated role in many African and European regions - also in quantitative terms”.

Sutherland (49) described the case of small farmers (crofters) in Scotland who normally raise beef and sheep in an extensive production system. They typically work part time in other jobs and are subsidized by the government. There is very little local meat processing – abattoirs can often be several hundred miles away. They tend to buy their food in supermarkets. She wondered how the boundaries of this regional food system might be best drawn - for example, whether they should include the supermarkets or be extended to include the abattoirs.

Nkomboni (62) described the many advantages of using the food systems approach, such as making it possible to: identify the quantities and food produced within a farming system; follow pathways of food/product movement to disposal; and use value chain analysis tools to highlight flow of goods and inputs, actors involved and their competitiveness. He suggested that its only disadvantage was that it might be less accurate for small farm systems (which are more dynamic) than for commercial farm systems (which are less diverse).

2.3 Small farms and their role in food security and nutrition

The Background Document gave a description of food security and its four dimensions as well as a brief global overview of food security and nutrition. There were lots of responses to questions about the role of small farms in food security and nutrition.

2.3.1 How important is the contribution of small farms to food security and nutrition? Why?

Participants from several developing countries, from Bangladesh and India to Cameroon and Uganda, shared their experiences and underlined the importance of the contribution by small farms to food security and nutrition (Alam, 5; Oyath, 15; Pius, 24; Igbine, 27; Abdullahi, 28; Nkomboni, 35; Edewor, 77; Benjamin, 82; Njieassam, 94). As Joseph-Adekunle and Atungwu (60) put it, most farmers in Nigeria have only small farms but “yet they are the hands that feed the nation - not the large ones”.

The main reason given by most participants for the importance of small farms to food security and nutrition was that they produced abundant quantities of nutritious food which fed families and communities in the rural areas of their countries. Surpluses could also be sold providing an important source of income. Some also argued that they produced better quality nutritious food because fewer chemicals were used (Chander, 16; Gonnella, 91).

While their contribution to food security and nutrition was recognized, some participants also noted that smallholder farmers themselves can also suffer from food insecurity. Poverty among farmers and their lack of awareness about the importance of a balanced nutritious diet were cited as important causes (Qadir, 2 and 20; Ngum, 21; Pius, 29; Kagnew, 31).

Glover (17) and Vercillo (36) also argued that certain commonly-cited statistics related to the contribution of small farms and smallholders to food security (e.g. that smallholders produce about 70% of the world's food) seemed to lack reliable sources and that there was a need to gather better data and evidence around such key issues.

2.3.2 How do small farms contribute to each of the dimensions of food security?

As outlined in the Background Document, there are four dimensions of food security, namely the availability of food; access to food; utilization of food; and food stability. One of the 15 questions that participants were asked to address was about the specific contribution of small farms to the different dimensions of food security. From the responses to this question, the contribution of small farms to the food availability and food stability dimensions seemed of most importance.

Regarding food availability, as noted by participants referenced in Section 2.3.1 and by Ngum (4), Abdullahi (28) and Sumane (99), small farms make large quantities of diverse food products available for consumption.

Regarding food stability (i.e. that to be food secure, a population, household or individual should have adequate food at all times and should not face hunger as a consequence of sudden shocks, such as an economic or climatic crisis, or cyclical events), Ngum (4) noted that small farms can keep a share of their harvest to feed the family in case of such shocks and that during the 2008 food riots in Cameroon, the rural community of small farms was relatively unaffected. Andersson (19) agreed with Ngum (4), arguing that small farms are an important safety net against economic fluctuations and trade limitations. In a similar vein, Karanikolas (95) noted that during the Greek economic crisis, they had observed that small farms using part of their produce for self-consumption had reduced the poverty rates by several percentage points.

Sumane (99) also noted that small farms contribute to the dimension of food access, as they make food accessible in diverse ways, including conventional food chains; alternative local short food chains; and informal networks (to extended family, friends or neighbours). As noted by Ngum (4) and others, income from sale of surplus produce (or on-farm processed foods) can be used to access food for the farmer's family.

2.3.3 Does the participation of small farmers in the rural non-farm economy increase the contribution of small farms to food security and nutrition?

As noted in the Background Document, many small farmers participate in the rural non-farm economy and work to generate additional income. The question that participants were asked was whether this increased the contribution of small farms to food security and nutrition.

There was broad consensus among participants that it did. One of the main reasons cited was that the additional income generated could be used to buy food whenever needed by the farming family (Vargas, 26; Gogo, 75). Adukpo (89), looking at a similar issue (i.e. farmers who cultivate non-food crops such as cotton, kola nuts and rubber trees), came to the same conclusion.

Another reason cited was that the additional income would enable the smallholders to continue running and investing in the farm. Vargas (26) said that small farmers in the Mennonite community in Mexico work non-farm 'as a common practice' and that the money earned gives them the chance to continue their farming. Raheem (55) noted the difficulties faced by small farms in northern Finland

and the ongoing discussions to give them new opportunities by linking them to tourism which is the main source of revenue in the region. Benjamin (82), from Nigeria, said that when prices and farm incomes fall, smallholders diversified their labour and resources into non-farm activities. Similarly, Karanikolas (95), from Greece, said that one of the reasons why small farms manage to be resilient for long time periods is “flexible combinations of family and hired labor on-farm and of family labor both on- and off-farm. Thus, whenever their farm income is not sufficient to support the standard of living of the farm family (including access to food), they use off-farm sources of income”. Edewor (77) and Adukpo (89) also argued that the income earned from non-farm activities could be used to boost the farm’s productivity, e.g. by hiring labour or constructing storage facilities.

Justice (88) supported the comments about the benefits of growth in the non-farm sector for smallholders. Arguing that there was an increasing body of evidence that a strong and scale-appropriate agricultural mechanization process preceded growth in the rural non-farm sector in many Asian countries, he highlighted the importance of small-scale machinery.

2.3.4 The relationship between production diversity in small farms and healthy, balanced, diversified diets

There were many messages about diversity in small farm production systems and the relationship between production diversity and household diets.

The diversity of production systems used by small farms was described by several participants (e.g. Chander, 46; Murtagh, 81; Peter-Onoh, 90; Njieassam, 94). For example, Muralidharan (57) described the ‘multi-tiered home garden systems’ that are typical of monsoonal climates on the western coast of India and other parts of the tropics, often combining high crop diversity with a high level of productivity. Nkomboni (35) noted the broad range of crops and livestock produced by small farms in southern Africa, contributing to the maintenance of genetic resources for food and agriculture. Adukpo (96) argued that mixed cropping systems used in small farms in many developing countries preserve biodiversity, especially indigenous plant species that are rich in micronutrients.

There was some discussion about whether this diversity led to balanced nutritious diets. Nkomboni (35) argued that production of diverse crops (from cereals to pulses) “ensures near balanced meals at village and national level”. Poveda (38) maintained that diversification within the family farm would contribute to diversified, healthy diets because of self-consumption and sale of the remaining harvested crops. Ortiz-Miranda (54) disagreed with this, arguing that there seemed to be significant scientific evidence showing little impact of production diversity of smallholders’ farms on the improvement of household nutrition status. He suggested instead that the relationship between market-oriented production (diversified or not) and nutrition seemed more significant, providing some references to back his case.

Gurri (59), supported by Poveda (71), disagreed with Ortiz-Miranda (54) and argued instead that the references he provided showed positive associations between farm diversity and food diversity and even food security. Chappell’s (67) analysis of the relationship between diversity of farm production and household nutrition was that “there is insufficient evidence to make conclusive statements either way”. He argued, however, that there was certainly qualitative evidence of a relationship, providing several references, and concluded that most of the evidence seemed to point to a positive association.

The important role that government policies can play in this area was also underlined. Chander (63) referred to a study indicating that small farmers in India use a larger proportion of their land for staples (rice and wheat) than other farmers (medium or large) and use a lower proportion of their land to protein-rich pulses. He concluded that this indicates that the concern of policy-makers in India has always been more on food security, especially at the level of small scale farmers, than nutritional security. He noted that falling protein intake in the diets of rural Indians had serious health implications and urged that nutrition-sensitive policies should be promoted. In a similar vein, Afonso (74) argued that policy measures to support social food programmes should include fruits and

vegetables from local small farms rather than relying on an unbalanced diet based on staple foods which neglected the issue of micronutrient deficiencies.

Poveda (38), furthermore, argued that policies introduced to encourage crop diversification should not simply result in farmers replacing one crop with another one (or one cultivar by another), as had happened in Colombia, but should increase the total diversity on the farm. If advocating diversification of crops, Tinsley (30) underlined that it was importance to ensure that the farmers had the labour and other operational resources that would allow them to do so.

2.4 Sustainability

As written in the Background Document, because of the recently-adopted Sustainable Development Goals, sustainability development with its three dimensions - environmental, social and economic – is now central in the international development agenda.

2.4.1 Of the three sustainability dimensions, which one do small farms contribute most to sustainable food security and nutrition?

There were several responses to this question, most of them focusing on the environmental dimension.

Aduol-Sigar (79) said that small farms do/would contribute in equal measures to the three dimensions and that all three must go hand in hand to realize sustainable development. Olusegun (93), instead, said that small farms contribute more to sustainability in the environmental and social dimensions than the economic dimension, because “in economics they fall short of expectations and often cannot go beyond the local market”. Afonso (76) cited examples from Ecuador and Spain where she said farmers’ practices were contributing to food security in a sustainable way involving the three dimensions.

Njieassam (94) suggested that their lack of resources meant that small farmers are more environmentally sustainable as they tend to recycle organic waste [also noted by Chander (16) and Pius (24)] and other natural resources and thereby preserve the environment.

Czyzewski (7) noted it was a tricky question but that in his country, Poland, the answer was not the environmental dimension. This conclusion was based on research he had carried out to examine agricultural greenhouse gas (GHG) emission models for panels of countries on different development levels. His results indicated that increases in agricultural income in lower GDP or medium GDP (e.g. Poland) countries translate into higher GHG emissions. Only in high GDP countries did higher incomes result in lower GHG emissions from agriculture. The reason was that the medium GDP countries want to participate in economic growth but environmentally friendly technology is still too expensive so they use old machinery, obsolete fertilizers and other means to increase production which are not good for the environment and which are no longer used in the richest countries (Czyzewski, 7, 52, 65).

Gurri (42, 58, 69) responded to Czyzewski (7, 52, 65), arguing that there were many cases where small farmers had led the battle against excessive use of fertilizers and pesticides and in favour of sustainable practices. He argued that when smallholders start practicing agriculture as a business they increase their use of fertilizers, pesticides, reduce biodiversity and become less sustainable. The solution was to avoid turning them into commercial agriculturalists and, instead, to develop policies “to encourage food production and increase household income without transforming their survival strategy into a business” (Gurri, 69).

Chappell (68) agreed there were ample examples where small farmers had fought against the excessive use of fertilizers and pesticides, naming some of the organizations involved. He noted, however, that from the literature “there will be examples of small farmers with many different attitudes, from pro-fertilizers and pesticides to vehemently against. One can easily find both”.

ABBREVIATIONS: FAO = Food and Agriculture Organization of the United Nations; GDP = Gross domestic product; GHG = Greenhouse gas; SALSA = Small Farms, Small Food Businesses and Sustainable Food Security (a Horizon 2020 research project); SO = Standard output.

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