Pulses Are Praised For Their Health, Environmental And Economic Benefits.

AKSHITA MASIH, Dr Sanjay Kumar

RESEARCH SCHOLAR, SHUATS-Assistant Professor,

NAINI,PRAYAGRAJ
Advisor.

Abstract

-Worldwide, the consumption of pulses has declined due to changing dietary patterns and thefore the inconvertible fact that production has not been ready to increase with population growth . Yet the plan to supply the world population with nutritious, healthy food that is produced in a sustainable manner, encouraging the production and consumption of pulses is crucial because of their many beneficial characteristics in terms of its nutritional value and its impact on environment. Due to of nutritional aspects, pulses have been an important source of plant-based protein in developing countries, where access to animal-based proteins is often lacking. In particular in African and Asian countries usually cereal-based diets are often complemented very well by the consumption of pulses . This is especially the case for children, who are often fed watery, cereal-based porridges that lack the nutrients needed for growth . Worldwide, the very fact that pulses have a low glycemic index and a low fat content could make them a major player in the fight against non-communicable diseases like diabetes, cardiovascular diseases and obesity . From an agro-ecological perspective, and particularly within the context of climate change, the advantage of pulses are substantial as well. Pulses of broad genetic diversity allows for the development of high-yielding varieties . And their positive impact on soil is well known, in particular their ability to fix nitrogen naturally, which fertilizes the soil for both intercropped crops and crops to be cultivated subsequently. This in turn lowers the need to use chemical nitrogen fertilizers ; reducing the production and application of these fertilizers decreases GHG emissions .

Key words: Nutritious, Environmental, Protein, Benefits.

Introduction

In developing and emerging countries pulses are an very important part of the diet; this is often the case for example instance in Costa Rica, where they are a key ingredient in daily meals, and in Ethiopia, where pulses are part of curries and of snacks served at the coffee ceremony. In Iran, pulses are an important part of sustainable food and feed production,and in India - the largest importer of pulses in the world - people significantly depend on them as a cash crop and as a source of protein for marginal households. However, inter alia a shortage of supply and adverse weather effects have led to sharp increases in prices which has been hampering poor peoples' access to pulses . This is the case for instance in Egypt, where a 55 percent increase within the national production, of broad bean would, be needed in order to satisfy self-sufficiency . Yet besides resorting to other foods for economic reasons, in some cases people voluntarily choose to substitute pulses with other products because of their negative image. In Western Africa for example, people who have moved from the countryside to the towns sometimes regard pulses as "food for poor people" and for "people from the village". The rising middle class in emerging economies like India and Mexico often chooses to consume different products as its incomes increase and as a wider variety of products FSN Forum becomes available . The general trend is that with rising income levels, peoples' dietary preferences shift towards animal- instead of plantbased protein. As for developed countries, pulses have not been very present on the menu. Even in Canada, one of the major producers and exporters of pulses, domestic consumption has remained considerably low.

<u>How to increase consumption of pulses</u>

It is very necessary to promote the consumption of pulses in our country .And this could be possible with the help of multi sector and multilevel strategy that prioritizes the interests of developing countries. There are different factors influencing consumer behavior.

1. In developed countries, there are many trends through which we can promote the consumption of pulses, including the "simpler, healthier foods trend" flexitarianism, environmental consumerism, the "gluten-free trend" and the "hidden vegetables trend".

2. In emerging economies, rising incomes and an increase in the availability of different products could promote consumption of pulses. If they need not traditionally been part of the local diet. Countries where eating pulses has been familiar, consumption is likely to be affected negatively. One thus needs to take into account consumers' aspirational needs by providing more

choice: for instance if people have more money to purchase snacks, then one should work together with snack food manufacturers to include pulse-based products.

3. In developing countries, the consumption of pulses are very income-elastic, therefore the focus should get on establishing market linkages and stabilizing incomes for domestic producers.Some another way to restore the long-term consumption, is by incorporating pulses in different food aid programmes that address chronic malnutrition.

Suggestions to promote consumption of pulses :

1. All the People should be educated on the health benefits of the consumption of pulses in terms of lowering cholesterol and reducing heart disease and colon cancer.

2. Recipes that include pulses should be developed under the leadership of the Ministry of Agriculture and of Health, and will be popularized by health organizations and NGOs as well. Meal-providing (public) institutions should also increase the use of pulses.

3. Pulses should be introduced within regular diet of children .

4. People should be educated on how pulses are often be prepared . For example, new recipes might be introduced through cross-cultural events.

5. Precooked pulse products should be followed to change dietary systems.

6. The availability of pulses in local shops and markets should be promoted.

7. Investment is needed in value addition Iprocessing in order to diversify the use of pulses . For example, developing food-processing technologies would also support the reintroduction of traditional pulse-based dishes.

Production of pulses:

Production challenges

The productivity of pulses is far below its possibilities. In order to know the challenges associated with pulse production, one should consider both field level and the farm level .The entire farming system, as pulses are grown among different crops in which farmers also invest their resources. The challenges are mentioned indeed often interrelated, and include the following:

1. There is strong competition from cereals , which are more profitable . Thus farmers often choose to grow pulses in rainfed conditions (with consequently low yields), and are not willing

to cultivate them in irrigated conditions because cereals have higher yields . Pulses have received little funding and policy support from government, nor has there been much private sector involvement.

2. Due to lack of effective research, there is inter alia limited germplasm evaluation and improvement of varieties .

3. Unsophisticated production methods hamper productivity. In particular, the low level of mechanization of cultivation systems - and the resulting labour intensity- restrict the majority of the farms in Cameroon, for example, to sizes of between 1 and 3 hectares.

4. Seed systems are less developed in terms of multiplication, certification and distribution . Other inputs are also difficult to access .

5. The yield of pulses is low, due to:¬

. A lack of high-yielding varieties-poorly adapted varieties, the domesticated varieties are generally not tolerant of soil infertility , and varieties that can resist excessive vegetative growth under highmoisture conditions are lacking .

. Abiotic stresses, like cold and drought stress.

. Biotic stresses, like parasite attacks in the field .

6. "Exotic poisoning" has been taking place in the following ways:

-The replacement of organic input-based varieties of major crops (like rice) with chemical inputresponsive varieties in mixed cropping systems (including pulses) has destroyed the organic matter-based mycorrhiza on which pulses depend for their growth.

-The introduction of exotic varieties has brought exotic pests which have destroyed ecological conditions that support landraces.

-Exotic varieties have been cross-bred with genetically superior landraces .

7. Industrial development is limited, because investment is lacking in training, infrastructure and reliable industrial producer organizations.

8. Inadequate (knowledge of) marketing channels leaves farmers to selltheir produce to traders at very low prices . In general, the farm gate price of pulses fluctuates significantly.

Ways to address production challenges

A number of participants stressed the need to consider the local context in designing interventions addressing the difficulties producers experience. Pulses may not necessarily be "the answer", as there may be more appropriate alternatives . Agreeing on the importance of optimizing the potential of pulses, there is need to create a broader supportive environment for potential farmers was often highlighted; in developing and implementing policies, all key stakeholders should be involved (Manoj Kumar Behera).

Specific suggestions regarding how producers should be supported included the following:

- *Research and development should be encouraged in the public as well as private sector in order to 1) reduce the yield gap between pulses and cereals ; 2) optimize mixed small-scale farming, giving pulses the importance they are accorded in the local culture; and 3) better understand insectplant interactions, allelochemicals/toxic compounds in plants (which are very important for pulses).*

- *High-yielding, abiotic/biotic stress-resistant varieties should be developed the local conditions ; they should in particular be adapted to infertile soils Non-endemic varieties should not merely be introduced for economic reasons, because of uncertainty regarding their interaction with local species . Preferably, one should focus on the development of under exploited varieties Nordin).2 Subsequently, these quality seeds need to be made available, e.g. through village seed banks .*

- *Extension services and technical assistance should be improved .In order to encourage farmers to cultivate pulses and to improve their production methods, capacity building efforts are needed in which small holders and women are central .*

- *Higher and more stable incomes for farmers should be realized by means of 1) laws assuring fair prices , for example through minimum support prices for pulses ; 2) weather based price insurance for pulses ; 3) geographic origin protection and other strategies to add value to local production ; 4) the establishment of producer cooperatives to avoid unfair prices ; and 5) providing storage facilities, so the produce can be sold later at a better price .*

- *Commercialization should be stimulated , which inter alia entails investing in value addition . For example, low-cost, cluster-based dal mills could be introduced to allow for processing of pulses.*

-

Pulses And Climate Change

The role pulses can play in the context of climate change. Particularly their genetic diversity, which allows for adaptation to changing growing conditions, and their benefits regarding soil health were highlighted. Various examples of the development of varieties adapted to a changing climate were mentioned. For example, the Portuguese institute for germplasm resources and plant breeding studies (INIAV) has produced several varieties that are well adapted to different climatic conditions. In Iran, the new drought-tolerant chickpea variety "Sameen" and the cold stress-tolerant "Saral" have, been released.In addition, Robynne Anderson shared a number of studies on drought tolerance (all are included in the resources list), in particular on the effects of drought and the water use of pulses:

A meta-analysis of Daryanto, Wang and Jacinthe (2015) investigated the effects of drought on legume yields:

-Water availability and yields were positively correlated, but yield impact varied with the legume species and the phenological state during drought.

-Lentil, groundnut, and pigeon pea have exhibited lower drought-induced yield reduction compared with legumes such as cowpea and green gram.

-Adaptability of a species to drought did not always correspond to dryland origins.
-Phenological plasticity could be an important trait for selecting drought-resistant species, given irregular rainfall patterns and the large observed impact of drought during the reproductive stage.

A study of Cutforth et al. (2009) examined the drought tolerance of peas, chickpea, canola, mustard and wheat in Saskatchewan, Canada.

-Compared with wheat, canola and mustard, peas and chickpea were better able to adjust to moderate to severe water stress.

-Pulses maintained positive turgor and metabolic activity over a wide range of water potentials.

The research of Angadi et al. (2008) also took place in Saskatchewan looked into the water, use of three pulses (chickpea, lentil and peas) as well as that of canola, mustard and wheat:

-Compared with the high water use of wheat, canola and mustard, chickpea and lentil had medium water use and peas had low water use. -Peas and wheat produced the most grain

biomass and had the highest water-use efficiency.

-lentil and chickpea have good grain yields under dry conditions and performe better than other crops under droughtstress.

-Pulse crops, especially peas, were well suited to the drier parts of the semiarid prairie.

CONCLUSION

The immense potential of pulses and elaborated on their benefits for human health and the environment. Many ideas were shared on how to stimulate their consumption and production. In general, there was a broad consensus on the need to support pulse producers and the pulses sector as a whole in order to promote the availability and accessibility of this nutritious food for all people, in particular in the context of a changing climate. The contributions received will feed into initiatives organized during the International Year of Pulses, which aims to raise awareness on their benefits, encourage an increase in their production and consumption, and likewise highlight the need for enhanced investment in research and development and in extension services.

Reference

Angadi, S.V., McConkey, B.G., Cutforth, H.W., Miller, P.R., Ulrich, D., Selles, F., Volkmar, K.M.,Entz, M.H. & Brandt, S.A. 2008. Adaptation of alternative pulse and oilseed crops to the semiarid Canadian prairie: seed yield and water use efficiency. Canadian Journal of Plant Science, 88: 425-438.

Dhanya, P. & Ramachandran, A. 2015. Farmers' perceptions of climate change and the proposed agriculture adaptation strategies in a semi arid region of south India. Journal of Integrative Environmental Sciences, (2015): 1-18.

Cutforth, H.W., Angadi, S.V., McConkey, B.G., Entz, M.H., Ulrich, D„ Volkmar, K.M., Miller, P.R. & Brandt, S.A. 2009. Comparing plant water relations for wheat with alternative pulse and oilseed crops grown in the semiarid Canadian prairie. Canadian Journal of Plant Science,89: 826-835

.Daryanto, S., Wang, L. & Jacinthe, P.A. 2015. Global synthesis of drought effects on food legume production. PLOS ONE, 10(6): e0127401.

Jason, D., Malone, H. & Malone Eathorne, A. 2016. The Power of Pulses. Saving the World with Peas, Beans, Chickpeas, Favas and Lentils. Douglas & McIntyre.