

Cashing in on the commercial potentials of PIGEONPEA

As is the case with the promotion of food crops, market and profit are primary considerations. On that note, final arguments for the promotion of pigeonpea as a major crop for the Philippines drylands should come in handy in this age of climate change. Aside from its suitability to the country's geographic conditions and its being a crop that does not require expensive inputs, it is now fast becoming a crop of worldwide economic importance. It augurs well for the nation to cash in, to maximize the productivity of its vast drylands and improve the economy in marginal communities.

Domestic utilization: The importance of pigeonpea in smallholder economy goes beyond the food dimension, since pigeonpea also provides forage, fodder, feeds, fuel, and as medicine (Mergeai et al., 2001). In either form (dry grain and as a green vegetable), it can make an important contribution to the diet of resource poor farmers (Audi et al., 1999).

Exploiting the crop's export potential: ICRISAT's improved varieties have made a significant impact globally. A wide range of high yielding varieties including germplasm materials have been provided to various countries. To encourage these countries to grow pigeonpea and earn valuable foreign exchange, the following marketing channels are envisaged.

India. The present pigeonpea production of 2.5 million t is insufficient

to meet the domestic market and considerable amount of seeds is imported every year. In 1995-96, India imported 82,000 t, while in 1996-97 it increased to 132,000 t. India's pigeonpea deficit is projected to continue to grow as the estimates for the 1998-99 season were as high as 200,000 t. In 1991, Africa exported more than 60,000 t of pigeonpea to India (Jaeger, 1998). In 2007 and 2008, around 1.5 to 2 million tons of pigeonpea was imported annually from Myanmar and Africa (india.com, 2008; economicstime.com, October 2007).

Myanmar. The entire pigeonpea cultivation in Myanmar is export oriented and it has registered very significant growth in pigeonpea area from 62,010 ha in 1970 to 540,000 ha in 2005. The most dominant country where pigeonpea is exported is India, which has acquired 93.5%



pigeonpea imports in 8 years. In 2007, a total of 78,860 metric tons (mt) have been exported. With an average buying price of \$475.83/mt, the total value was estimated at \$37,523,953.80. In 2008, there was a substantial increase in export as compared to the previous year. Myanmar exported a total of 445,520 mt pigeonpea with a street value of \$233,898,000.00 and majority is shipped to India. In May 2009, a total of 33,775 mt toor whole was exported with value of \$22,460,375. Yearly prices of pigeonpea have been increasing from \$237.5/MT in 2002 to \$665/MT in 2009 (USDA GAIN Report, 2007 to 2009).

The America's and Europe.

The demographic change in USA is creating a demand for immigrants' traditional foods in their new homes. The large Indian and Afro-Caribbean communities in North America offer new potential markets. The potential of canned or frozen green peas is also high. From the Dominican Republic, about 80% of the annual harvest is exported (Mansfield, 1981). The growing pigeonpea export market has led to increase in pigeonpea area in Dominican Republic from about 7,000 ha in 1970 to 23,000 ha in 1998. The principal importer and consumer in Europe is the United Kingdom, owing to its large population of people of Indian and Caribbean descent. Recent research in Europe indicated a significant niche market for high quality pigeonpea grain (Jaeger, 1998).

Pigeonpea milling: Value addition of pigeonpea seeds presents the biggest potential for its commercial production. With the donation of the Dhal milling machines by ICRISAT to the Republic of the Philippines, pigeonpea seed processing to dhal can take place. The initial dhal processing demonstration will show to farmers the bright prospects of pigeonpea cultivation as a means to ensure their livelihood security. The milling machine is anticipated to make possible value addition of pigeonpea through dhal because this

is the base-product for producing bakery products, tempe, noodles etc.

Strategies for expanding pigeonpea

Seed production: In comparison to cereals, the seed system for legume crops is not well established. This leads to poor seed source. Farmers have no option but to use their own seeds year-after-year or obtain these from co-farmers. The genetic purity of crops like soybean, green gram, cowpea etc. over the years does not deteriorate rapidly due to high level of self-pollination. However, for pigeonpea, the seed system has not been established due to the crops exotic existence.

Pigeonpea flowers are self-fertilized with only 20-40% cross-fertilization. The cross-pollination takes place when the petals of the flowers unfold and insects visit them to collect nectar. However, for the crop to be widely raved by farmers, they need to be trained on how to maintain the purity of the seeds to avoid contamination brought about by out-crossing or mechanical mixing (Picture 16). In India, a study conducted by the National Seed Project for over six years revealed that in most cases, farmer-saved seeds were of sub-standard in respect of physical purity (about 15-100%), genetic purity (37-80%), germinability (15-100%), and general seed health. Also, farmers' seeds gave 2 to 80% lower yields than the certified seed (ICAR, 1993). In spite of poor quality of seed, farmers' practice of exchanging seed materials continues. Therefore, it is essential that farmers be educated to follow simple procedures to maintain seed purity at farm level to obtain high yield. A key message to farmers is to maintain an isolation distance of about 300-500 m for their seed production. Inability to follow this protocol, the quality of seeds will continue to deteriorate season-after-season.

Demonstrations and Field Days: There is no best method to

change attitude or practice than through field demonstration where farmers are directly involved.

Showcasing matured technologies through demonstration and even field days provide the initial steps towards their adoption. Field days are essential to arouse interest of key actors in pushing for the cultivation of crop.

The traditional pigeonpea cultivars and landraces are of long (250 days) to medium (160-180 days) maturity durations. However through breeding efforts, some early maturing (120 days) types have been developed. At Patancheru (17° N), ICRISAT developed the earliest pigeonpea line (MN 8) that flowers in 45 days and matures in 85 days. The continuous variability for maturity duration available for pigeonpea not only plays an important role in the diversification of existing cropping systems but also provides an opportunity for extending pigeonpea cultivation to new production niches. The plants of early maturing varieties are relatively short in height and produce less biomass. Such characteristic allows higher plant population per unit area for optimizing yield and such types are generally cultivated as a sole crop. The longer maturing cultivars, on an individual plant basis, produce greater biomass and are traditionally grown either as intercrop or perennial hedges.

Looking Ahead: In most developing countries the smallholder dryland farmers derive their protein needs from legumes. These resource poor farmers need a crop, which not only provide food security but also improves their soil to sustain the moderate level of productivity. After the success story of pigeonpea introduction in China where pigeonpea area increased from 50 hectares in 1999 to over 150,000 hectares in 2009, which can also take place in the Philippines. The high export potential of this crop is indeed the best incentive to the farmer-growers.