

# Development and Promotion of Sunflower Hybrids in Pakistan



Blooming **PARSUN-3** at NARC



**PARSUN-3** at maturity

PARC made tremendous efforts for the development of improved production technology and a number of sunflower hybrids. As a member of evaluation team for the of local hybrids in cotton area, I see that the efforts of the scientists of PARC have proved fruitful. Development of PARSUN-3 hybrid is a great breakthrough. The hybrid has higher yield potential, earlier in maturity and responds better to higher inputs due to short stature. The hybrid performed equally well as Hysun-33.

**Contributors:** Dr. AbdurRehman, Dr. Mumtaz Ahmad, Dr. Muhammad Amjad Rana, Dr. BakhatRoidar, Dr. Akbar Shah Mohmand, Dr. M. Ayub Khan (**PARSUN-3** Breeding/Development), Oilseed Program NARC, Islamabad

## Challenge

- Since independence to early 1960s, edible oil requirements were mostly met from animal sources.
- With increase in population, the additional requirements were met through import of vegetable oil.
- Varieties of non-conventional oilseed crops (sunflower, safflower and soybean were introduced during seventies.
- In early 1980s, Ghee Corporation of Pakistan played an effective role in promoting non-traditional oil crops in general and sunflower in particular.
- Domestic seed requirements to raise most of the oilseed crops were met through imported hybrids/varieties costing huge foreign exchange.
- Most of the imported varieties/hybrids did not adopt well locally.
- Challenge was to develop and promote high yielding sunflower hybrids for increasing the production of edible oil in the country.

## Interventions

- In 1985-86, PARC initiated the National Uniform Yield Trials (NUYT) and also breeding program on sunflower with few lines of U.S and Russian origin.
- A total of 516 open pollinated varieties/hybrids were evaluated, out of which 46 hybrids were selected for cultivation in the country.
- Production technology (optimum planting time, plant population/ha, use of fertilizer and harvesting time) was optimized.
- Consequently, shift in planting time was recommended from late planting (in March) to earlier (Jan-Feb.) to accommodate sunflower planting time in rice and cotton farming systems of Punjab.
- PARC undertook research on planting method and optimum plant population and recommended replacement of broad casting with row planting method (with pneumatic planters). It resulted in reduction (33%) in standard seed rate from 7.5 to 5 kg per ha and increase (100%) in yield from 749 kg/ha to 1520 kg/ha as well.
- In 1989-1997, National Oilseeds Development Project (NODP) was launched to strengthen these activities.
- In 2007-2011, "Research for Agriculture Development Project (RADP) was launched.

## Outcome

- In 1992, the First Ever Sunflower Hybrid (PARC-92E) was released having traits like early maturity and suitability for rice & cotton areas.
- From 1993 to 1996, its seed was multiplied on Gidder Farm (Balochistan) and planted on 5000 acres.
- In 2003, another high yielding hybrid, PARSUN-2 was released and planted on >5000 acres in Bahawalpur Division.
- During 2003-2005, it was also promoted in Sindh the collaboration of Engro-chemicals (Pvt.) Ltd on pilot scale.
- During 2007-2011, a number of potential parent lines were developed, resulting in release of an early maturing and high yielding sunflower hybrid, PARSUN-3 (SMH-0907) for major sunflower growing areas of Sindh and Punjab.
- In 2013, one ton seed of PARSUN-3 was produced and sold for spring planting by PATCO on half the market price.

## Way Forward

- Development of more uniform and competitive parent lines is underway.
- Testing of more hybrid combinations is being pursued for identification of more high yielding and stress tolerant hybrids.