INTRODUCTION

Seasonal flowers, also called annual ornamental flowers, represent a mainstay component in floriculture, whether floricultural practices are used ornamentally or commercially. Seasonal flowers complete their life cycle within one growing season, which means that these plants germinate, produce flowers, and then produce seeds within a single season. The fact that these plants grow fast, produce flowers profusely, give us a variety of colors, and offer diverse forms means that these plants can be used for many purposes, such as cut flowers, loose flowers, bedding, ornamenting gardens, making pots, and garland production.

The cultivation of seasonal flower crops increases income for farmers, employment, and associated enterprises, including nurseries, seeds, and floriculture. Across India, the most popular flower varieties include marigolds, petunia, phlox, zinnia, balsam, cosmos, larkspur, sweet peas, and several others, which help fuel the country's flower demand, particularly for public events, cultural, social, and religious functions. The flower industry remains dynamic, with high demands driven by population growth, urbanization, rising income levels, landscaping, eventing, and hospitality growth.

Getting the most from flowers, particularly improved varieties that provide enhanced features such as color, size, and uniformity, among others, largely depends on the use of high-yielding varieties. In addition, the varieties have the advantages of synchronized early flowering, increased yields per land area, suitability to varying climates, and resistance or tolerance to distinctive pests and diseases. All these factors contribute to increased productivity, lower costs, and higher profits.

Significant progress has been achieved in the development of seasonal flowers through targeted breeding efforts at ICAR institutes, SAUs, and private sector seed enterprises. A large number of open-pollinated varieties and hybrids have been developed and released, and they have been doing well in Indian conditions. Good quality seeds of these varieties have played a very important role in modernizing and commercializing floriculture in India.

Thus, in this context, it is essential to promote and adopt better seasonal flower varieties to ensure the development of sustainable floriculture. With this, it will be possible to know the right kind of seasonal flowers, which can be produced with better remunerative returns.

2. Value of High-Yielding Varieties

Choosing high-yielding varieties is central to lifting yields, boosting profits, and sustaining seasonal flower farming. Varieties improved through structured breeding carry stronger genetic potential and better agronomic traits, helping growers get more output with efficient use of inputs. Here's why high-yielding varieties matter for seasonal floriculture:

More Flowers per Area: Since varieties are chosen which yield more blooms and biomass, higher production and better land-use efficiency are obtained.

Uniform Blooming and Market-Ready Quality: They grow more uniformly and flower in sync, producing blooms with consistent size, shape, and color, enhancing market appeal and commanding higher prices.

Pesticide Resistance or Tolerance: Most varieties are resistant or tolerant to major pests and diseases, reducing the use of pesticides and protection costs.

More Adaptability to Diverse Climatic and Soil Conditions: Most of the high-yielding varieties are, on the other hand, bred for wide adaptability. Therein lies the possibility of their successful cultivation throughout different regions with diverse climatic and soil conditions.

Increased Income--Decreased Cost of Production: Higher output, improved quality, and fewer losses increase the net return to the farmer while decreasing per unit costs.

3. Notable High-Yielding Varieties of Major Seasonal Flowers

Several high-yielding and improved varieties of seasonal flowers have been developed and released by ICAR institutes, State Agricultural Universities, and private seed firms. The following are some of the important crops and their top-performing varieties:

3.1 Marigold (Tagetes spp.)

The marigold remains one of the most popular seasonal flowers of India due to its adaptability, prolific flowering, longer shelf life, and wide uses in garlands, religious offerings, and decoration. It thrives in a broad range of environment.

Key species: *Tagetes erecta* - African marigold *Tagetes patula* - French marigold

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एग्रीकल्चर फ़ोरम फॉर टेक्निकल एजुकेशन ऑफ़ फार्मिंग सोसायटी

कोटा, राजस्थान

High-Yielding Varieties of Seasonal Flowers

संकलन

Syed Ayesha[1], Bowdu Kavya[2], P Lasya Priya[3]

[1, 2, 3] Ph.D., scholar, Department of Floriculture and Landscaping, Dr YSR Horticultural University, COH - Venkataramannagudem, Andhra Pradesh

High-Yielding Varieties
Pusa Narangi Gainda: This variety of African marigold has high flower and yield potential, producing bright orange blossoms.
Pusa Basanti Gainda - Known for its bright yellow color, early flowering, and usage in looser flowers.
Calcutta Orange: This is a very popular commercial variety with bold, deep orange blooms and excellent post-harvest quality.
Calcutta Yellow: Provides uniform large size for garland making.
Arka Bangara: This variety is bred by IIHR in Bengaluru and produces golden yellow flowers with high levels of productivity and uniformity.
Arka Agni: It is known for its bright orange-red flowers and its reliability across all climates.
Yield Potential:
Approximately between 15 and 25 tonnes per hectare of loose flowers when grown with preferred agronomic practices.

3.2 Petunia
One of the key cool-season ornamental plants is petunia, which finds extensive use in the landscaping of gardens, in bedding schemes, at the edges of gardens, in containers, in window boxes, and in hanging baskets.
High-Yielding Varieties
1. Pusa Purple: Deep purple flowers with a good spreading habit and extended flowering.
2.Pusa Violet: The variety is distinguished by attractive violet-colored flowers and uniform growth
3. Pusa White: Pure white blooms are best suited for mass bedding and landscape work.

3.3 Phlox (*Phlox drummondii*)
Phlox are one of the most popular cool-season annuals, valued for relentless flowers, small stature, and vivid, pleasing flower colors. Plants are widely used as bedding plants, as edgers, in mass displays, or in container cultivation in private gardens and public landscapes.
High-Yielding Varieties:
Pusa Crimson: deep crimson flowers, typical growth, profuse flowering.
Pusa Pink: produces bright pink flowers that can flower for a longer duration.
Pusa White: pure white flowers of high value for mass planting and landscaping.
Special Feature:
Abundant, continuous flowering with bright colors, excellent for landscape decoration.

3.4 Zinnia (Zinnia elegans)
Zinnia is a hardy, fast-growing annual recognized for bold, bright blooms and its strong heat tolerance. It is widely grown because it is easy to cultivate, has a long bloom time, and fits well within home gardens and commercial production.
High-Yielding Varieties:
Pusa Swarna - yellow-gold flowers, with a homogeneous growth habit and good flowering behavior.
Pusa Kiran: bright orange flowers bearing strong plant growth.
Giant Dahlia Flowered: very large, dahlia-like blossoms of very high ornamental value.
California Giant: These plants are tall with large flowers in many different colors.
Uses:
Bedding plants, cut flowers, borders, landscaping, and general garden decoration.

3.5 China Aster (*Callistephus chinensis*)
China aster is an important winter annual grown for loose flowers and cut flowers. It is valued for a wide colour range, good keeping quality and suitability for garlands and arrangements.
High-Yielding Varieties:
Pusa Purple Aster: deep purple flowers with strong stems and good flower size.
Pusa Pink Aster: Attractive pink flowers borne uniformly.
Arka Archana: High yielding variety - lavender coloured flowers, excellent keeping quality - developed at IIHR, Bengaluru.
Arka Kamini: light violet flowers, suitable for both loose and cut flower use.
Yield Potential:
Around 12–18 tonnes per hectare of loose flowers under recommended management.

3.6 Balsam (*Impatiens balsamina*) Balsam is one of the classic annual flowers, widely grown during the rainy and summer seasons. It possesses bright-colored, brightly colored flowers all along the stems and is tolerant of a wide range of conditions.
High-Yielding Varieties:
Pusa Sawani: vigorous plants with heavy flowering and good adaptation.
Pusa Aditi: Uniform growth, Attractive flower color.
Double Mixed: double-petaled flowers in mixed shades, excellent for ornamental use.

3.7 Sunflower (*Helianthus annuus*)
Ornamental sunflowers are riding a wave of popularity at the moment, being a part of many cut flower arrangements, plus their bold, lively flowers, along with their tall, sturdy stems, make them big in demand in the field of urban floriculture.
High-Yielding Varieties
1. Sunrich Series: Well-respected hybrid varieties that have pollen-free blooms, making them good for cut flower arrangements.
2. Pusa Surajmukhi: This variety is better for improving any new arrangement or display for your garden.
3. Valentine: Bright yellow flowers with dark centers and a strong vase life.
4. Pacino: Amulti-purpose variety with a compact habit for a dwarf type, ideal for pot use and at the front

Uses:
Cut flowers, garden displays, landscape design, and floral arrangements.

3.8 Cosmos
Cosmos is a lovely, free-flowering annual that is recognized by its exquisite foliage and daisy-type blooms. It's frequently utilized for massings, borders, and wildflower-type gardens.
High-Yielding Varieties
1. Sensation Mixed: It contains tall plants with large flowers in different colors.
2. Sonata Series: Small plant varieties suitable for pots and bedding, with high flowering.
Purity: A white flower that has a purer appearance in the landscape.

4.Role of Improved Varieties in Commercial Floriculture
Central to the development and diversification of commercial floriculture are improved and high-yielding seasonal flowers which enable:
1. Year-Round Flower Supply through Staggered Sowing and Seasonal Planning
2. Enhanced fit between flowering, festivals, and market demands, particularly with respect to weddings
3. Expansion of Floriculture in Open Field and Protected Cultivation
4. The production of uniform and high-quality flowers for domestic and foreign markets

5. Constraints in the Adoption of High-Yielding Varieties
Despite these advantages, there are several challenges involved in popularizing improved seasonal flower varieties:
Limited or Uneven Access to Quality Seed at the Local Level
1. Lack of awareness about improved varieties among small and marginal farmers
2. Deficits of technical knowledge related to nursery raising and crop management
3. Climatic sensitivity of some varieties, which demand specific growing conditions
4. For these barriers to be addressed through improved seed systems, training initiatives, and support packages, it is imperative.

CONCLUSION
High-yielding seasonal flower varieties are the back bone of present-day commercial floriculture. The selection of varieties plays an important role in increasing yield, quality, and profit if appropriate varieties are selected in terms of agro-climatic conditions, demand, and utility. Improving seed systems, cultivating awareness among farmers, and providing extension support will help accelerate the use of improved floral varieties and take the floriculture sector to greater heights.