

GROUPING ANNUAL PLANTS WITHIN A FLOWER BED IN TIMISOARA AND ESTABLISHING THE BEST FLOWERING PLANT ASSOCIATIONS FOR 2012

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ABSTRACT

Floricultural plants are the most colourful, varied and beautiful element of green areas. Choosing the flowering plants to be included in decorative flower arrangements should be done with great care and taking into account flowering plant size, flower colour, blooming time and requirements from the soil and climate. Flower arrangements should be the point of attraction within green areas, but improper flowering plant choice can result in unpleasant landscapes. (M. PREDA -1973)

The present paper presents a study on a few annual flowering plants we used in the arrangement of a mixed flower bed in the Botanical Gardens of the Municipality of Timisoara (Romania). The goal of the research was to find the best flowering plants associations for the soil and climate conditions of Timisoara allowing more effective costs related to the production of plantlets, to the design, planting and care of floral arrangements in city parks and gardens. The study was carried out in 2012: it consisted of measurements during all flowering plant development stages aiming at producing the best combinations of flowering plants for the green areas of Timisoara. To process results, we monitored flowering plant evolution during the entire vegetation season: flowering plant size, diameter, blooming time and duration, flowering plant response to neighbouring flowering plants.

Keywords: arrangement, combination, flowering, plants.

INTRODUCTION

Whether public or private, green areas are part of our life and a feature of civilisation. Proper design and the skills involved in establishing them and in caring for them allow green areas to fulfil their recreational, aesthetic or ecological function thus contributing to the improvement of human life quality.

Flowering plants are main components of the natural environment; they are a living material of infinite diversity and they make landscapes dynamic due to their seasonal variation and evolution in time. Vegetation is the most versatile element due to flowering plant size, shape, colour and texture, and to the many ways of combining and grouping in space and time.

Often the brightest flowers and the most spectacular foliage in green areas are provided by the shortest-lived plants- the annuals. Annual are plants that invest all their energy into one season of flower and seed production before dying. (TONY LORD, 2010)

In establishing any type of green area, the proper choice and association of flowering plants is the key to success: the aesthetic value of the future green area and its sustainability largely depend on how we meet these requirements. But properly choosing and associating flowering plants implies knowing and observing certain biological and ecological features that act together and that condition mutually (MARIA BĂLA, OLIMPIA ALINA IORDĂNESCU, 2004).

MATERIAL AND METHOD

The study presented in this paper was carried out in the Botanical Gardens of Timisoara (Romania).

To carry out the study, we have chosen as a planting form the flower bed.

- Planting the plantlets was done in May, when there was no more threat from frosts;
- Plantlet distance was established depending on flowering plant size upon maturity, so that the flowering plants would not suffocate mutually but make up a compact spot in the flower bed;
- Flowering plant groups large enough were established to make up compact colour and texture arrangements;
- Both flower and leaf decorative annual flowering plants were chosen: *Ageratum mexicanum*, *Anthriscum majus*, *Begonia semperflorens*, *Cineraria maritima*, *Coleus citron*, *Coleus hero*, *Dahlia variabilis*, *Gazania splendens*, *Heliotropium peruvianum*, *Iresine lindenii*, *Petunia hybrida*, *Pyrethrum parthenifolium*, *Portulaca grandiflora*, *Salvia farinacea*, *Salvia splendens*, *Tagetes erecta* and *Zinnia elegans*.

The flower bed on which we planted the flowering plants measured 6100 cm x 220 cm, an area of 134,20 m², enough to allow the association of several flowering plants and get most relevant results.

In choosing the planting way we took into account not only the theme studied (we did not plant at random), but we took into account flowering plant height upon maturity and flower colour to make up balanced compositions from an aesthetic point of view (*Figure 1*).

In the *Table 1* I presented the costs of the seedlings used for this flower bed and why is very important to make the right choice for a decorative flower bed as long as possible.

We present below an image to illustrate how the flowering plants were planted within the flower bed.

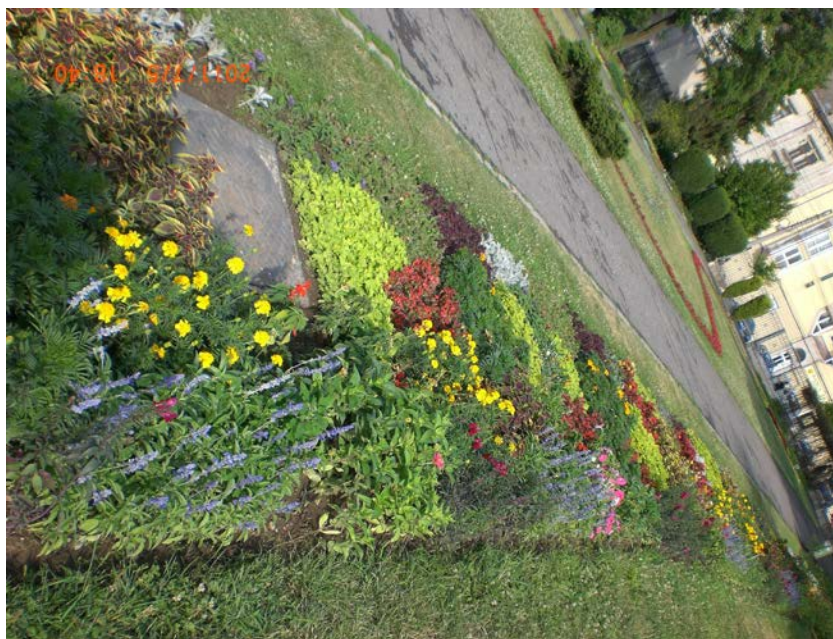


Figure 1: Planting scheme

Table 1: Estimate costs (vegetal material)

Nr. crt	Plant name	Quantity	Price/piece	Value (lei)
1	Ageratum mexicanum	516	2.9	1,496.40
2	Anthirrhinum majus	222	2.9	643.80
3	Begonia semperflorens	509	2.9	1,476.10
4	Cineraria maritima	432	2.9	1,252.80
5	Coleus citron	378	2.9	1,096.20
6	Coleus hero	169	2.9	490.10
7	Gazania splendens	288	2.9	835.20
8	Heliotropium peruvianum	273	2.9	791.70
9	Iresine lindenii	573	2.9	1,661.70
10	Petunia hybrida	227	2.9	658.30
11	Portulaca grandiflora	318	2.9	922.20
12	Pyrethrum partenifolium	283	2.9	820.70
13	Salvia farinacea	182	2.9	527.80
14	Salvia splendens	442	2.9	1,281.80
15	Tagetes erecta	455	2.9	1,319.50
16	Zinnia elegans	175	2.9	507.50
	TOTAL	5442		15,781.80

RESULTS

The measurements we made and the monitoring of the way flowering plants decorated the planted area during the entire vegetation period produced results that will contribute to the most effective choice for floral decorations in Timisoara's parks and gardens.

Within the flower bed, there was good compatibility between certain flowering plant species: unhindered development and production of beautiful flowers or of nice bushes until cold weather. As for the flowering plant associations, we need to emphasise the fact that some flowering plants did not develop well in the presence of other flowering plants: there were flowering plant species that suppressed the existence of other flowering plants and flowering plant species whose development within the flower bed was impossible no matter the type of neighbouring flowering plant.

To determine the flowering plants we can use to better decorate for as long period as possible, we monitored the evolution of the flowering plants during the entire vegetation period measuring such features as flowering plant height, bush diameter, time of blooming, duration of blooming (*Table 2*).

In the following pictures is shown some groups from the flower bed during the vegetation period and how they grow together.



Figure 2- Heliotropium p; Ageratum m.,
Coleus c., Portulaca g., Begonia s.



Figure 3- Tagetes e, Gazania s.,
Iresine l., Coleus H., Ageratum m.



Figure 4- Cineraria m., Iresine l.,
Salvia s., Ageratum m.



Figure 5- Pyrethrum p., Iresine l.,
Petunia h, Salvia s., Cineraria m.



Figure 6- Ageratum m., Cineraria m.,
Coleus h, Tagetes e.



Figure 7- Coleus c., Salvia s, Cineraria m.,
Anthirrhinum m, Iresine l., Salvia f.

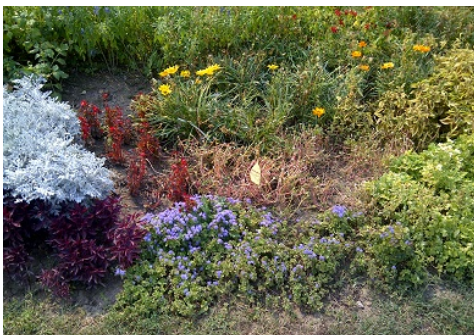


Figure 8- Ageratum m, Iresine l.,
Portulaca g., Begonia s, Gazania s.



Figure 9- Begonia s., Gazania s., Coleus h,
Coleus c., Tagetes e., Zinnia e.

Table 2: Measurements on the plants during the entire vegetation period

Plant	High(cm)			Diameter (cm)			Flowers		
	27.06	27.08	18.10	27.06	27.08	18.10	27.06	27.08	18.10
Ageratum mexicanum	7-8	10-11	12	9-10	10-11	10-11	70% bloomed	bloomed	30% wilted flowers
Anthirrhinum majus	30-32	34-36	39-40	9-10	12	12-14	start blooming	bloomed	Wilted flowers
Begonia semperflorens	14-15	16	12-16	10-12	15	18-20	bloomed	100% flowers	60% wilted flowers
Cineraria maritima	13-14	17-18	18-22	11-12	14-15	18-19	Decorates through leaves		
Coleus citron	11-12	14-15	17-21	10-11	12-13	15-17	Decorates through leaves		
Coleus hero	13-15	17-18	23-25	8-9	11-13	16-18	Decorates through leaves		
Gazania splendens	13-14	15-18	30-33	15	20-24	32-34	bloomed	bloomed	30% wilted flowers
Heliotropium peruvianum	4-9	17-22	27-36	8-9	20-21	29-34	30% bloomed	blooming	50% wilted flowers
Iresine lindenii	10-11	16-17	19-21	7-8	11-13	14-15	Decorates through leaves		
Petunia hybrida	20-22	28-32	36-50	10-11	20-25	30-40	30% bloomed	100% blooming	40% wilted flowers
Portulaca grandiflora	10-12	12-13	-	10-13	12-14	-	buds	Wilted flowers	Wilted flowers
Pyrethrum parthenifolium	8-9	25-27	29-32	20	26-27	30-35	buds	bloomed	90% wilted flowers
Salvia farinacea	31-32	35-38	42-48	10-11	14-15	19-23	start blooming	bloomed	80% Wilted flowers
Salvia splendens	25-26	30-33	37-42	6-7	11-14	17-25	70% bloomed	bloomed	60% wilted flowers
Tagetes erecta	20-22	36-41	53-54	15-17	13-26	30-33	buds	bloomed	50% wilted flowers
Zinnia elegans	25-29	30-35	44-52	9-10	15-16	28-36	buds	90% bloomed	40% Wilted flowers

CONCLUSIONS

The flowering plants we studied developed differently, i.e. some kept their decorative features until the cold season while others survived with difficulty in the neighbourhood of other flowering plants:

Ageratum mexicanum proved to be a very resistant flowering plant, no matter the neighbouring flowering plants;

Anthirrhinum majus decorated during the entire vegetation period due to its erect port and colourful flowers;

Begonia semperflorens developed rather poorly and such neighbouring flowering plants as *Tagetes erecta*, *Gazania splendens*, *Ageratum mexicanum*, *Salvia farinacea* cause its death (Figure 9);

Cineraria maritima proved to be the most resistant no matter the flowering plant combination: it made up rich bushes and white-silvery, downy spots (Figure 4);

Coleus citron made compact, bright, light green bushes in the vicinity of such flowering plants as *Iresine lindenii*, *Cineraria maritima*, *Salvia farinacea* and *Ageratum mexicanum* (Figure 7);

As we can see in Figure 6, *Coleus hero* successfully decorated the flower bed: its leaves turned paler during maturation, but the bushes kept compact;

The beautifully coloured flowers of the species *Gazania splendens* brought joy to the flower bed proving that, if supplied with enough sunlight, they keep blooming until October (Figure 3);

Heliotropium peruvianum responded differently to the neighbouring flowering plants: thus, it made rich bushes with large flowers when associated with *Coleus citron*, *Iresine lindenii* and *Cineraria maritima*, but its development was hindered by the presence of such flowering plants as *Begonia semperflorens*, *Coleus hero* and *Tagetes erecta*. (Figure 2)

Cineraria maritima, *Begonia semperflorens* or *Gazania splendens* made up intensely red bushes, while the association of *Iresine lindenii* with *Tagetes* and *Coleus hero* resulted in underdeveloped flowering plants;

Petunia hybrida bloomed continuously but, because of its high port and its tendency to invade neighbouring flowering plants, we recommend its association with *Tagetes erecta* whose port is similar (Figure 5);

Portulaca grandiflora proved to be the worst choice for the studied flower bed no matter the association: it first resulted in empty spaces and finished by completely disappearing making spots of dried plants as it's shown in Figure 8;

Salvia farinacea developed no matter the neighbouring flowering plants and coloured in blue during the entire vegetation period;

Salvia splendens was a proper choice for the flower bed: its rich bushes with intensely red flowers making up a superb decoration until October;

Tagetes erecta, with its port, ramifications and specific odour bloomed during the entire vegetation period; towards the end, though, the basis of the flowering plants dried and lignified producing empty spaces within the flower bush.

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