

SUNFLOWER HYBRIDS WITH RESISTANCE AT SULFONILUREEA HERBICIDE AND AT IMIDAZOLINONE HERBICIDE CREATED AT NARDI FUNDULEA

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Keywords: *sunflower, herbicide, resistance, sulfonilureea, imidazolinone*

ABSTRACT

In nowadays, farmers sowing sunflower hybrids with resistance at sulfonilureea herbicide and at imidazolinone herbicide. NARDI Fundulea released on seed market three IMI sunflower hybrids, FD15CL44, FD16CL50 and FD18CL58, resistant at imidazolinone herbicide, and two SU sunflower hybrids, FD15E27 and FD18E41, resistant at sulfonilureea herbicide.

IMI sunflower hybrid FD15CL44 in Clearfield system, was registred in year 2016 and is a semilate sunflower hybrid with a period of vegetation of 128-130 days, seed yield of 4000-4200kg\ha, oil content of 50-51%, resistant at race E of broomrape but herbicide Pulsar 40 controled this parasite.

IMI sunflower hybrid FD16CL50 in Clearfield system was registred in year 2017 and is a semilate sunflower hybrid with a period of vegetation of 125-137 days, seed yield of 3900-4100kg\ha, oil content of 50-52%, resistant at race E of broomrape but herbicide Pulsar 40 controled this parasite.

IMI sunflower hybrid FD18CL58 in Clearfield system was registred in year 2019 and is a sunflower hybrid with a period of vegetation of 121-123 days, seed yield of 3900-4100kg\ha, oil content of 50-52%, resistant at race E of broomrape but herbicide Pulsar 40 controled this parasite. Recomended density at sowing is 48000-52000 plants\ha in nonirigated field and at density at sowing is 53000-58000 plants\ha in irigated field.

SU sunflower hybrid, FD15E27 in Express-Sun system was registred in year 2016 and is a sunflower hybrid with a period of vegetation of 118-122 days, seed yield of 3800-4000kg\ha, oil content of 50-52%, resistant at race F-G of broomrape.

SU sunflower hybrid, FD18E41 in Express-Sun system was registred in year 2019 and is sunflower hybrid with a period of vegetation of 116-119 days, seed yield of 4100-4400kg\ha, oil content of 50-53%, resistant at race F-G of broomrape.

INTRODUCTION

The use of quality seed from cultivation adapted to the climatic conditions, with indices of cultural value and with high purity, leads to spectacular production increases. In the case of sunflower hybrids IMI and SU (Evci, *et al*, 2011; Sala *et al*, 2012; Kaya *et al*, 2013;

Risnoveanu *et al*, 2019), the production gains obtained are due to the heterozygous effect achieved in the first generation hybrid organisms. The obtaining of seeds with superior qualitative qualities is conditioned by the scientific foundation of the activity in the field of seed production, which consists on the one hand in the knowledge of the

theoretical bases of seed production, and on the other hand in the knowledge and application in this activity of modern methods of maintaining the genetic purity of the inbred lines, as well as technologies specific to the process of seed production, processing and storage. By observing the specific breeding technology in the hybridization batches, a quality hybrid seed will be obtained, which plays a decisive role in obtaining in the first hybrid generation a maximum heterozygosity. Parental forms of sunflower hybrids, inbred lines, with low vitality and vigor, have higher demands on soil temperature. Sowing should be done when the soil at the depth of sowing is warm enough, minimum 10-12° C. The explosive emergence of the plants gives them a better tolerance to diseases.

Between the parental forms that cross in order to obtain a hybrid there is a genetic diversity that can generate a flowering gap. In order to achieve a good coincidence when flowering in some hybrids, one uses the shifting sowing of the parental forms.

MATERIAL AND METHOD

We sowing in two years, 2018 and 2019, in Fundulea, in nonirigated field, at density of 48000 plants\ha, three IMI sunflower hybrids in Clearfield system, FD15CL44, FD16CL50 and FD18CL58 and two SU sunflower hybrids, FD15E27 and FD18E41, in Express-Sun system.

We planted this sunflower hybrids, randomized in three repetitions in micro plots of 4 rows.

RESULTS AND DISCUSSIONS

IMI sunflower hybrid FD15CL44 in Clearfield system, the parental forms, androsterile line 2114A and restorer line 3012R, are sown at the same time because they have a good coincidence when flowering (figure 1).

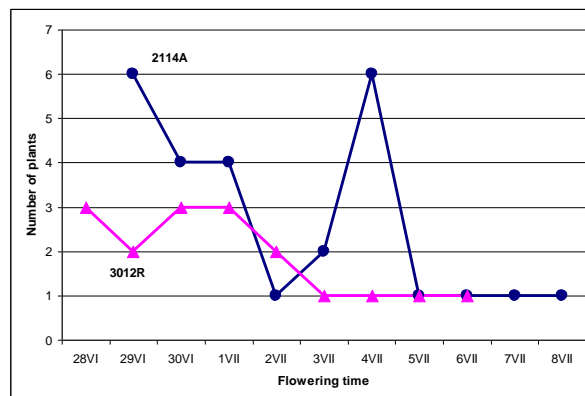


Figure 1 The dynamics of flowering of sunflower hybrid FD15CL44

IMI sunflower hybrid FD16CL50 in Clearfield system, the parental forms, androsterile line 2114A and restorer line 3010R, are sown at the same time because they have a good coincidence when flowering (figure 2).

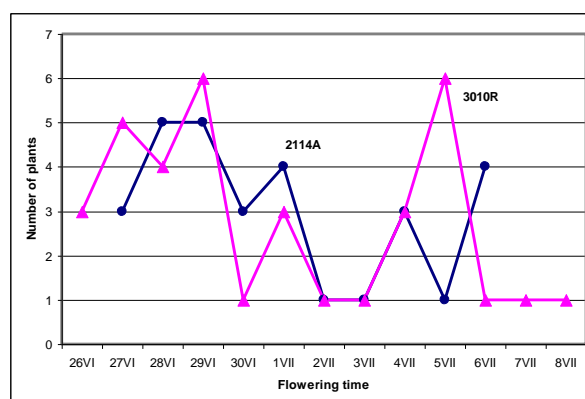


Figure 2 The dynamics of flowering of sunflower hybrid FD16CL50

IMI sunflower hybrid FD18CL58 in Clearfield system, the 50% of restorer line 3008R is sown in the first epoch, and when it begins to emerge, in the second epoch, the androsterile line 2110A is sown and the rest of restorer line 3008R (figure 3).

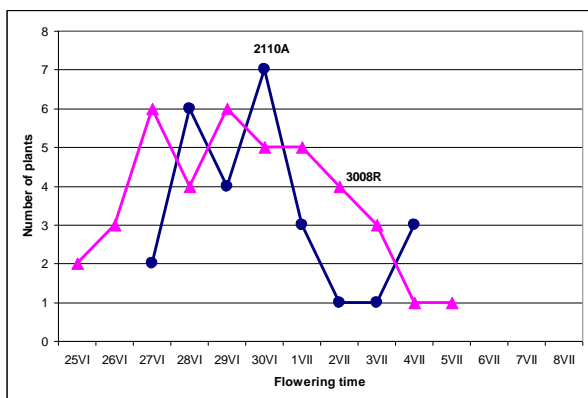


Figure 3 The dynamics of flowering of sunflower hybrid FD18CL58

SU sunflower hybrid FD15E27 in Express-Sun system, in order to achieve a good coincidence in flowering, the androsterile line 2111A at the beginning of flowering will find in the lot the flowering paternal form, it is necessary that the sowing be executed in two stages. In the first epoch the restorer form 3007R, is sown, in the second epoch when the seedlings are seen in a row, than the mother is sown (figure 4).

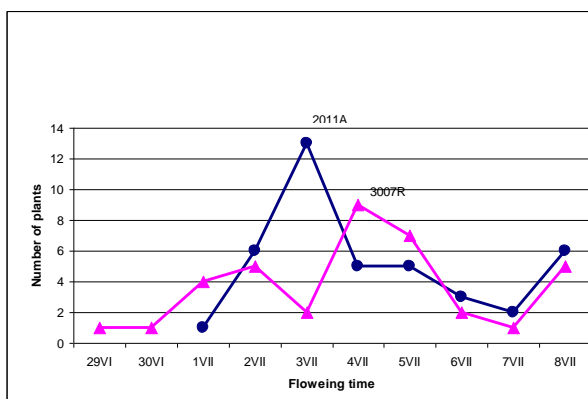


Figure 4 The dynamics of flowering of sunflower hybrid FD15E27

SU sunflower hybrid FD18E41 in Express-Sun system, in order to achieve a good coincidence in flowering, it is necessary for the sowing in the first epoch, the restorer line 3009R, and in the second epoch when the seedlings are seen in a row, the androsterile line 2111A. (figure 5).

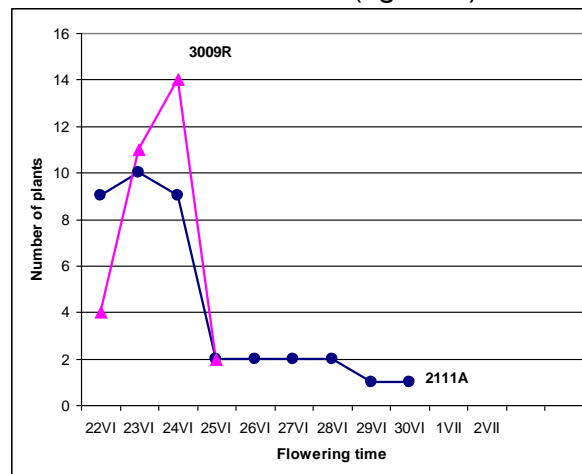


Figure 5. The dynamics of flowering of sunflower hybrid FD18E41

In years 2018 and 2019, in Fundulea, we planting in nonirigated field, at density of 48000 plants/ha, three IMI sunflower hybrids in Clearfield system, FD15CL44, FD16CL50 and FD18CL58 and two SU sunflower hybrids, FD15E27 and FD18E41, in Express-Sun system.

In year 2019, we regisred the best seed yield of this sunflower hybrids, in Fundulea. IMI sunflower hybrids in Clearfield system, FD16CL50 and SU sunflower hybrids, FD18E41, in Express-Sun system has the higher seed yield., (Figure 5).

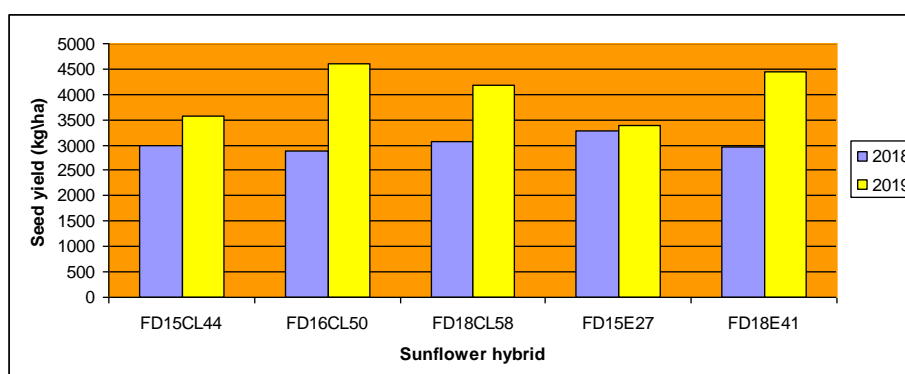


Figure 5. Seed yield of SU and IMI sunflower hybrids in years 2018 and 2019 in Fundulea

Rainfall exceeded the multi-year average, in Fundulea, in month may in year 2019 and in month june in year

2018, but in emerge time in april, in year 2018 was no rainfall. (Figure 6)

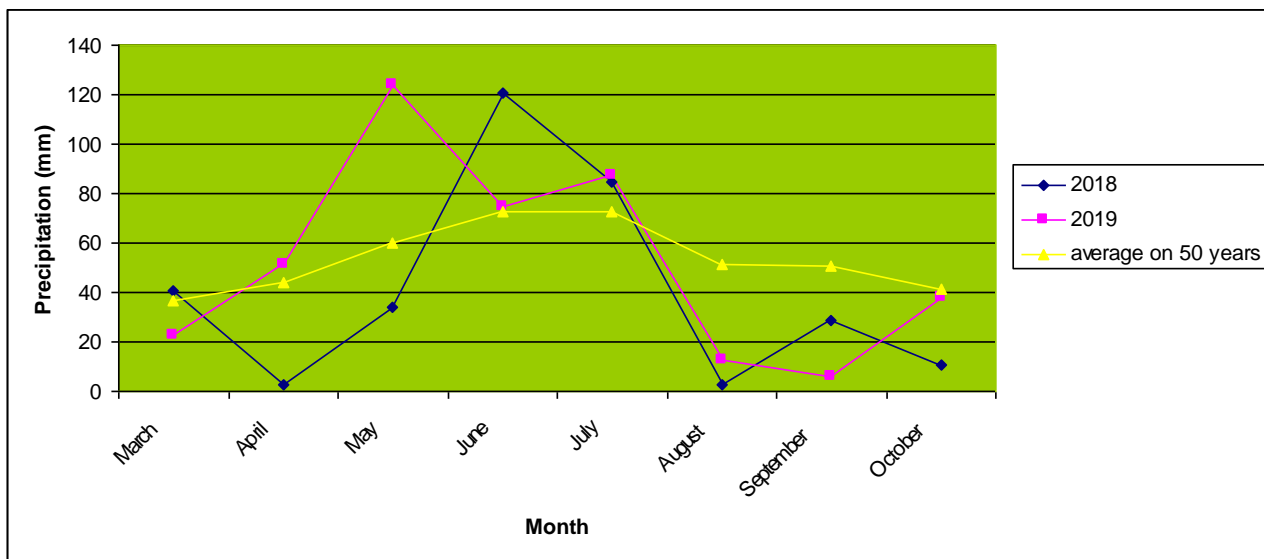


Figure 6. Rainfall in years 2018 and 2019, in Fundulea

Temperature exceeded the multi-year average, in Fundulea, in year 2018 and in month april and may and in year

2019 was higher in month june (Figure 7).

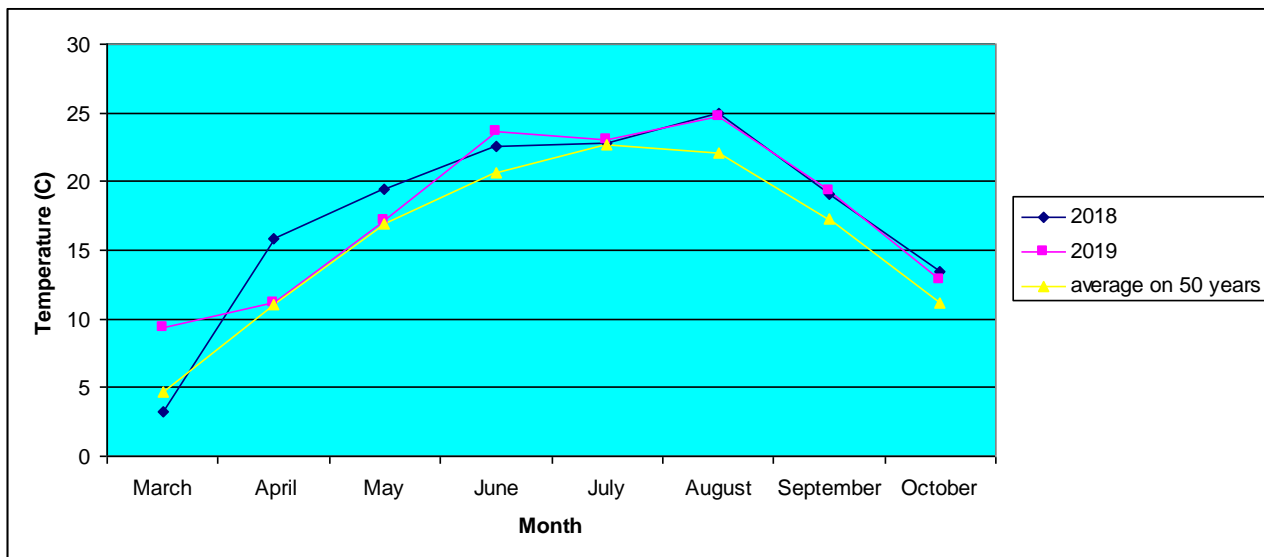


Figure 7. Temperature in years 2018 and 2019, in Fundulea

CONCLUSIONS

IMI sunflower hybrids FD15CL44, FD16CL50, is recommended to sowing at density of 48000-53000 plants/ha in nonirigated field and at density of 55000-60000 plants/ha in irrigated field.

IMI sunflower hybrid FD18CL58 and SU sunflower hybrids, FD15E27 and FD18E41, is recommended to sowing at density of 55000-57000 plants/ha in nonirigated field and at density of 58000-60000 plants/ha in irrigated field.

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