SUNFLOWER ADAPTATION IN NORTHEAST BRAZIL.

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SUMMARY

Sunflower is not growing as a commercial crop in Paraiba State, Northeas Brazil. Different efforts have been done in order to analyze crop adaptation of sunflower to the environment of Northeast Brazil. Studies to introduce sunflower in the region included: agroclimatic adaptation, analyzing temperature and available water conditions, field tests of several gtenotypes, and greenhouse experiment on the effect of salinityand water stress onunflwer genotypes' production. The different kind of studies indicated that the sunflower production is a feasible alternative for Paraiba State. However, there are some municipalities with climatic and soil conditions for sunflower production, and others where sunflower should not be introduced.

Introduction

The Northeast region of Brazil is one of the five regions of the country. The region comprises 18% of the national territory, 29% of national population, and contributes with 12% of the national product. Rainfed agriculture is the main agricultural activity in the region. A high proportion of Northeast Brazil belongs to the semi-arid tropics, a very fragile environment which demads new technologies that can effectively be transferred to the farmers (Zaffaroni, 1991).

Paraiba State, in Northeast Brazil, has an area of 56,372 Km^2 and different climates: humid tropics, semi-arid tropics and a transition zone between both zones. Agriculture is the main source for regional exports in Northeast Brazil. Crop production in the region is one of the most important activity.

The agricultural production of Northeast Brazil had a tremendous shock with the arrival of boll weevil (Anthonomus

grandis). This insect had significantly diminished cotton production, one of the main crops in the area. On the other hand, crop production in the region is highly dependent upon few crops. Therefore, it is necessary the introduction of new crops in order to diversify productions and increase farmers' income.

Sunflower performs well in most temperate zones, and cultivars of few other crops show its wide range of adaptation (Robinson, 1978). Sunflower is very well known as a crop with high ecological adaptability, growing in different climates and soil conditions (Vranceanu, 1977). When a new crop is going to be introduced to a region an analysis of climatic characteristics, effect of limiting factors on production, and genotypes performance have to be studied.

This paper reports differents efforts that have been developed in order to analyze feasibility of introducing sunflower to the State of Paraiba in Northeast Brazil. The studies included agroclimatic analysis, green house experiments dealing with the effect of water deficit and salinity, and genotypes performance.

Agroclimatic analysis

Plant growth and yield are directly dependent upon the weather and climate. While climatic and edaphic factors limit the area of the world where any specific crop can be grown successfully, the weather determines the yield. The climatic elements most used are temperature, precipitation, evaporation, and their seasonal variations (Pereira, 1982).

An approach to analyze crop adaptation can be done by

genotypes was different which caused the interaction. However, IAC-Uruguay yielded more under absence and presence of salts.

Genotypes performance

The final test to be considered in crop adaptation is the field performance of different genotypes.

In Paraiba State genotypes testings have been carried out by the National Center for Cotton Research (CNPA/EMBRAPA). The experiments included available genotypes from Brazil and Argentina, and were conducted in different physiografic regions, mainly in the semi-arid region (Freire et al, 1991).

Table 1 shows the yields of sunflower in different locations in 1987. The locations of Surubim and Souza had better yields of those in Patos (the experiment was lost) and Monteiro in two year-experiments (1987-88). Taking into account locations and years the following genotypes had better performance: Brasil comum, IAC-Uruguay, CNPA Charata, CNPA G-87-1BP, CNPQ G-86 34, CNPA G-86-33, DK-180 e Rumano (F 4).

Conclusions

The different kind of studies indicated that the sunflower production is a feasible alternative for Paraiba State. There are some municipalities with climatic and soil conditions for sunflower production, and others where sunflower should not be introduced.

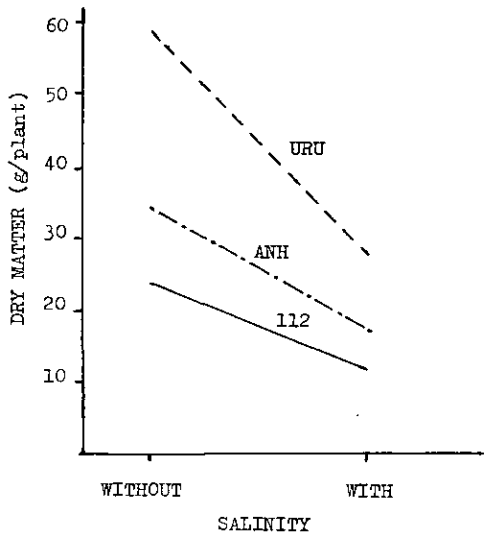

Fig. 1 - Dry matter per plant of different genotypes with and without presence of salinity.

Table 1. Sunlfower yields of different genotypes testing in 1987 in Northeast Brazil.

Treatmnets	Yields kg/ha		
	Surubim-Pe	Monteiro	Souza
IAC-Uruguay	1753a	585ab	-
IAC-Anhandy	1143abcd	585ab	2400ab
Brasil Comum	-	326ab	3317ab
CNPA G 86-36	1190abcd	836ab	2156ab
Cabure INTA	1393abc	380ab	-
Charata INTA	1354abc	624ab	-
PD-II Perucci	-	285ab	1171ab
Contisol 621	473bcd	-	864b
Contisol 422	-	210b	2477ab
DK 190	1167abcd	676ab	3102ab
Issanta	130d	703ab	2972ab
Progress	740abcd	843ab	1427ab
Semente Branca	1200abcd	785ab	2360ab
Rumano (P4)	1647ab	921a	2982ab
GB- Ilnissey	1303abcd	603ab	2737ab
Contisol 711	850cd	371ab	1905ab
Mean	1062	590	2370

Means followed by the same letter are not different by the Tuckey test at 5%

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