agMOOCs

Crop-Weather Interactions: Sunflower and Mustard

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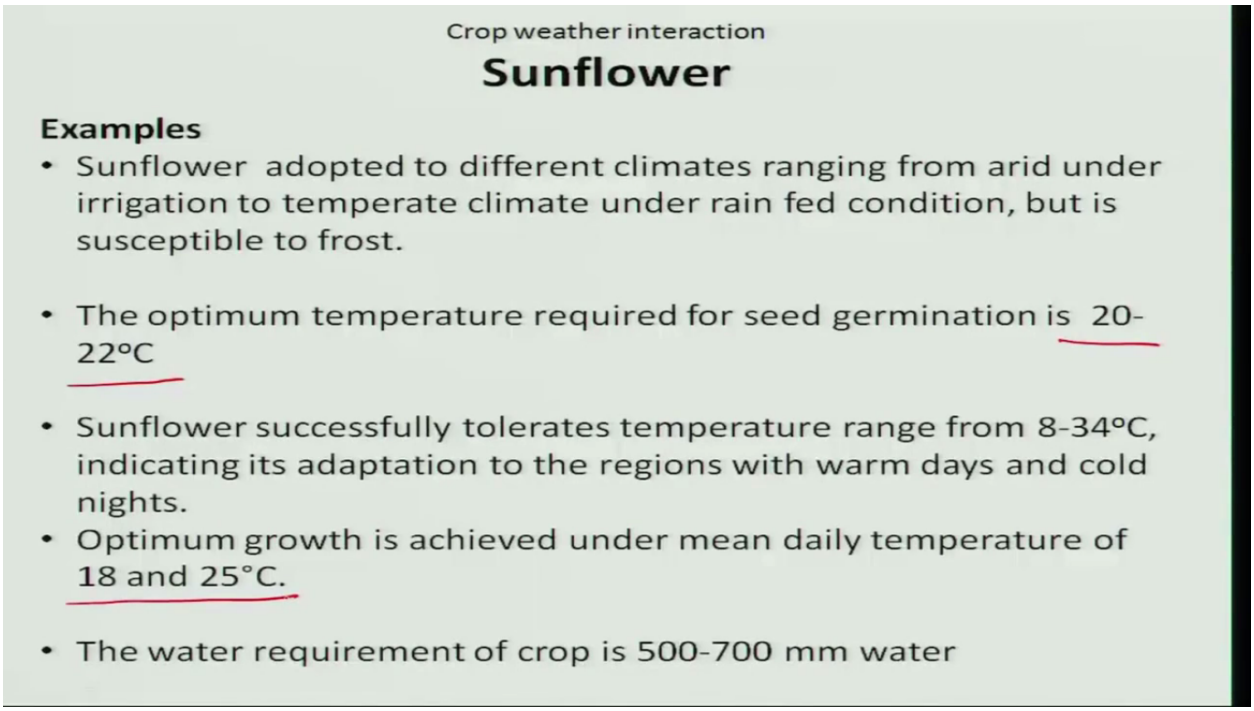
Dear students in the last class we have seen crop weather interaction for sugarbeet and chickpea. In this class we would like to see the crop weather interaction for sunflower and mustard. Both are important oilseed crop grown in most part of the Indian region.

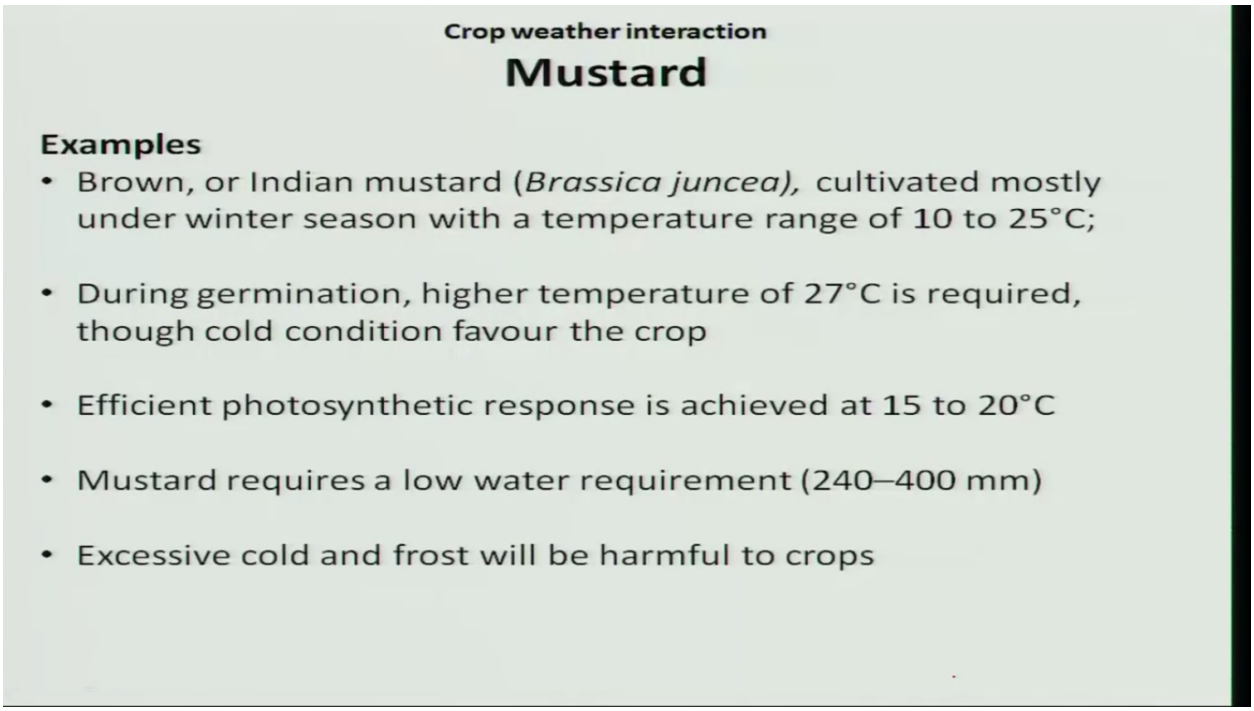
Let us see the crop weather interaction for sunflower. Sunflower is one of the important oilseed crop grown in India and it has a very strong tap root system as well as very strong stem. Let us see the crop weather interaction during different growth phases starting from germination, vegetative, reproductive, and maturity phase.



In general it is usually cultivated in Kharif and Rabi season in India. Let us see this crop weather interaction during germination phase. It requires an optimum temperature of 20 to 22 degree Celsius for seed germination. Sunflower is highly susceptible to frost also. The optimum temperature required during the vegetative stage is 18 to 25 degree Celsius. However, it can able to adopt under warm situation as well as temperature ranging from 18 to 34 degree Celsius.

Let us see the crop weather interaction during the flowering to pollination stage. This phase is highly critical period for water requirement. It will affect the flowering and the pollination. If the crop experiences rainfall for a period of one week it will adversely affect the pollination process because pollination is triggered by the insects in the case of sunflower. Therefore it should not be coincide with the rainy season.

The moisture is also very critical during the flowering phase; 20 days before the flowering and the 20 days after the flowering those period is highly critical period for moisture stress. Therefore, the farmers are advised to give a light irrigation during the flowering phase. The water requirement of the crop is almost 500 to 700 mm to complete its entire lifecycle.



Let us see the crop weather interaction for mustard crop. It is also one of the important oilseed crop grown most part of the northern India during the Rabi season especially the cultivation was started especially during the October/November and harvesting was made during the March/ April. It is one of the important winter season crop. It can tolerate up to a temperature range of 10 to 25 degree Celsius. The germination require little higher temperature of about 27 degree Celsius though it is a cold season crop. The temperature requirement is determined by the oil content of the seeds. Therefore it requires little higher temperature even the seed size is small. Let us see the crop weather interaction in different growth phases starting from germination, vegetative, reproductive, and maturity phase.

During vegetative stage the crop can be able to tolerate under a temperature range of 15 to 20 degree Celsius. During this phase excessive cold and the frost would affect the crop. Let us see the crop weather interaction during flowering phase. Cold weather, warm temperature, bright sunny hours increase the oil content of the crop. However, high temperature, high relative humidity leads to reduction in the oil content. It was also reported in India.

Let us see the water requirement of a crop. It is around 240 to 400 mm.

This is about the crop weather interaction for sunflower and mustard.

In the next class we will see the genesis on the origin of the India meteorological department.

Thank you.