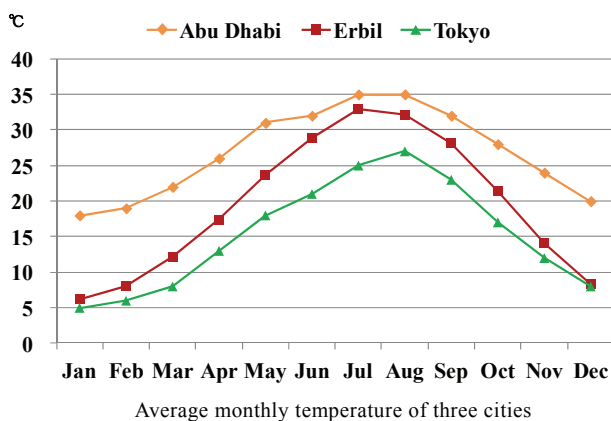


Greenhouses in the Middle East <Part 3>

Greenhouses in the Kurdistan region of Iraq

Unlike the Gulf States such as UAE which have been using greenhouses for cultivation since the 1970s, it was only after 2000 that greenhouse cultivation was introduced to the Kurdistan region. Most of these greenhouses are imported from Lebanon and they are arch greenhouses with yellow polyethylene sheet. Greenhouses in the Kurdistan region tend to be simple and typically they do not have any cooling devices such as pads and fans.

The average temperature of the main city, Erbil in the Kurdistan region exceeds 30 °C in summer. In winter, it goes down to 5 °C, like Tokyo. This means that greenhouses in the Kurdistan region will require cooling facilities in summer equivalent to those used in UAE and heating devices like those that Japanese greenhouses use in winter. This context will require a different thinking from UAE, which is only concerned about cooling technology.

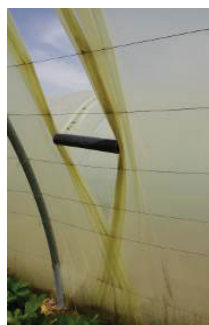


Average monthly temperature of three cities

In the Kurdistan region, in summer, they replace polyethylene sheets on the front and back sides of greenhouses with nets, and thus adapt to the heat by improving ventilation. However during the day, the temperature inside greenhouses can easily go over 50 °C. This is a harsh environment for both crops and people and makes it painful to even enter greenhouses. Because it is so very hot, people try to ventilate them by creating spaces by forcefully pulling polyethylene sheets apart



Putting up nets in summer



Ventilation space made by force

where two sheets are overlapping. However this is not very effective. Moreover, because there is no net in these spaces, pests and small animals can freely enter the greenhouses. It should be possible to improve the situation by placing a side window on the greenhouses and changing the covering materials.

As temperatures decrease from summer to autumn, people grow vegetables such as zucchinis, cucumbers and eggplants in Kurdish greenhouses. They grow crops only during the period when there is no heating necessary. Generally, greenhouse farming finishes by late October, and there is no growing between November and March when it is coldest. From around April, it is common to grow vegetables and fruits such as tomatoes and cucumbers. However the way greenhouses are used does not make the most of what greenhouses can offer. Their greenhouse cultivation is not much different from open field cultivation. A small number of ingenious farmers try to warm greenhouses using household heaters. Special heaters for agricultural purposes are rarely seen because they are not available in local hardware shops and farmers themselves need to directly import them from foreign traders.



Heaters for warming Kurdish greenhouses

As shown above, the only merit of using greenhouses in the Kurdistan region is to prolong the autumn harvest period by a few weeks. Considering the cost of installing greenhouses and the high temperatures in summer, they don't seem to offer an attractive option. However given that Iraq is dependent on neighboring countries such as Turkey, Iran, Syria and Jordan for their agricultural produce, improvement in horticultural technologies in the Kurdistan region which is the major farming region is a very important issue. The economy of the Kurdistan region is growing steadily and the population has been increasing. Despite geographical and political risks, it is expected that there will be increasing investment in the agricultural sector in future. In order to effectively use greenhouses, the best scenario would be to cultivate crops throughout the year and increase the operating ratio. It is deemed important to establish the most appropriate methods of greenhouse cultivation for the Kurdistan region, rather than to continue to be dependent on foreign imported materials.