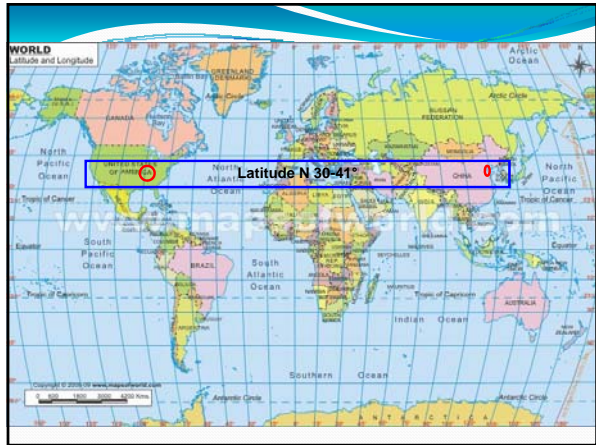


Solar Plastic Greenhouse in China

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High Tunnels in the United States

- A high tunnel is a solar-heated, plastic-covered greenhouse with no electrical or automated ventilation.
- It is used to extend the crop production season for many horticultural crops
 - Cool season crop can be planted in late November, harvested or overwintered in the high tunnel.
 - Warm season crop (tomato) can be planted in March and start to harvest in mid-June.



So What Chinese Do, besides the American type HIGHTUNNELS?







The Solar Plastic Greenhouse

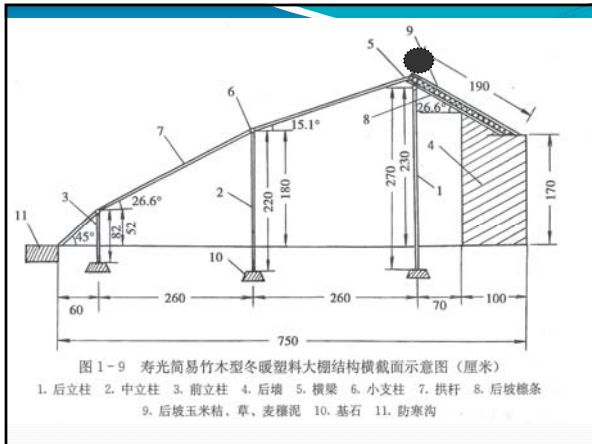
- First appeared in 1989—high tunnels were popular before that.
- No additional heating, SOLAR heated.
- Single-layer plastic films.
- No automated ventilation system.
- Produce warm-season vegetables and fruits in winter.
- Labor intensive but very profitable in China.
- Changes in structure and cultural techniques through the years.
- Mechanization possible now.

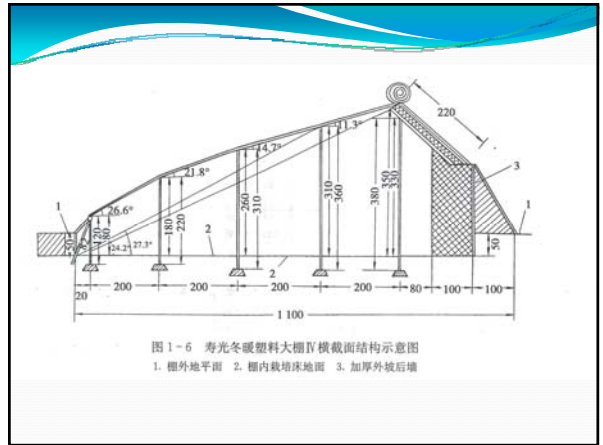
It keeps the minimum temperatures at the coldest winter NIGHT above 50°F!

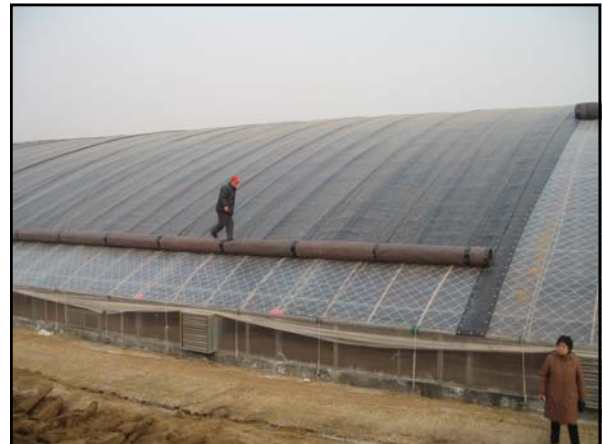
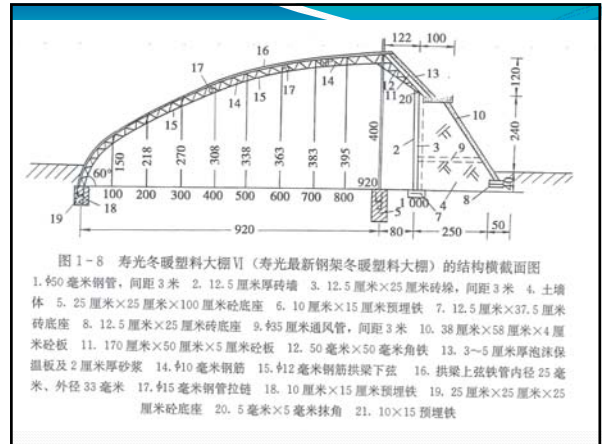
- Greenhouse effect: Short wave to long wave
- Heat stored in soil, thick walls (1-1.5m)
- An insulation layer (straws) covers the plastic film at night
- The soil temperatures are relatively high and stable.
- In colder region, some additional heating can be used, this is mostly used by research institutes for breeding and research purpose.----which is easily done in the US.

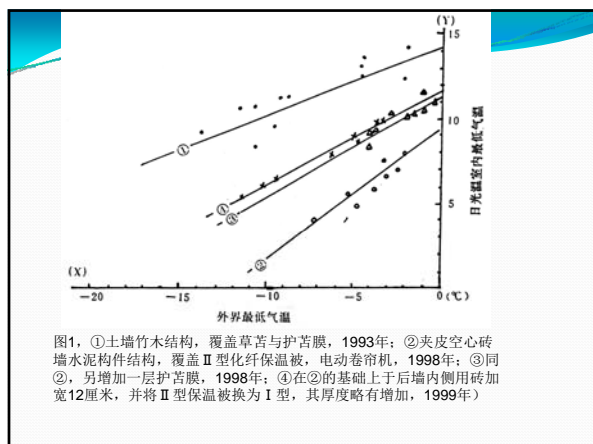
Basic Structure

- Three thick walls
- A thick roof (top)
- Support structure
- Plastic cover
- Insulation layer at night









Techniques

- Cultivars: greenhouse varieties developed through the years.
- Grafting
- Trellising
- Pruning
- Irrigation
- Temperature control
- Large amount of manure and compost
- Disease and insect control



Major shortcomings

- Labor requirement: much better now
- Ventilation
- Disease control can be tough: high humidity and cold temperature
- Continuous cloudy and snow days can be disasters: artificial light and additional heating

Will it feasible to US?

- Would THINK So!
- It will be my research project for the next few years (*I am going back to China for a visit next week*).

QUESTIONS?