

Lots of flexibility to tailor the solution to your climate and budget

Rain protection not required: Flat roof



Rain protection required: X-Frame, Rafter or A-Frame



Use either clear greenhouse roof covering or white cooling roof covering



Flat roof with blackout



Rafter or A-Frame with blackout



Contact us to learn more on how you can produce at a lower cost while balancing your capital investment.

For detailed design guidelines for the retractable roof production system refer to our "10 steps to designing your retractable roof production system" brochure for product details and specifications.



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3 production systems for Cannabis

Exploiting the low-cost advantage of growing outside with the benefits of automatic weather protection and day length control using Automatic Retractable roof houses



Tailor the cannabis production system to your climatic advantages and limitations. From simple climate optimization and weather protection... to day length control over your outdoor crops... to a complete solution from mother plant production, propagation, vegetative growth, flower production and drying of your crop after harvest.

Benefits of automatic retractable roof greenhouses, cooling houses and field covering systems for climate optimization and daylength control

1. Prevent crop loss due to:

- Spring (early season) frosts,
- Summer season hail, strong winds and the impact of hard rain
- Fall (end of season) dew and frost

2. Increase plant and flower quality by growing the plants indoors AND outdoors, whichever environment will:

- Grow strong young plants helping to reduce transplant shock
- Help plants develop strong natural defence mechanisms
- Maintain plant health through the hot summer
- Maximize CBD and terpene production,
- Help prevent mold and mildew during the wet and damp fall conditions

3. Maximize yields by:

- Extending the growing season 4-6 weeks in the spring and fall
- Improving flower development.

Cannabis produced under a retractable cooling roof in Arizona had an improved leaf-to-calyx ratio compared to outdoor,

thus more usable flower by weight.

The retractable roof house produced a high of 60% flower and 40% trim with an average of 55:45 whereas outdoors the ratio was reversed at 40:60

- Protect plants from excessive summer temperatures to reduce the chance that females will switch to males
- Minimizing dew accumulation on the flowers to reduce chance of mold and mildew

4. Use blackout systems to change harvest timing which allows for:

- Multiple crop cycles per year
- Levelling out of harvest labor requirements
- Final harvest to occur prior to colder fall conditions helping to eliminate mold and mildew
- For a reduction in the size of the drying and processing facility

5. Employ strategies to help reduce the risk of cross pollination

- Close the roof and walls 100% during

windy conditions

- Use the blackout system to advance flowering such that it occurs prior to that of outdoor hemp

6. Grow crops in the soil, raised beds, large bags or pots.

7. Avoid or minimize the cost of fuel to operate heating systems to maintain production during cold winters or solely for prevention of mold and mildew.

8. Avoid or minimize high electricity costs for HVAC or grow lights.

9. Create multifunctional structures which can be used for:

- Production of mother plants
- Production of young plants
- Vegetative growth
- Flower production
- Drying if harvesting 1 or 2 crops per year. Grow a crop and then use the same house for drying.

The choice of which retractable roof production system is best suited for your company is influenced by the following 8 factors

1. Financial

a. Is available capital limiting the investment or are funds available to make appropriate investment provided target returns can be met?

2. Climate

a. Do you have warm or cold winter conditions since it is not cost effective to grow in the winter when temperature and light levels are low? Crops can be grown year-round if winter temperatures are warm.

3. Labor

a. Is Labor supply good and at a low cost per hour or is labor difficult to find when needed and has a high cost?

4. Growing/ Harvesting strategy

a. Is it preferable to have 1, 2 or 3 crop cycles per year?

b. Will branches be selectively harvested multiple times per plant, or will the entire plant be harvested at once using a sickle mower?

5. Flexibility of the structure

a. Is it desirable to have a house that can be used to grow the mother plants, for propagation, to grow plants vegetatively, for flower production and for drying?

6. Lights to increase production in the winter

a. Is it preferable to utilize strategies to avoid the need to invest in supplemental grow lights and avoid the yearly operating costs?

b. Is it preferable to maximize the production during low light times of the year by investing in supplemental grow lights?

c. Is the supply of electricity dependable or will extensive backup systems be required?

7. Heating for increasing production and control of mold and mildew

a. Is it preferable to utilize strategies which avoid the need to invest in a heating system for control of mold and mildew?

b. Is it preferable to invest in a heating system to maximize the length of the harvest season?

8. Land availability (Yield per hectare)

a. Is the amount of land that can be used to grow cannabis limiting for any reason which would necessitate trying to maximize the yield of the growing area or, land is not a constraint which would allow for a larger growing area to be used at a lower investment per hectare?

Comparison of the 3 retractable roof cannabis production systems



#1: Retractable field covering system for climate optimization and weather protection

#2: Retractable field blackout system for day length control and weather protection

#3: Retractable roof greenhouse with blackout system



1. Financial	Capital IS limited	Capital IS limited	Capital IS NOT limiting
2. Climate/ Growing season	Cold winter: Extended Spring, summer and extended fall Warm winter: Year-round	Cold winter: Extended Spring, summer and extended fall	Warm winter: Year-round
3. Labor	Low cost, high availability	High cost, low availability	Low or high cost labor
4. Growing / harvesting strategy	<ul style="list-style-type: none"> • 2500 plants per hectare • Selective harvest of branches from large plants • 1 or 2 planting cycles per year 	<ul style="list-style-type: none"> • 18,750 plants per hectare • Mechanical harvest of the entire plant using a sickle mower • Harvest timing is manipulated to time harvests • 1 or 2 planting cycles per year 	<ul style="list-style-type: none"> • Low cost labor: 2,500 plants per hectare with 1 or 2 planting cycles per year with selective harvest of branches from large plants • High cost labor: 18,750 plants per hectare with 3 cycles per year and harvesting the entire plant at once
5. Flexibility	Peaked roof house can also be used for young plant production in the spring	Can only be used once crops have been transplanted.	Peaked roof greenhouse can be used for mother plants, propagation, vegetative production, flower production and possibly drying
6. Lights to increasing production in the winter	No. Only 2-5 kW hours of electricity is required per hectare to operate the retractable roof house.	No. Only 2-5 kW hours of electricity is required per hectare to operate the retractable roof house.	Lights for daylength extension are required. Grow lights are optional.
7. Heating for increasing production and control of mold and mildew.	Not required	Not required	If required
8. Land availability	Requires large growing area	Requires large growing area	Highest yield per acre or hectare