



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Andrew Shimshock; Daniel Sours	Project Number J1125
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Project Title The Living Roof
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<p align="center">Abstract</p> <p>Objectives/Goals Which vegetation planted on the roof, works best to cool down the temperature of a miniature house?</p> <p>Methods/Materials Dirt, Succulent plant, Chocolate Mint herb, Blue fescue, Vernier Probe, Water Syringe, Fluorescent Lamp, Water, Caulking/caulking gun, Boxes 12" X 7.75"X 7.75", Plastic Containers 12.5"x 13" x 2". Build boxes; Caulk boxes; Plant vegetation into plastic containers with dirt; Grow plants under fluorescent lights; Add 200ml of water to plants every other day (continual); Place plant onto boxes; Measure temperature of ambient air and boxes in morning, afternoon; Repeat step 7 for one week.</p> <p>Results</p> <table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Temp.(C)</th> <th>Outside</th> <th>Succulent</th> <th>Plant</th> <th>Chocolate Mint</th> <th>Plant</th> <th>Grass</th> <th>Dirt</th> </tr> </thead> <tbody> <tr> <td>1/5</td> <td>7:35 am</td> <td>5.9</td> <td>5.8</td> <td>5.7</td> <td>5.8</td> <td>5.8</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/5</td> <td>3:38 pm</td> <td>15</td> <td>14.5</td> <td>14.3</td> <td>14.5</td> <td>14.9</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/5</td> <td>6:30 pm</td> <td>10.2</td> <td>10.2</td> <td>9.8</td> <td>9.9</td> <td>9.8</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/6</td> <td>7:35 am</td> <td>6.4</td> <td>6.3</td> <td>6.3</td> <td>6.3</td> <td>6.3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/6</td> <td>5:10pm</td> <td>11.1</td> <td>10.9</td> <td>10.9</td> <td>11.0</td> <td>11.0</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/7</td> <td>7:35 am</td> <td>5.8</td> <td>5.7</td> <td>5.7</td> <td>5.7</td> <td>5.6</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/7</td> <td>5:05 pm</td> <td>11.9</td> <td>11.7</td> <td>11.6</td> <td>11.7</td> <td>11.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/8</td> <td>6:15 pm</td> <td>10.3</td> <td>10.2</td> <td>10.0</td> <td>10.2</td> <td>10.2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/9</td> <td>11:56 am</td> <td>11.7</td> <td>11.7</td> <td>11.6</td> <td>11.7</td> <td>11.6</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/10</td> <td>10:41 am</td> <td>12.7</td> <td>12.6</td> <td>12.6</td> <td>12.6</td> <td>12.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/10</td> <td>4:37 pm</td> <td>13.6</td> <td>13.4</td> <td>13.4</td> <td>13.5</td> <td>13.5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1/11</td> <td>7:30 am</td> <td>7.4</td> <td>7.3</td> <td>7.3</td> <td>7.3</td> <td>7.2</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Conclusions/Discussion The data shows that the chocolate mint plant cooled down the temperature of a miniature house the most during midday. The dirt and chocolate mint cooled down the miniature houses most in the morning. During midday the chocolate mint cooled down the house the most, followed by the succulent, the grass the third most and the dirt the fourth most. In the morning, the dirt and chocolate mint cooled down the house the most followed by grass and succulent. Much more cooling occurred during the day when the sun was out and air temperature was highest. This experiment shows that plants transpiration different rates cool houses down at difference rates. Many factors like temperature, humidity, light, wind and water affect how each plant uses transpiration to</p>	Date	Time	Temp.(C)	Outside	Succulent	Plant	Chocolate Mint	Plant	Grass	Dirt	1/5	7:35 am	5.9	5.8	5.7	5.8	5.8				1/5	3:38 pm	15	14.5	14.3	14.5	14.9				1/5	6:30 pm	10.2	10.2	9.8	9.9	9.8				1/6	7:35 am	6.4	6.3	6.3	6.3	6.3				1/6	5:10pm	11.1	10.9	10.9	11.0	11.0				1/7	7:35 am	5.8	5.7	5.7	5.7	5.6				1/7	5:05 pm	11.9	11.7	11.6	11.7	11.7				1/8	6:15 pm	10.3	10.2	10.0	10.2	10.2				1/9	11:56 am	11.7	11.7	11.6	11.7	11.6				1/10	10:41 am	12.7	12.6	12.6	12.6	12.7				1/10	4:37 pm	13.6	13.4	13.4	13.5	13.5				1/11	7:30 am	7.4	7.3	7.3	7.3	7.2			
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Summary Statement Investigating how living roofs of different plant types affect the temperature inside of miniature houses.
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Help Received Father helped build the houses.
