Growing Vegetables in a Raised Bed

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University of Missouri Extension

Outline
- Introduction to raised bed gardens
- Types of raised beds
- Construction materials
- Design
- Soil mix
- Growing vegetables in a raised bed
- The KOLR10 Raised Bed Vegetable Project

Growing Vegetables in a Raised Bed

Advantages of Raised Beds
- Better drainage
- Higher yields
- Expanded growing season
- Easier maintenance
- Using difficult sites
- Useful for children and people with disabilities

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Locating the Raised Bed
- Full sun
- Protection from wind
- Close to water
- Close to the house
- Away from trees with invasive roots
- Access

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Types of Raised Beds
- Temporary raised beds
- Permanent raised beds

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Construction materials
- Treated landscape timbers (?)
- Used railroad ties (?)
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Construction materials

- Treated lumber
- Rot resistant lumber
- Synthetic lumber

Design

- Shape
  - Often determined by site limitations
  - Rounded or curved beds are easier with concrete blocks or masonry
Growing Vegetables in a Raised Bed Design

**Shape**

**Width**
- 4 feet width is best for beds accessed from both sides
- 3 feet width is best for beds accessed from one side, or beds for people in wheelchairs or with walkers

**Depth**
- Most plants do best with at least 6-12 inches of rooting depth
- Beds higher than 24 inches require retaining walls and foundations
- Beds for disabled gardeners are often 18-24 inches high
- Seating can be accommodated on the sides of the bed

**Length**
- Usually determined by the site
- Break up long lengths

**Pathways**
- Foot traffic only – 1-3 feet wide
- Wheelchair – 4 feet wide
- 2 wheelchairs – 7 feet wide
- Hard surface is best

**Special features – cold frames**
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Design
- Cold frames

Design
- Shape
- Width
- Length
- Depth
- Pathways
- Special features – row covers, netting

Soil Mix
- Good quality topsoil
- Added organic matter
- Work the base soil
- Mix the added soil with the base soil
- Can also use mixtures that do not contain soil – peat moss, vermiculite, rice hulls, compost, other materials

Special Techniques
- Vertical gardening

Special Techniques
- Vertical gardening
Special Techniques

- Vertical gardening
- Mulching
- Companion planting
- Succession planting: Beans!, Beans!!, Beans!!!
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The Project

- Cooperators
  - Jill Gilardi, KOLR10
  - Patrick Byers, MU Extension

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Goals
- Demonstrate raised bed vegetable gardening
- Demonstrate potential for home vegetable production

Construction materials - 2008

- Treated lumber
- Metal stake supports
- Lined

Construction materials - 2009

- Solid landscape blocks

Design

- Length = 24 feet
- Depth = 1 foot
- Width = 8 feet
- Shape = rectangle
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The Soil Test

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Soil Mix

- Topsoil
- Compost – 2 inches
- Tilled together

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The Budget

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost per bed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed sides</td>
<td>$90.00</td>
</tr>
<tr>
<td>Bed supports</td>
<td>$13.14</td>
</tr>
<tr>
<td>Lining for bed sides</td>
<td>$9.74</td>
</tr>
<tr>
<td>Topsoil</td>
<td>$58.00</td>
</tr>
<tr>
<td>Compost</td>
<td>$15.00</td>
</tr>
<tr>
<td>Soaker hose</td>
<td>$10.00</td>
</tr>
<tr>
<td>Straw mulch</td>
<td>$4.79</td>
</tr>
<tr>
<td>Soil amendments</td>
<td>$10.00</td>
</tr>
<tr>
<td>Seeds and transplants</td>
<td>$50.00</td>
</tr>
<tr>
<td>Misc</td>
<td>$100.00</td>
</tr>
<tr>
<td>Rental items</td>
<td>$160.00</td>
</tr>
<tr>
<td>Rental items</td>
<td>$50.00 (estimated)</td>
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</tbody>
</table>

Total (with rentals): $570.67
Total (without rentals): $360.67

Growing Vegetables in a Raised Bed

The Planting Plan - 2008

<table>
<thead>
<tr>
<th>The Timeline - 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 23 – planning meeting</td>
</tr>
<tr>
<td>May 9 – construct raised bed</td>
</tr>
<tr>
<td>May 21 – planting the raised bed</td>
</tr>
<tr>
<td>July 3 – first harvest</td>
</tr>
<tr>
<td>July-October</td>
</tr>
<tr>
<td>Harvest is in full swing</td>
</tr>
<tr>
<td>Succession planting</td>
</tr>
<tr>
<td>Warm season crops</td>
</tr>
<tr>
<td>Cool season crops</td>
</tr>
</tbody>
</table>

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The Timeline - 2009

<table>
<thead>
<tr>
<th>The Timeline - 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 25 - Construct the new raised bed</td>
</tr>
<tr>
<td>March 25 - Install cold frame</td>
</tr>
<tr>
<td>April 8 - planting the cold frame</td>
</tr>
<tr>
<td>April 15 - planting the cool season garden</td>
</tr>
<tr>
<td>May-November</td>
</tr>
<tr>
<td>Harvest is in full swing</td>
</tr>
<tr>
<td>Succession planting</td>
</tr>
<tr>
<td>Cool season crops: May-June</td>
</tr>
<tr>
<td>Warm season crops: June-frost</td>
</tr>
<tr>
<td>Cool season crops: September-frost</td>
</tr>
</tbody>
</table>
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The Challenges

- Pest management - insects
  - Japanese beetle
  - Tomato fruitworm
  - Cabbage looper
  - Tomato hornworm
  - Dill worm
  - Flea beetle
  - Aphids

- Pest management - diseases
  - Tomato early blight
  - Cucumber anthracnose

The Weather

- Wind and hail damage
- Wet conditions
- Hot conditions

Other challenges

- Weeds in the mulch
- What to do with the harvest?
- Thieves

The 2008 Harvest

- Lettuce – 3 spring salads, 8 fall salads
- Cucumbers – 118
- Green beans – 8.5 lbs
- Tomatoes – 218
- Bell peppers – 30
- Onions – 12 green + 13 small bulb
- Eggplant – 40
- Broccoli – 8
- Cabbage – 3
- Cauliflower – 5
- Radish – 5 bunches
- Herbs –
  - Basil – 8 bunches
  - Parsley – 11 bunches
  - Sage – 2 bunches
  - Rosemary – 1 bunch
- Flowers – zinnias (7 bouquets); sunflower (38)

The 2008 Harvest - Value

- Lettuce – 3 spring salads, 8 fall salads $20.06
- Cucumbers – 118 $85.00
- Green beans – 8.5 lbs $14.36
- Tomatoes – 218 $199.00
- Bell peppers – 30 $20.70
- Onions – 12 green + 13 small bulb $3.38
- Eggplant – 40 $15.92
- Broccoli – 8 $7.16
- Cabbage – 3 $4.14
- Cauliflower – 5 $14.95
- Radish – 5 bunches $5.59
- Herbs –
  - Basil – 8 bunches $19.52
  - Parsley – 11 bunches $8.69
  - Sage – 2 bunches $4.98
  - Rosemary – 1 bunch $2.49
- Flowers – zinnias (7 bouquets); sunflower (38) $59.00
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The 2008 Harvest

Total value of harvest: $384.11

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Developments in 2009

- More vegetables
  - Spring cool season garden
  - Warm season garden
  - Fall cool season garden
  - Cold frame gardening
- A new raised bed
  - Concrete block walls
  - Soilless growing media

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Developments in 2009

- More vegetables
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Developments in 2009

- The new raised bed

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Developments in 2009

- The new raised bed
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Developments in 2009

- The new raised bed – challenges
- Nutrition was an issue
- Watering was a challenge
- Voles!!!
- Plants needed staking or support

Resources

  - Raised bed gardening
  - Vegetable planting calendar
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  417-859-2044

Any Questions?