# CrownPro 1.0

Program for the calculation of crown projection areas

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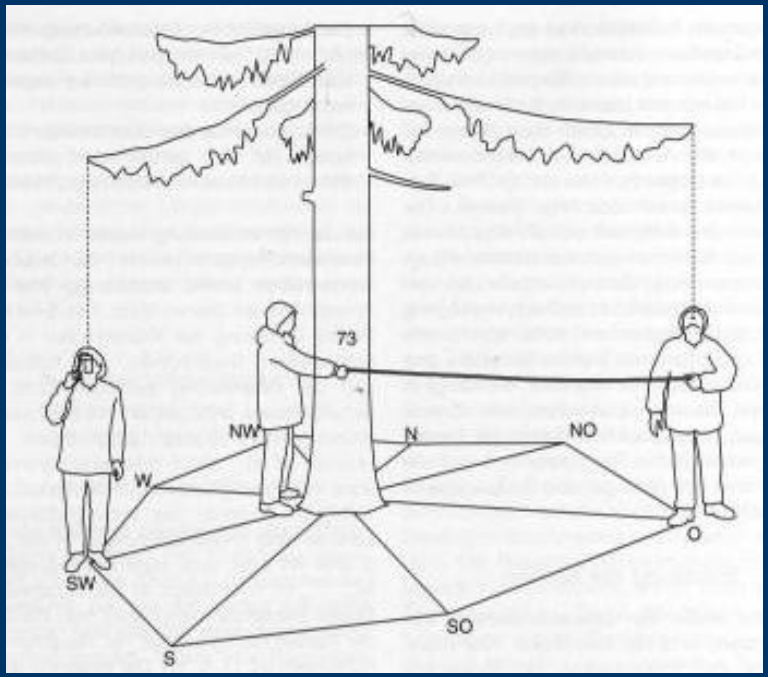
# Background

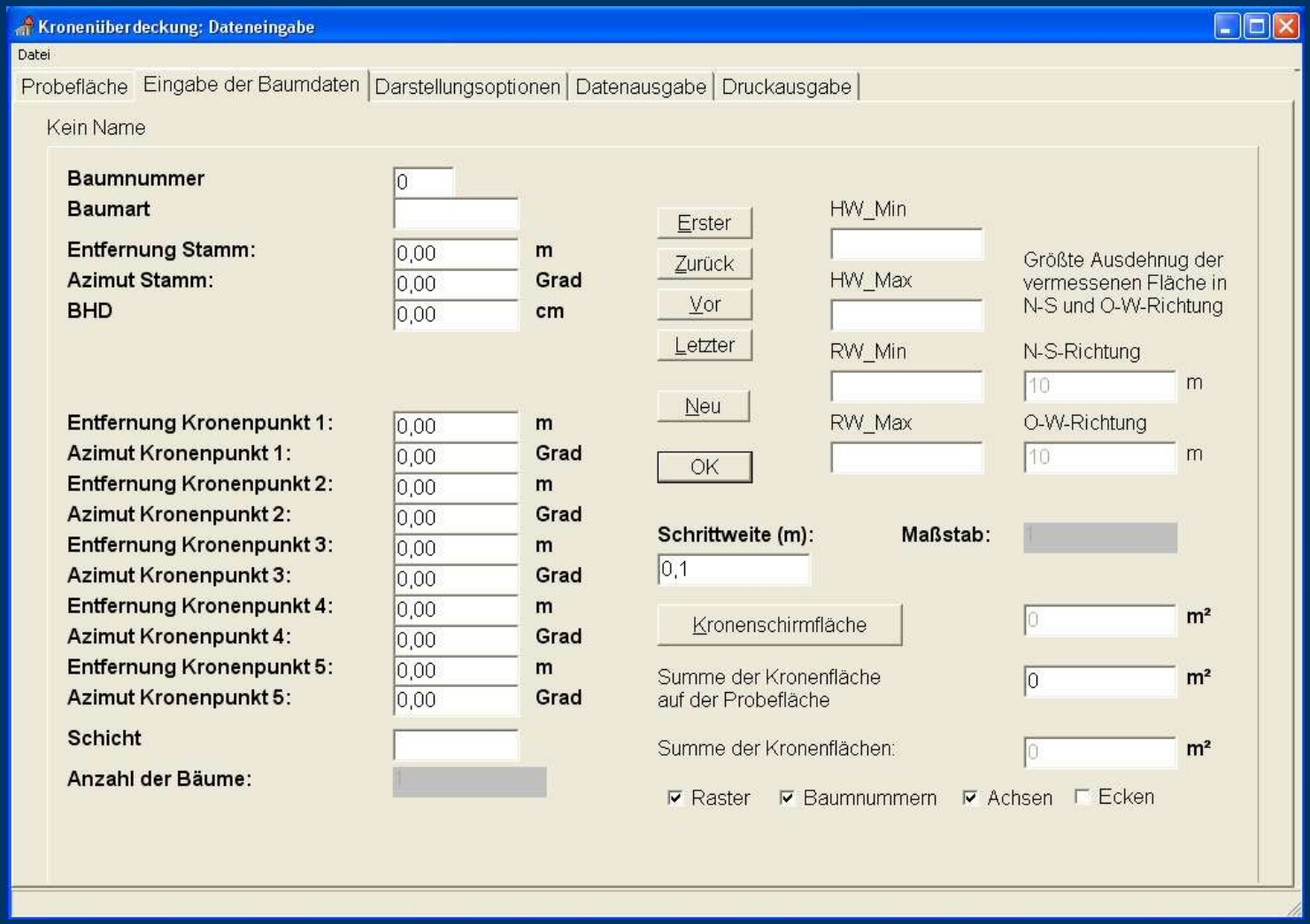
- Crown projection – What is it?
  - 2D representation of horizontal crown extent
  - Created by perpendicularly 'projecting' outermost points of a crown to the ground



# Background

- Crown projection – What is it?
  - 2D representation of horizontal crown extent
- Crown projection – Purpose?
  - Analyze / visualize horizontal spatial dimension and interaction of forest tree crowns
  - Calculation of “Deckungsgrad” = ratio of crown covered area to total area of sample plot
  - Calculation of crown surface area
    - Interception of precipitation / evaporation
    - Absorption of sun radiation
    - Photosynthesis / respiration
- Program “Kronenprojektion”

# Original program: Kronenprojektion



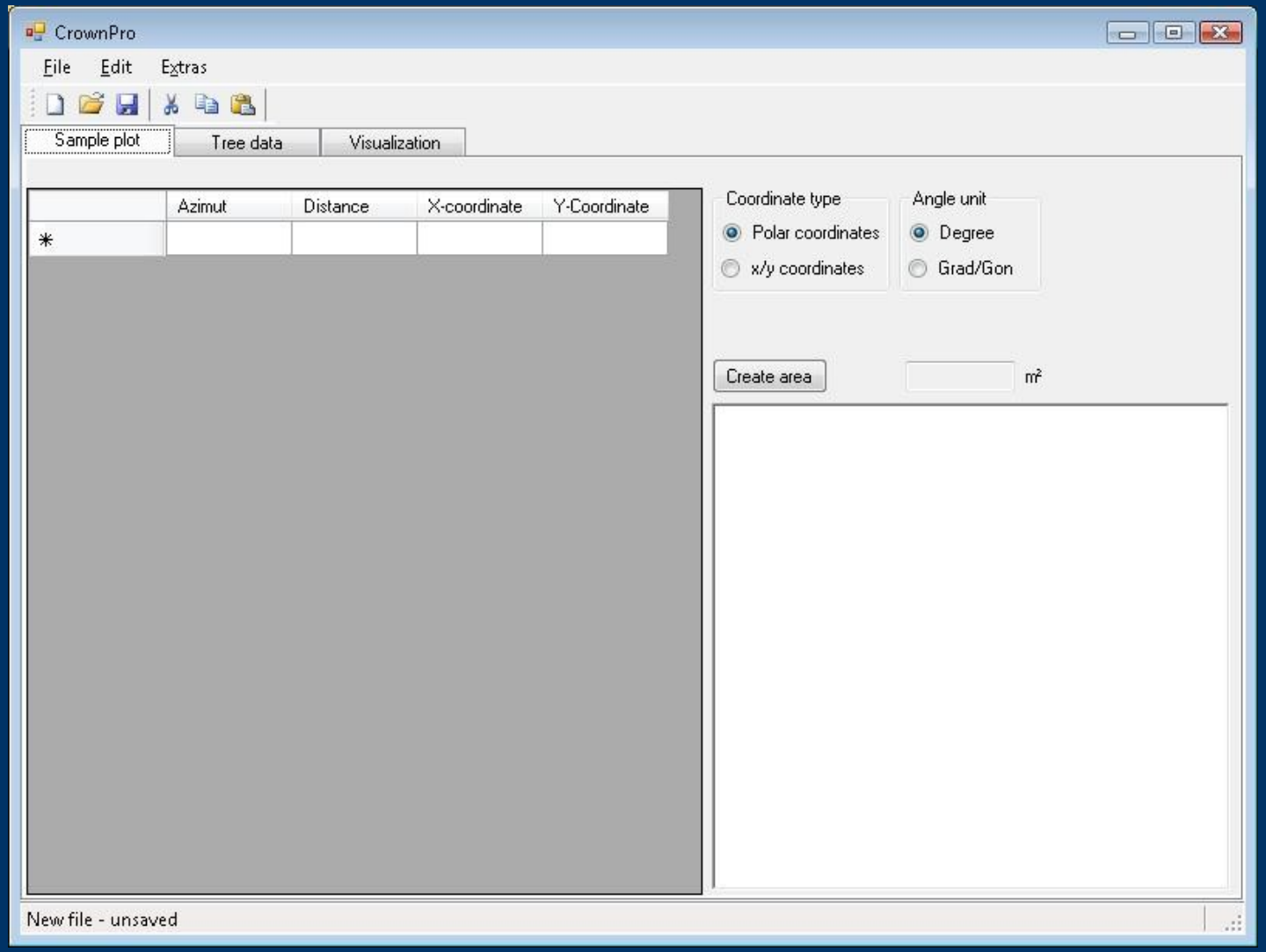
# Goal of the project

- Write a program with same basic capabilities which additionally allows:
  - Creation of more than 5 crown points per tree to allow a better approximation of crown shape
  - Crown points having the center of the stem as point of origin
  - Multi-language GUI (German / English)
- More:
  - Use modern programming language and programming approach (object oriented!)
  - Improve stability / usability / interface design
  - Windows - 'Look & Feel'

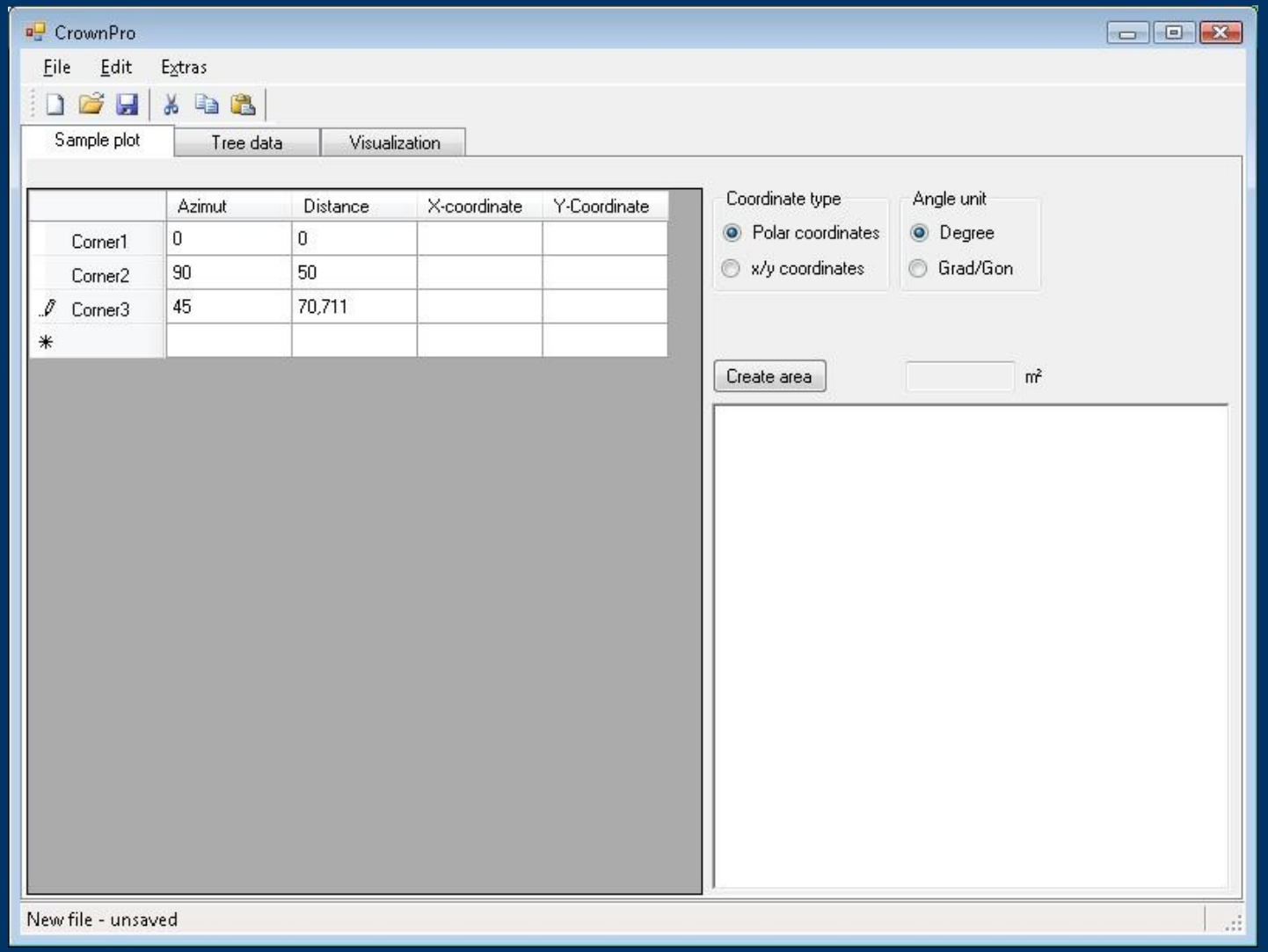
# Methodology

- Programming language:
  - Visual Basic .NET 2005
- Development:
  - Visual Basic 2005 Express, Visual Studio 2005 Professional

# Result: CrownPro 1.0



# Definition of sample area



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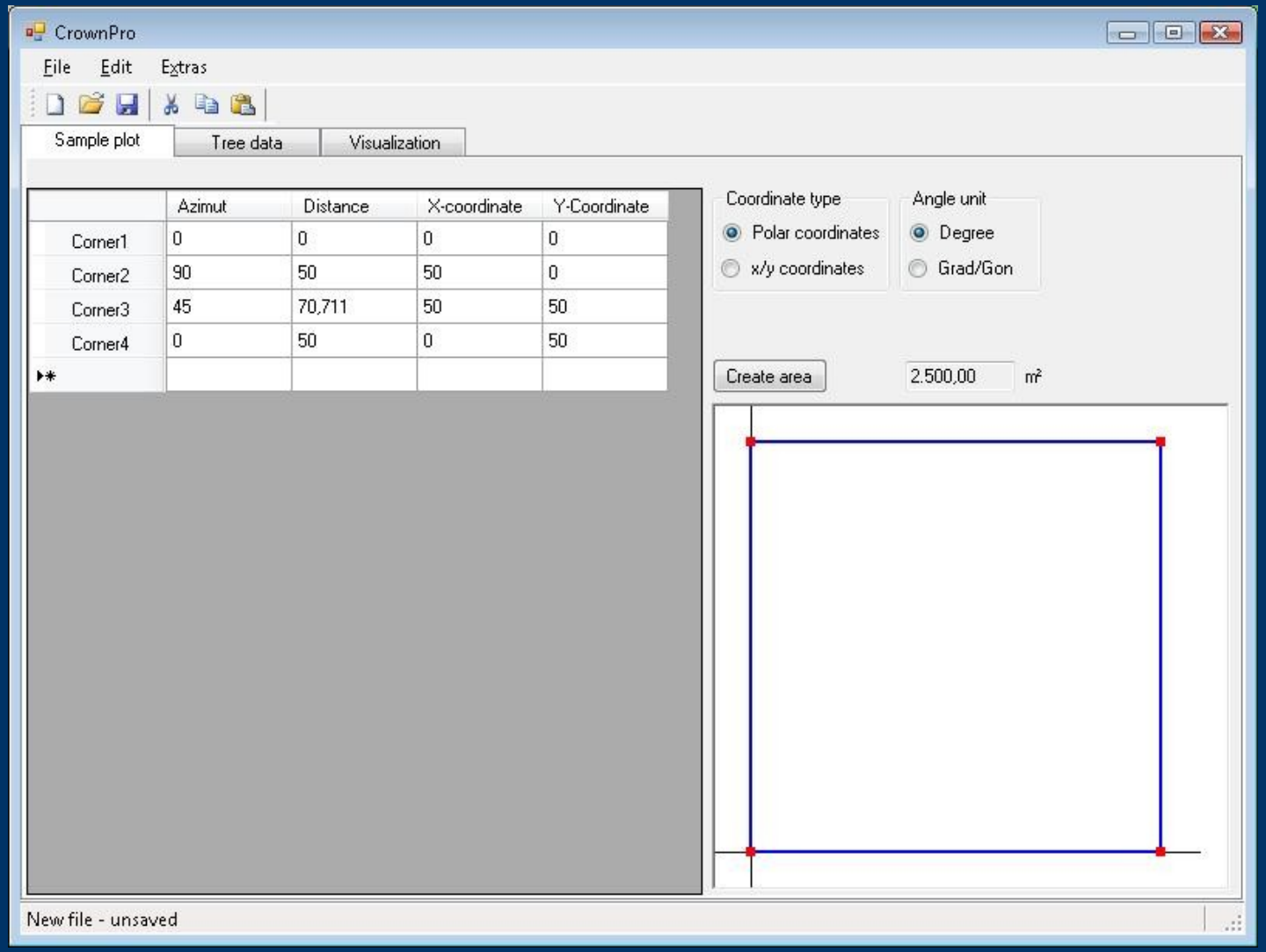
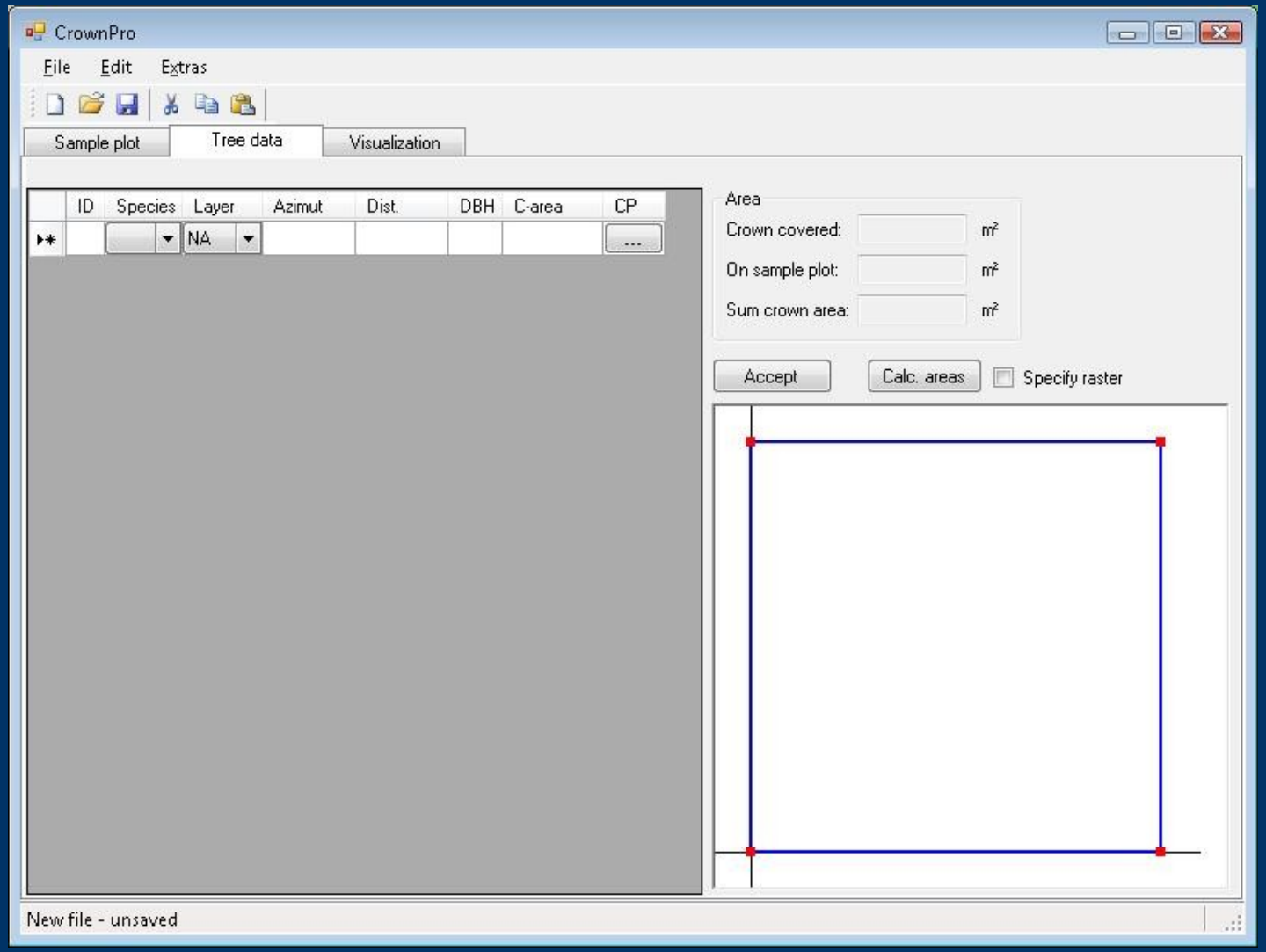


# Definition of trees



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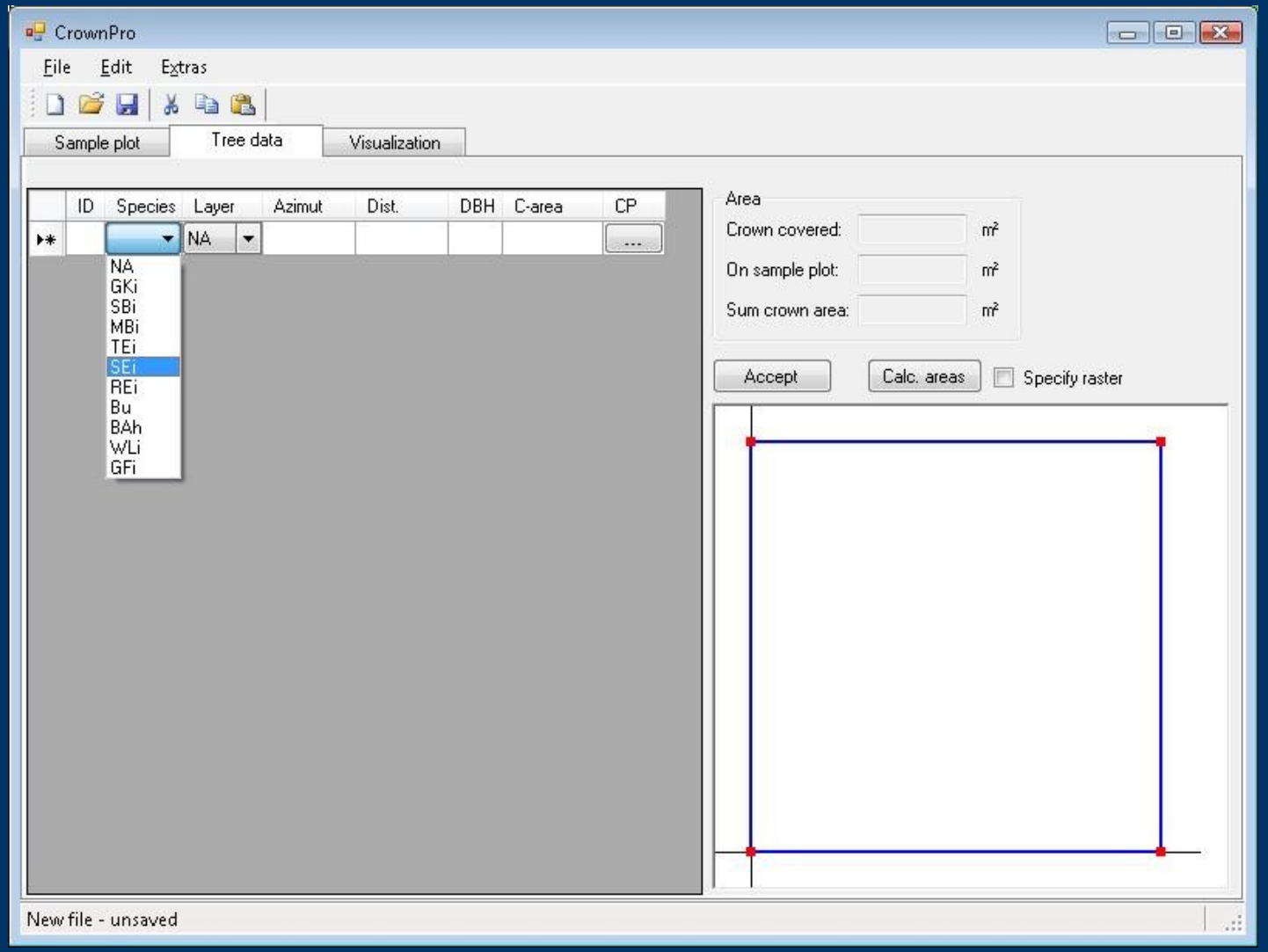

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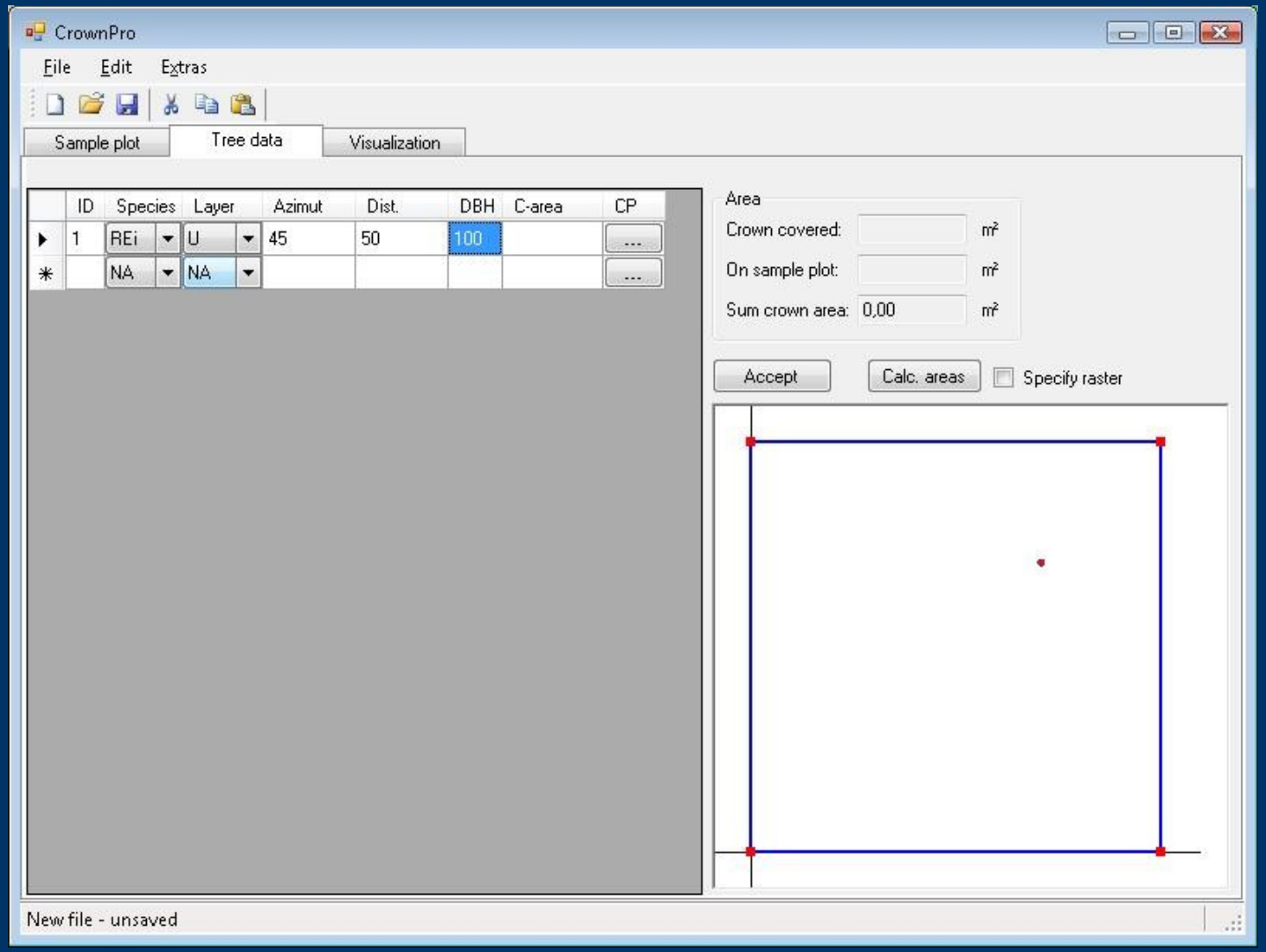
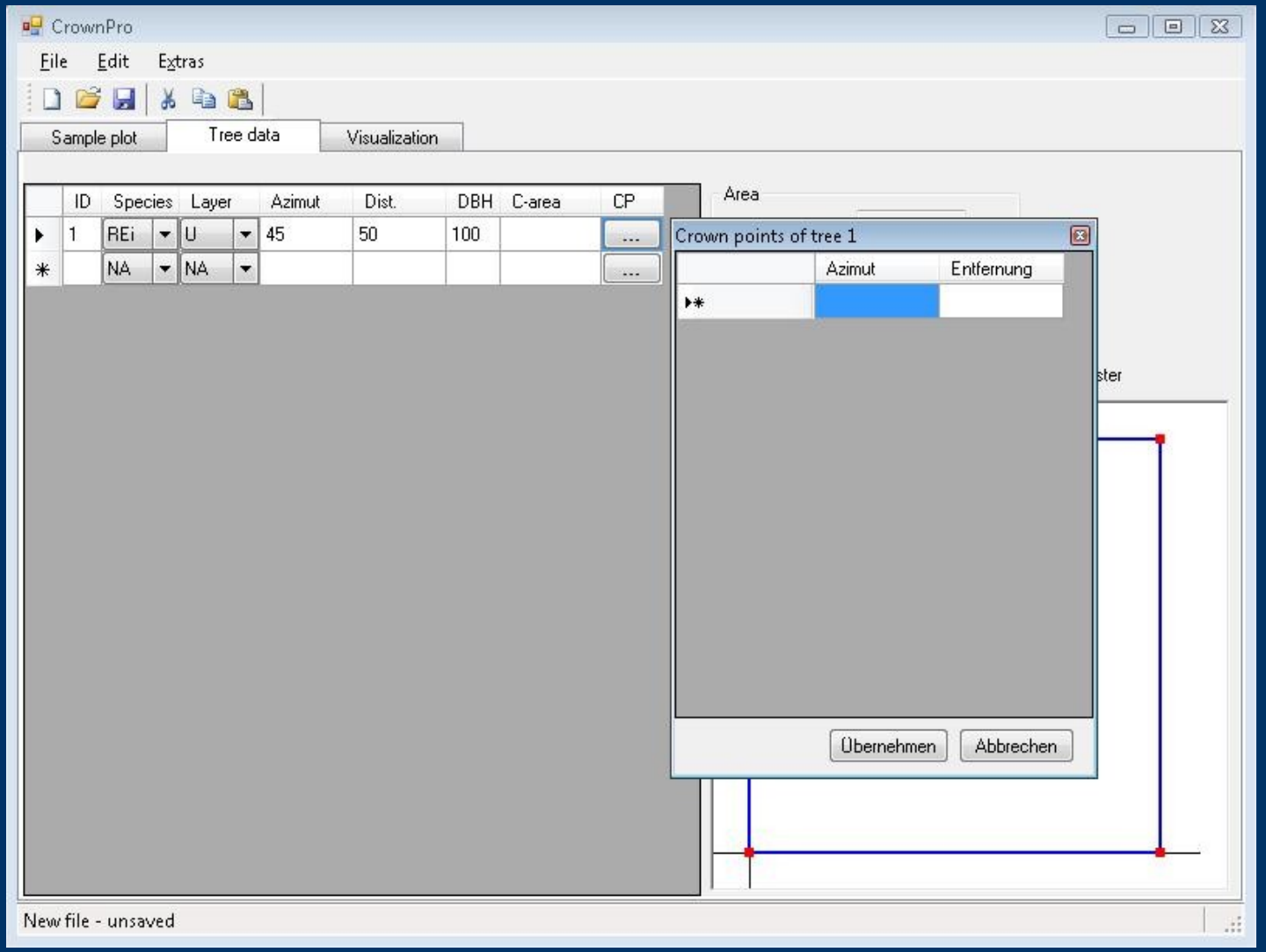


# Definition of crown points



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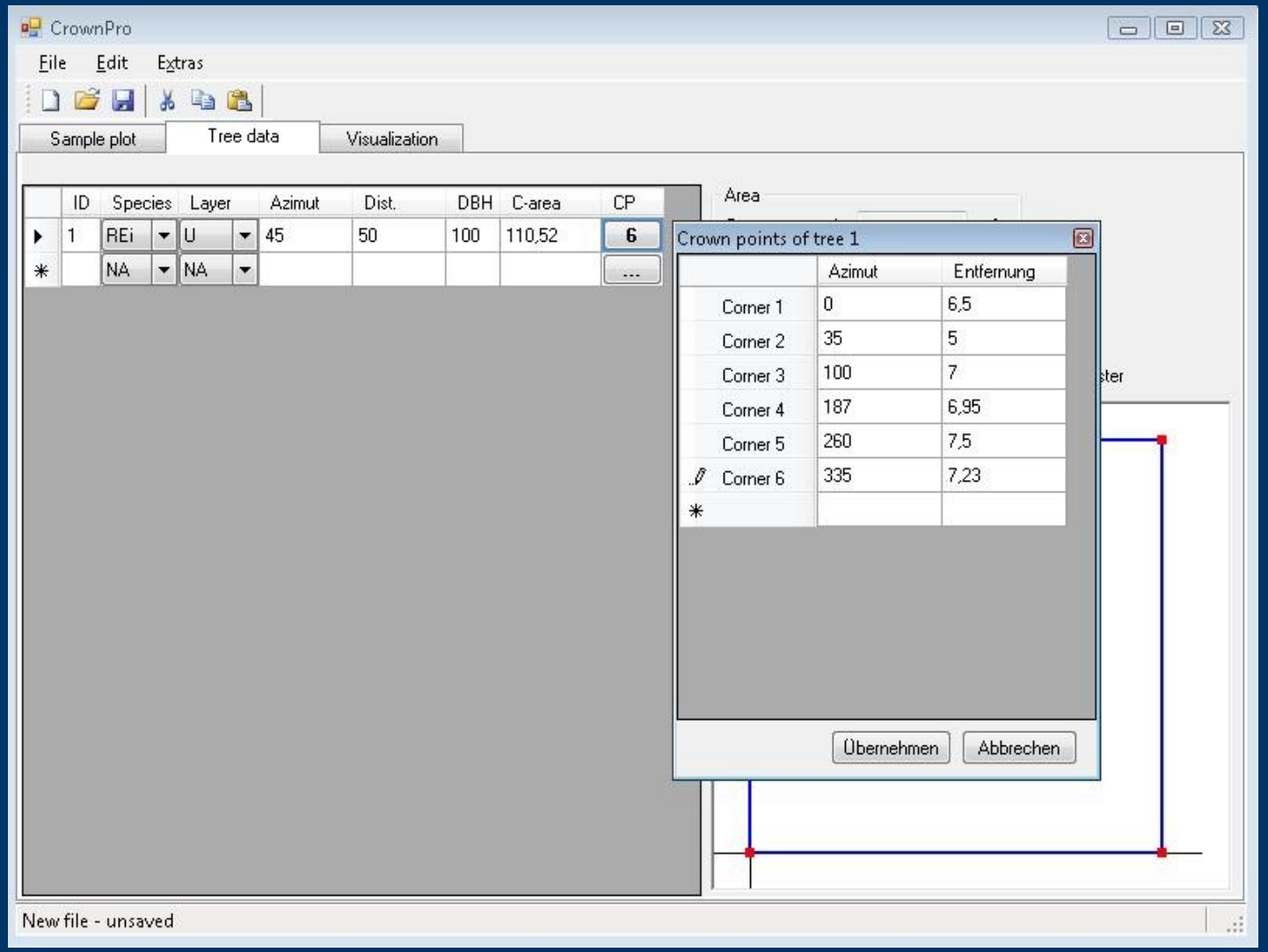

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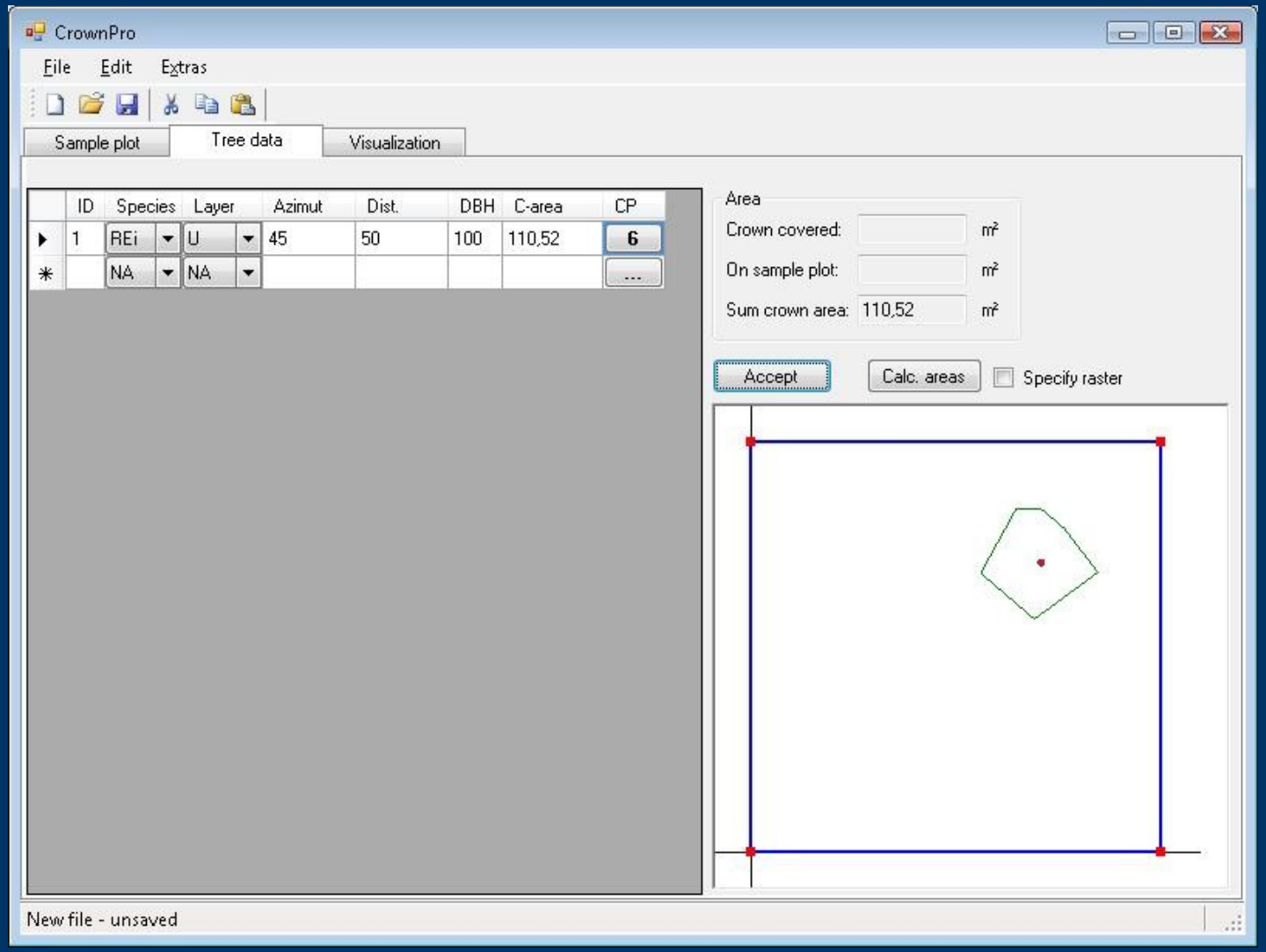
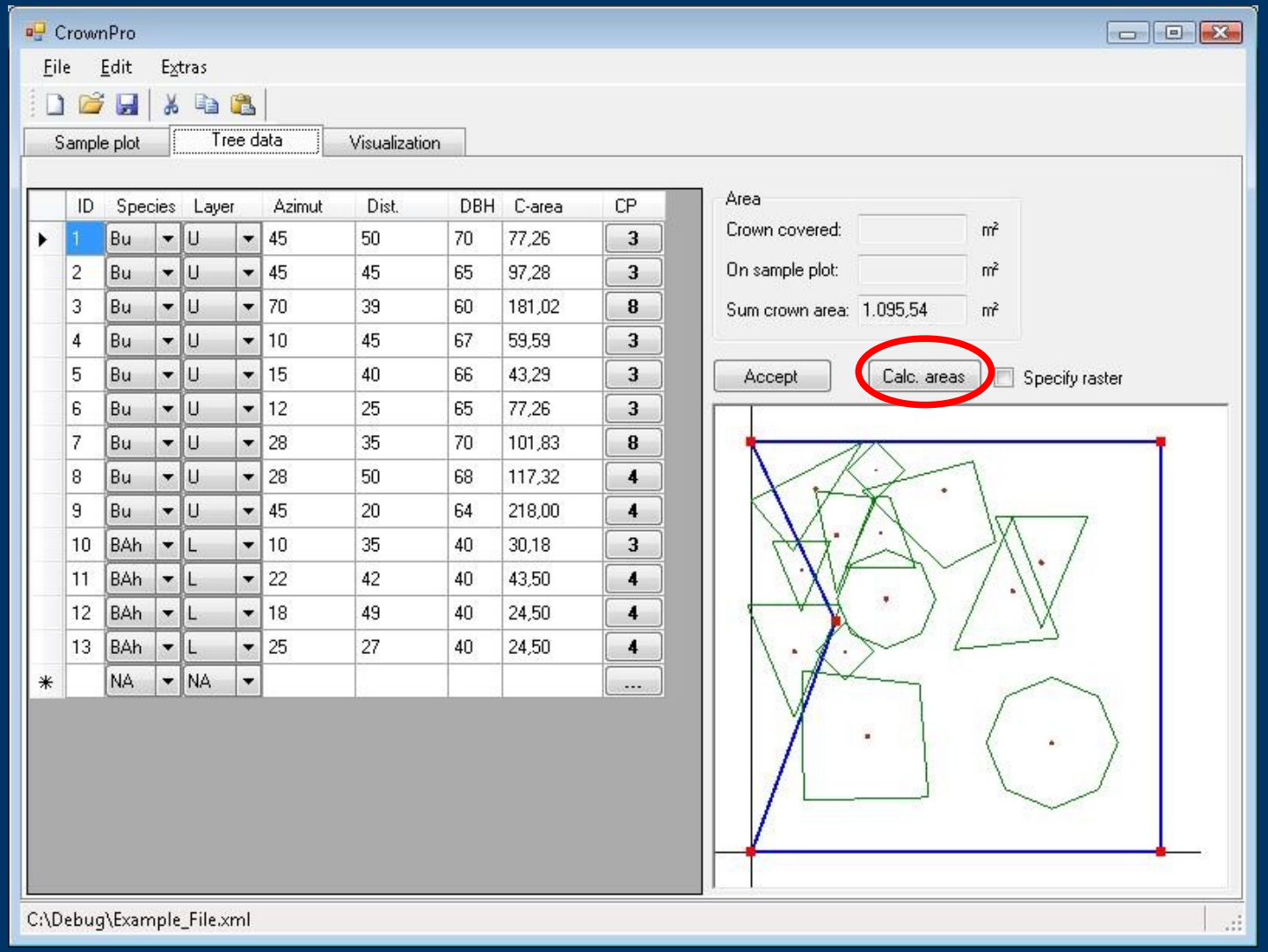


# Calculate crown covered area



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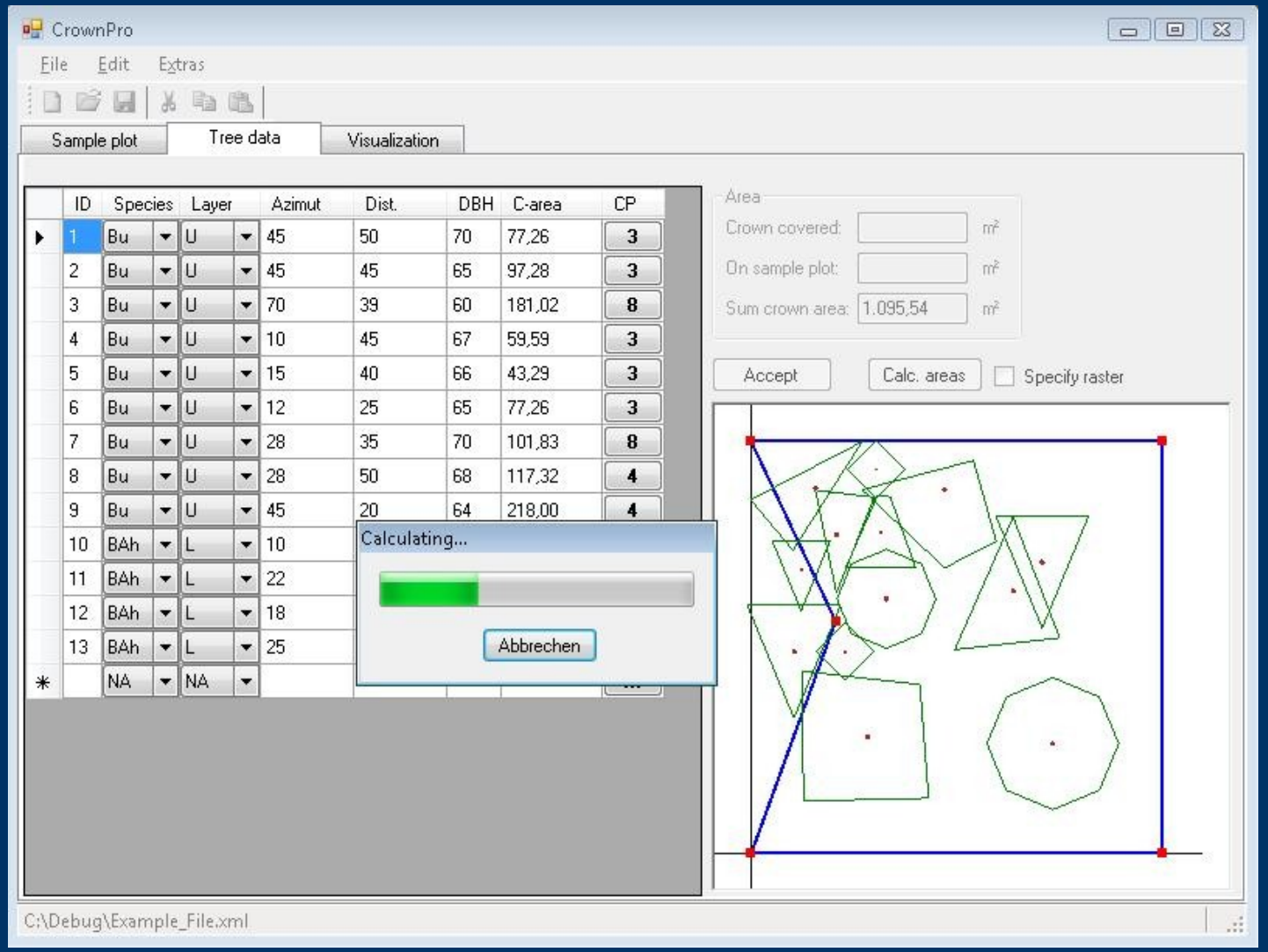

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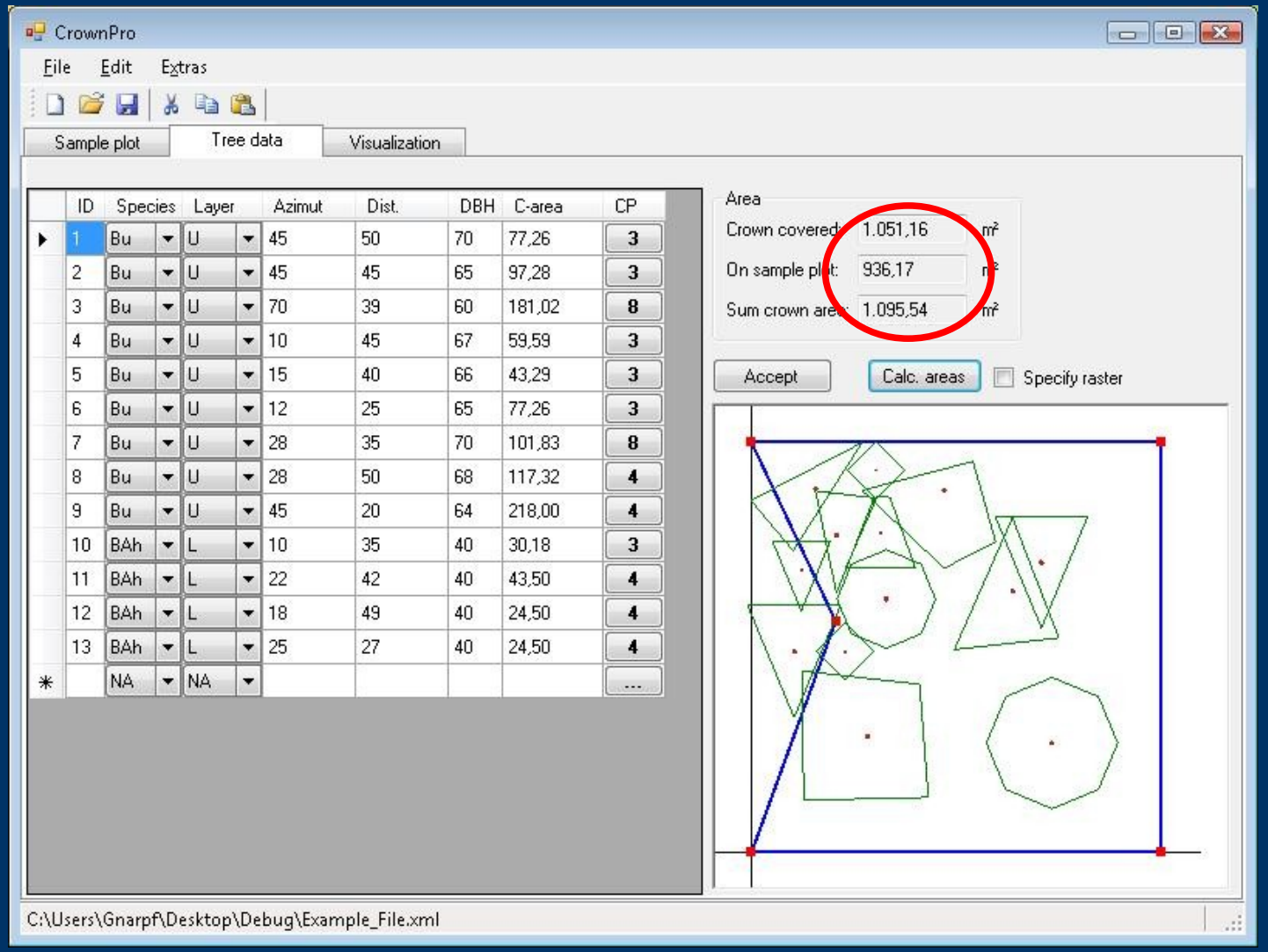
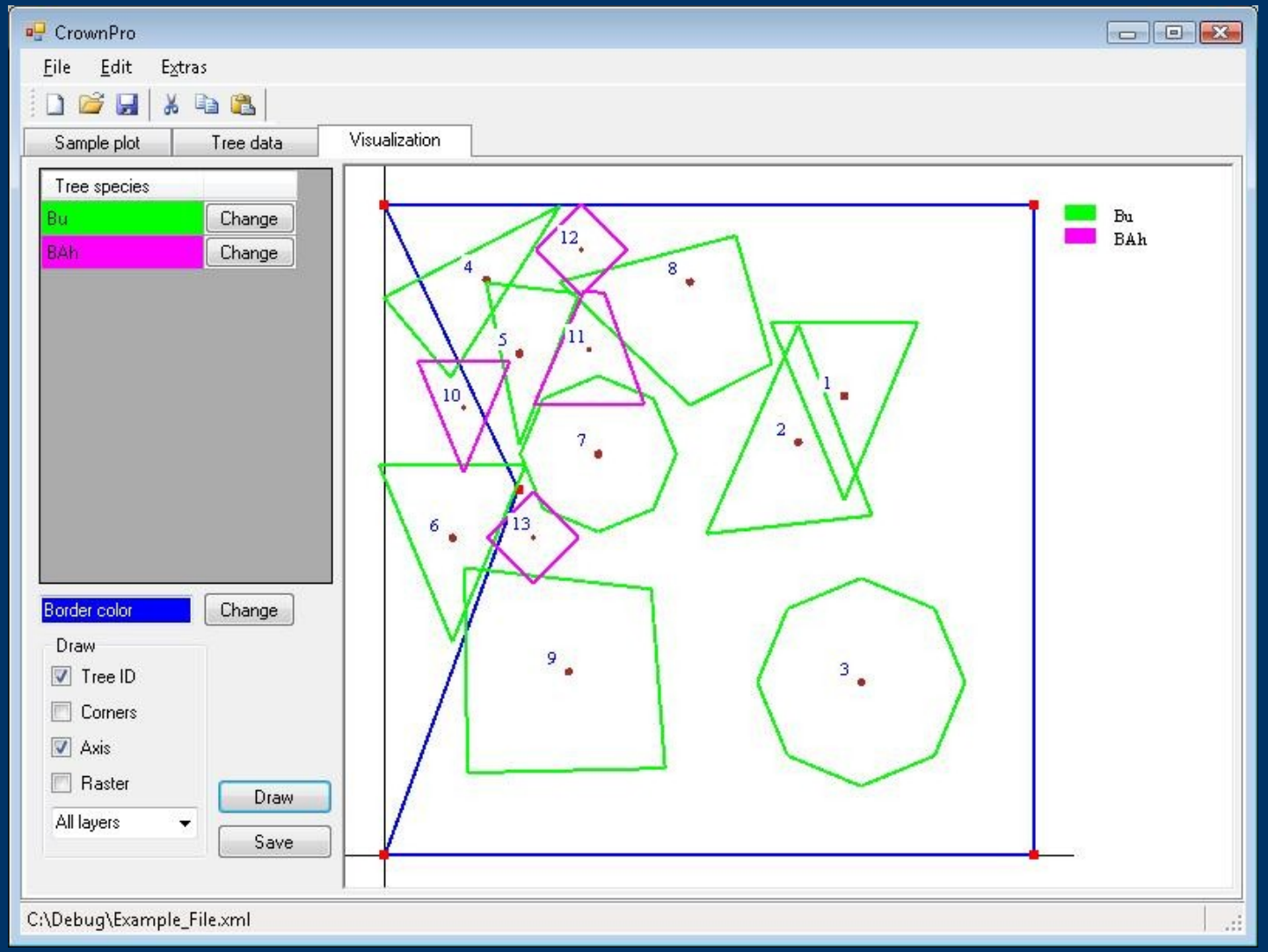
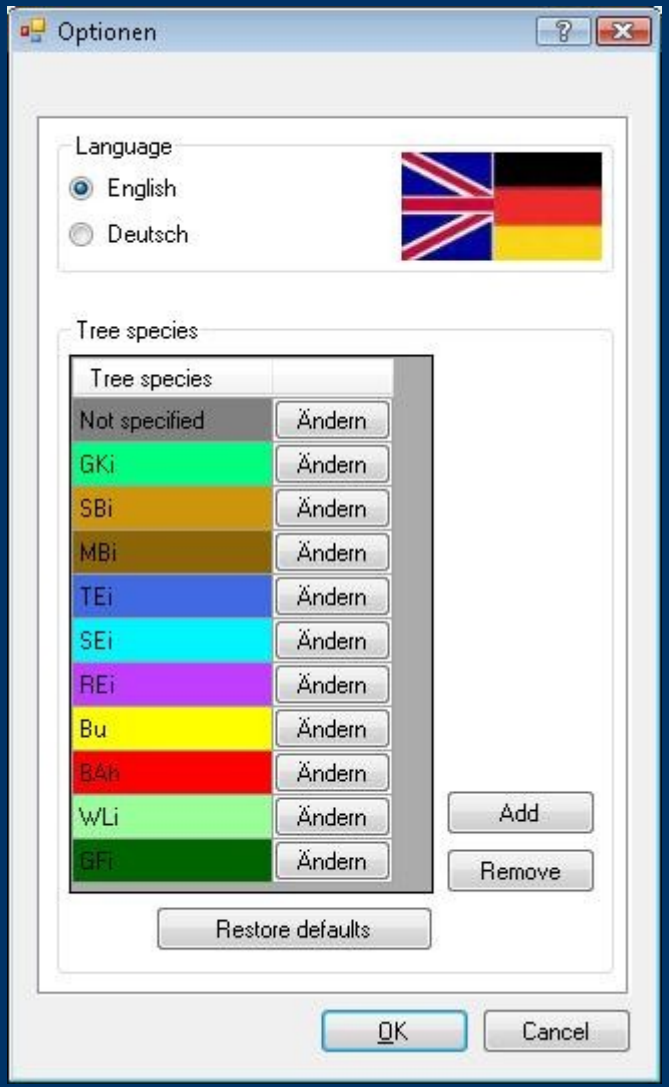


# Visualization



# Options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Language
English
Deutsch
Tree species
Tree species
Tree species
Not specified
Ändern
GKi
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REi
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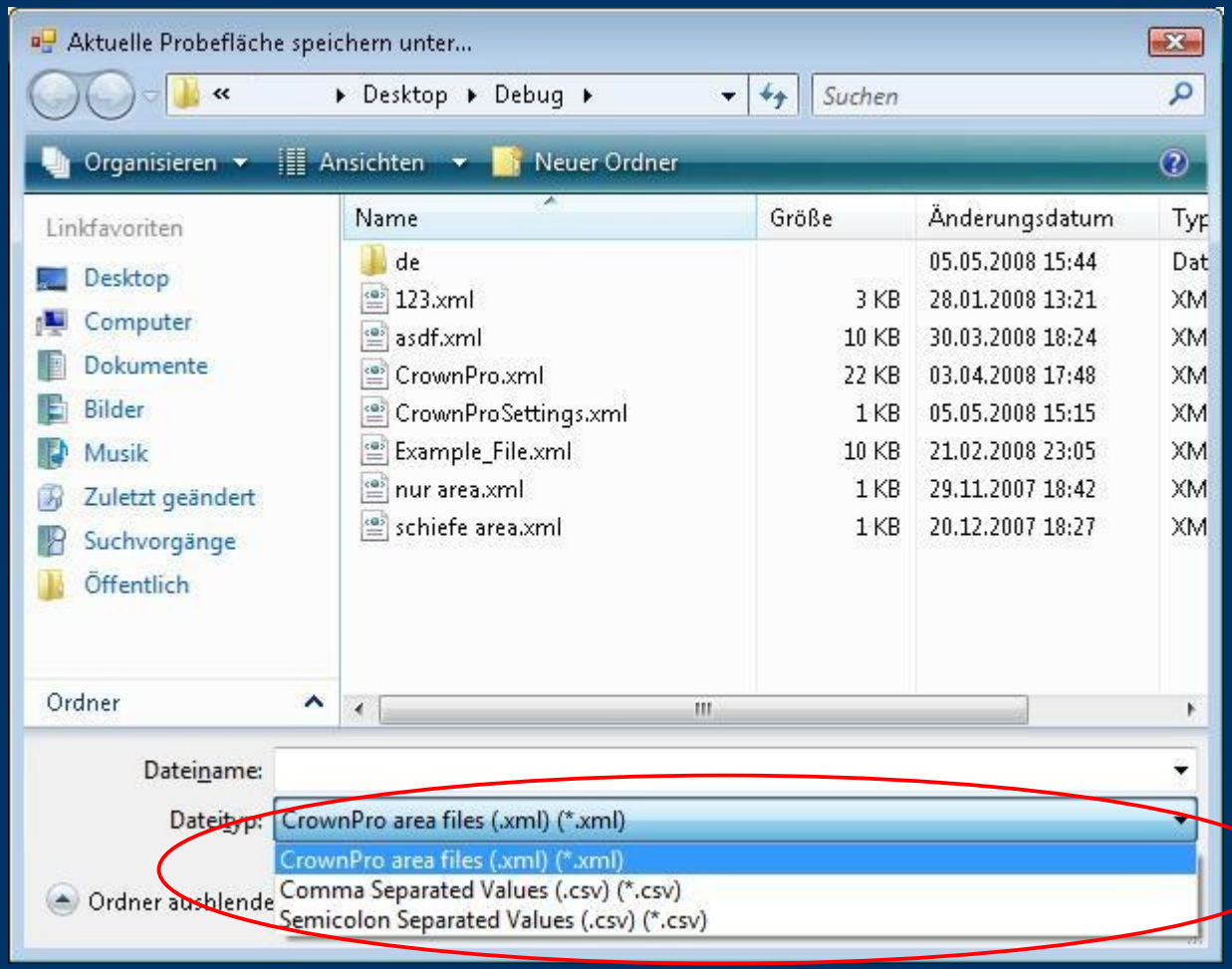
Bu
Ändern
BAh
Ändern
WLi
Ändern
GFi
Ändern
Add
Remove
Restore defaults
OK
Cancel

# Saving / exporting results



# *Future development*

- Exporting to Excel format (.xls)
- Allow for measuring tree locations from varying point of origins
- Representation of crowns by “splines”
- 3D capabilities