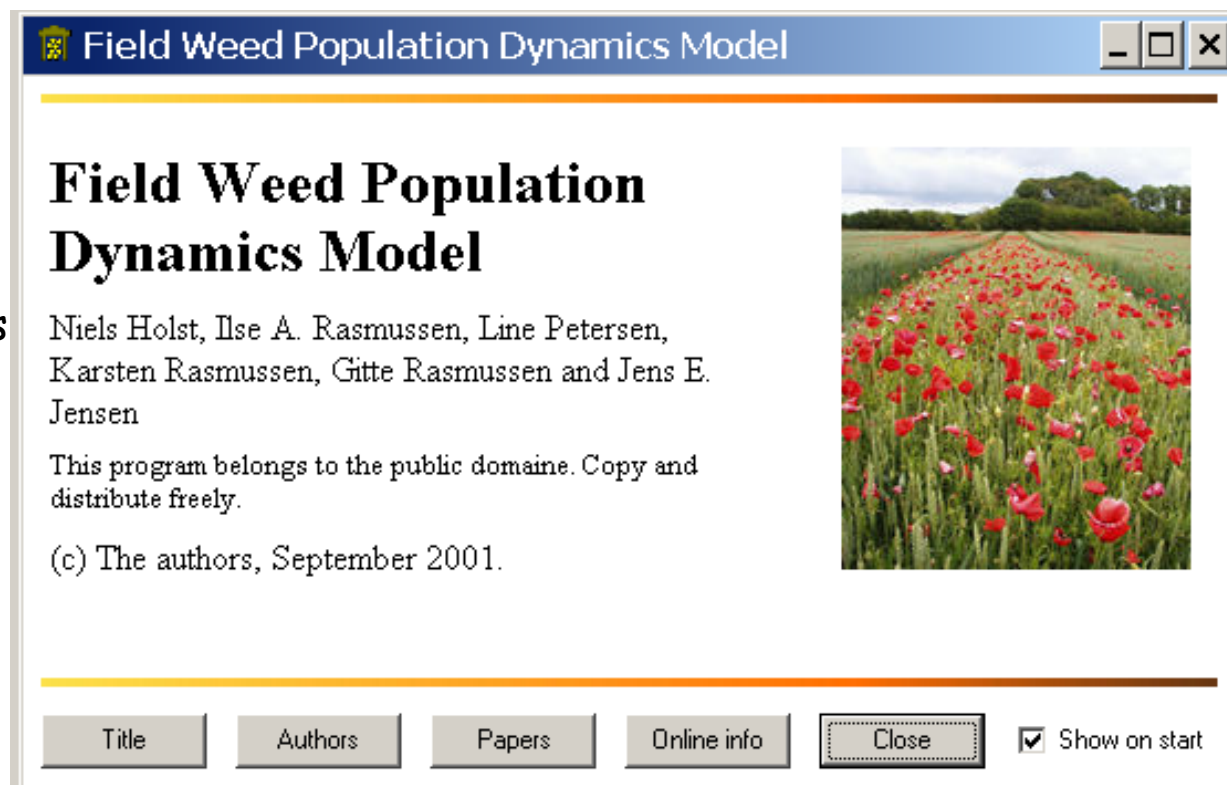# Computer model for simulating the long-term dynamics of annual weeds under different cultivation practices

Hands-on! Try the model!

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Field Weed Population Dynamics Model - defaultmodel.txt

Model   Advanced   Window   Help

Run	Ctrl+R
Load...	
Configure	▶
Scenarios...	
Ecosystem...	
Exit	

Weeds...
Interventions...
Crops...
Language...

- Choose
  - Model
    - Configure
      - Language (Danish, English, Scientific)
    - Browse through and edit
      - Weeds
      - Interventions
      - Crops

Duration of development in each stage

Configure weed species

Weed species: apesv ▾ Apera spica-venti   OK   Cancel

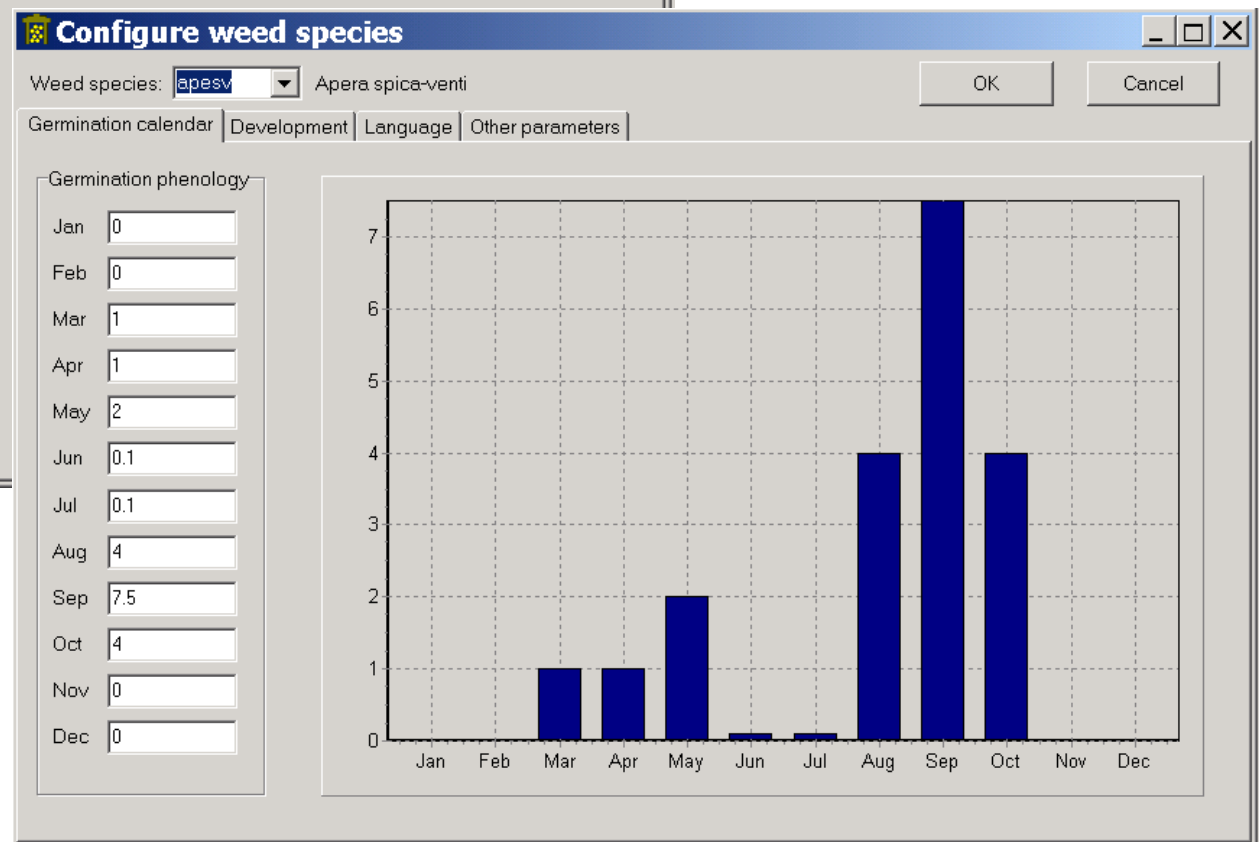Germination calendar | Development | Language | Other parameters

Growth stages

	Duration	k
Seedlings	100	10
Vegetative	1500	100
Reproductive	500	100
Seeds on plant	500	100

Duration is in day-degrees above the lower threshold.

k determines the variability of development. Larger k gives less variability.

☑ Is plant frost-resistant ?

Germination behaviour through the season

Configure weed species

Weed species: apesv ▾ Apera spica-venti   OK   Cancel

Germination calendar | Development | Language | Other parameters

Germination phenology

Jan	0
Feb	0
Mar	1
Apr	1
May	2
Jun	0.1
Jul	0.1
Aug	4
Sep	7.5
Oct	4
Nov	0
Dec	0

Density, germination, mortality, reproduction

Configure weed species   _ □ X

Weed species: apesv ▼   Apera spica-venti   OK   Cancel

| Germination calendar | Development | Language | **Other parameters** |

Density

Initial density (per m2) `1000`

Max. final mass (g/m2) `500`

Final mass of one solitary plant rel. to max mass (%) `5`

Mortality

Half-life when undisturbed (years) `1`

Mortality of seeds on ground (% per day) `3`

Basic germination

In undisturbed soil (% per year) `10`

In disturbed soil (% per disturbance) `50`

Reproduction

Seed production (seeds per g) `76.9`

Proportion of shed seeds entering primary dormancy (%) `0`

Vertical distribution of germination

Optimum depth (cm) `0.484`

Spread (cm) `0.439`

Effect of interventions

Configure field interventions   _ □ X

Intervention: | WEHAI | ▼ | weed-harrowing, intensive   [Delete]   [OK]   [Cancel]

Effects | Language

Soil pertubation

Type | Random | ▼

Depth (cm) | 3 |

Crop competition changes to

| Closed crop | ▼ |

No change
Closed crop
Strong competion
Average competition
Weak or no competion (row crop or bare soil)

Weed mortalities (%)

Seedlings | 90 |

Vegetative | 75 |

Reproductive | 75 |

Seeds on plant | 0 |

List of interventions in each crop – and competition

Build a scenario (or load one to edit) and push the "Finish"-button

Edit the interventions in your scenario

Scenarios

New | Load | Save | Save as... | Close

Create | Edit | Weeds

2/21/2002 ▼ | CLOSE ▼ | crop closes | Add

```
01/01/01 ploughing
08/04/01 harrowing
15/04/01 sowing
15/08/01 harvest
15/09/01 crop closses
01/06/02 mowing
01/08/02 harvest
01/01/03 ploughing
08/04/03 harrowing
15/04/03 sowing
15/08/03 harvest
01/01/04 ploughing
01/04/04 harrowing
15/04/04 planting
01/05/04 weed-harrowing, light
15/05/04 ridging
01/06/04 weed-harrowing, light
15/06/04 ridging
```

Edit

Delete

No. of rotations to simulate:

4

Choose a weed – and save your scenario

Load a scenario

Run – and see the results

Field Weed Population Dynamics Model - svend2_000.txt

Model   Advanced   Window   Help
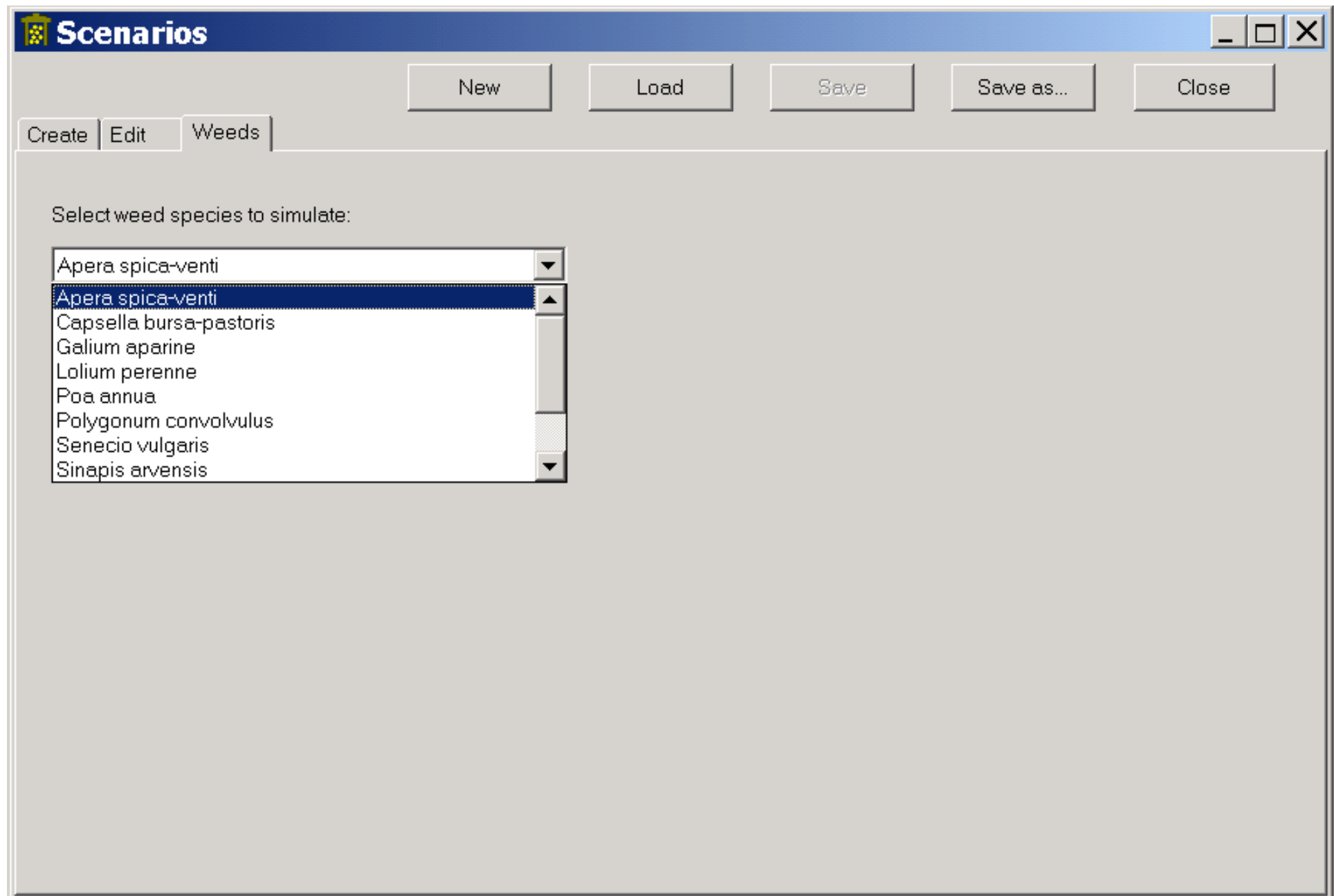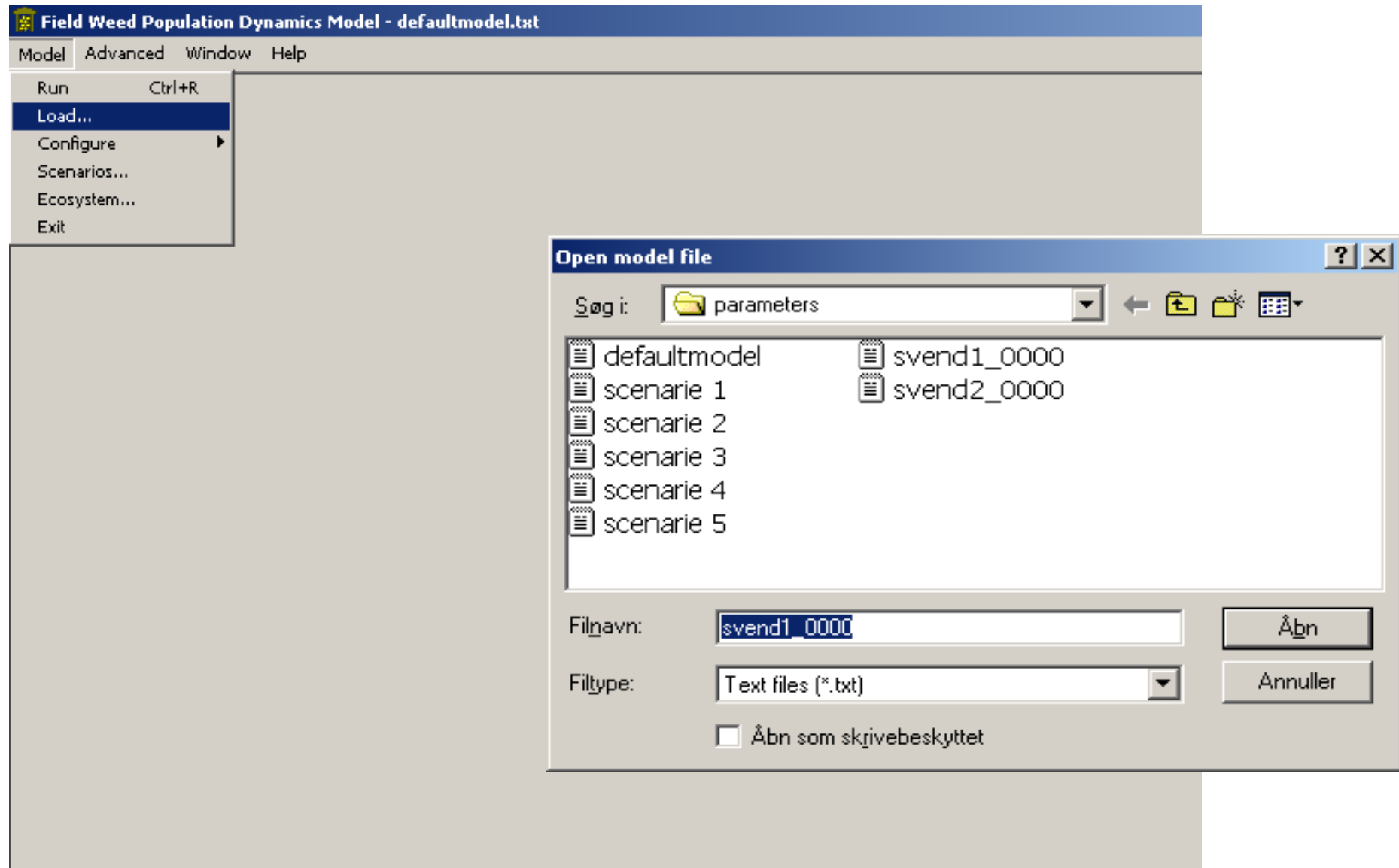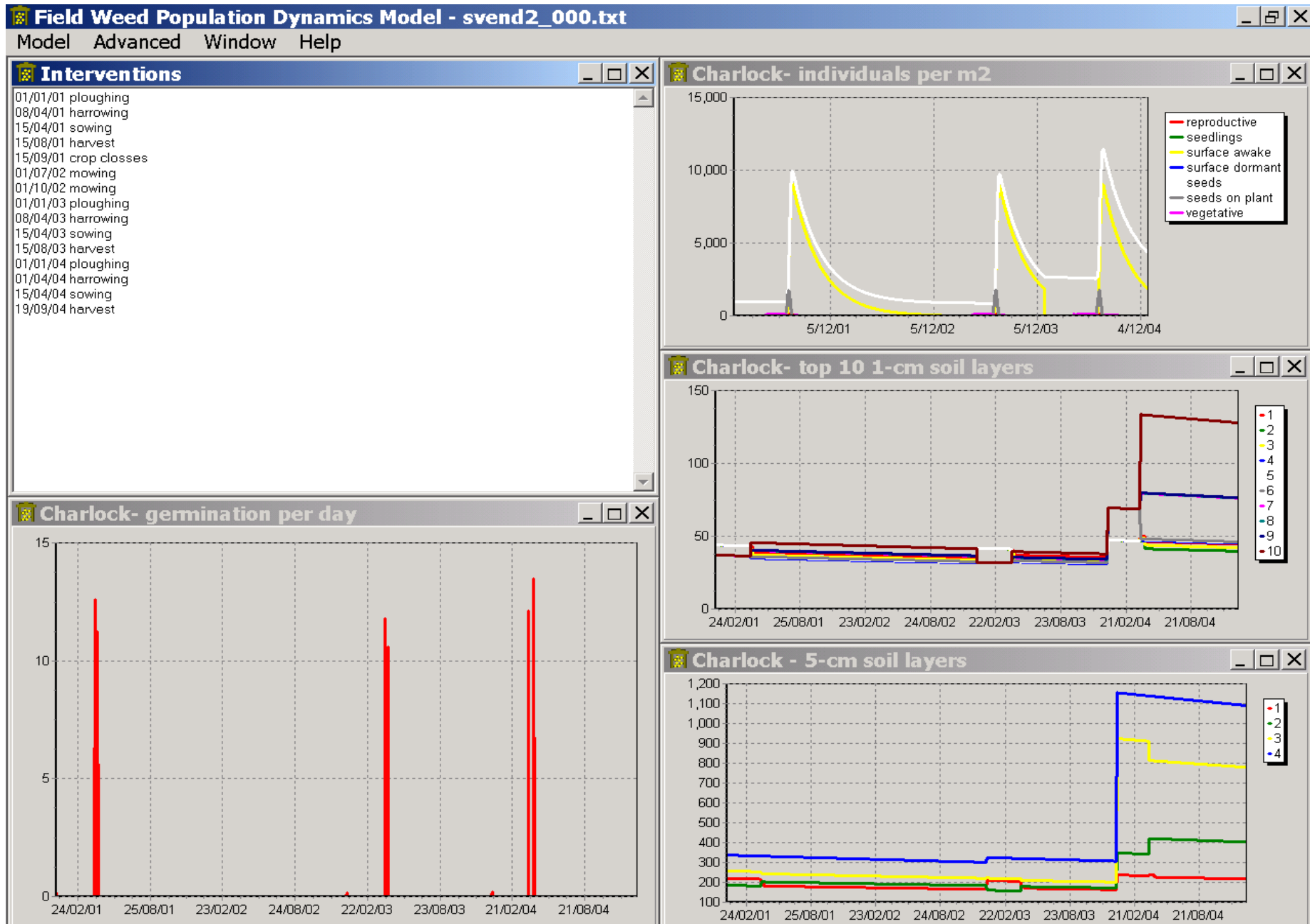
Interventions

01/01/01 ploughing
08/04/01 harrowing
15/04/01 sowing
15/08/01 harvest
15/09/01 crop closses
01/07/02 mowing
01/10/02 mowing
01/01/03 ploughing
08/04/03 harrowing
15/04/03 sowing
15/08/03 harvest
01/01/04 ploughing
01/04/04 harrowing
15/04/04 sowing
19/09/04 harvest

Charlock- individuals per m2

Legend: reproductive, seedlings, surface awake, surface dormant seeds, seeds on plant, vegetative

Charlock- top 10 1-cm soil layers

Charlock- germination per day

Charlock - 5-cm soil layers

Do you want the model
to try on your own computer?

- Download from
http://www.agrsci.dk/plb/nho/fieldweeds.htm
- Install from CD-rom – ask Ilse