Polynomial Regression

Educational widget that interactively shows regression line for different regressors.

Inputs

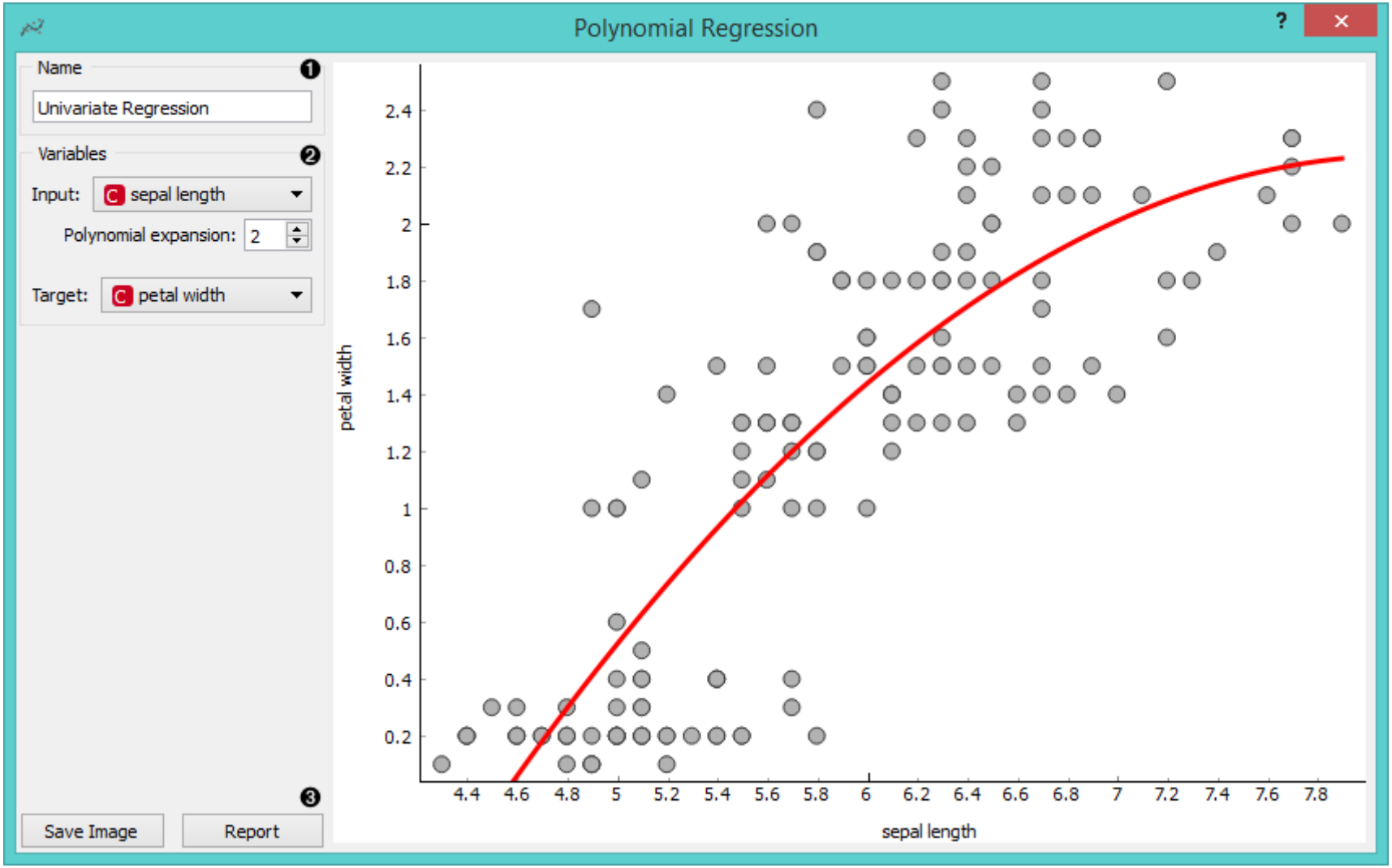
- Data: input data set. It needs at least two continuous attributes.
- Preprocessor: data preprocessors
- Learner: regression algorithm used in the widget. Default set to Linear Regression.

Outputs

- Learner: regression algorithm used in the widget
- Predictor: trained regressor
- Coefficients: regressor coefficients if any

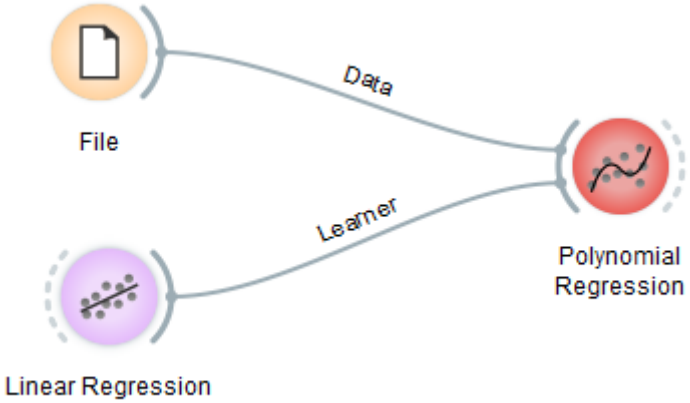
Description

This widget interactively shows the regression line using any of the regressors from the *Model* module. In the widget, polynomial expansion can be set. Polynomial expansion is a regulation of the degree of the polynom that is used to transform the input data and has an effect on the shape of a curve. If polynomial expansion is set to 1 it means that untransformed data are used in the regression.

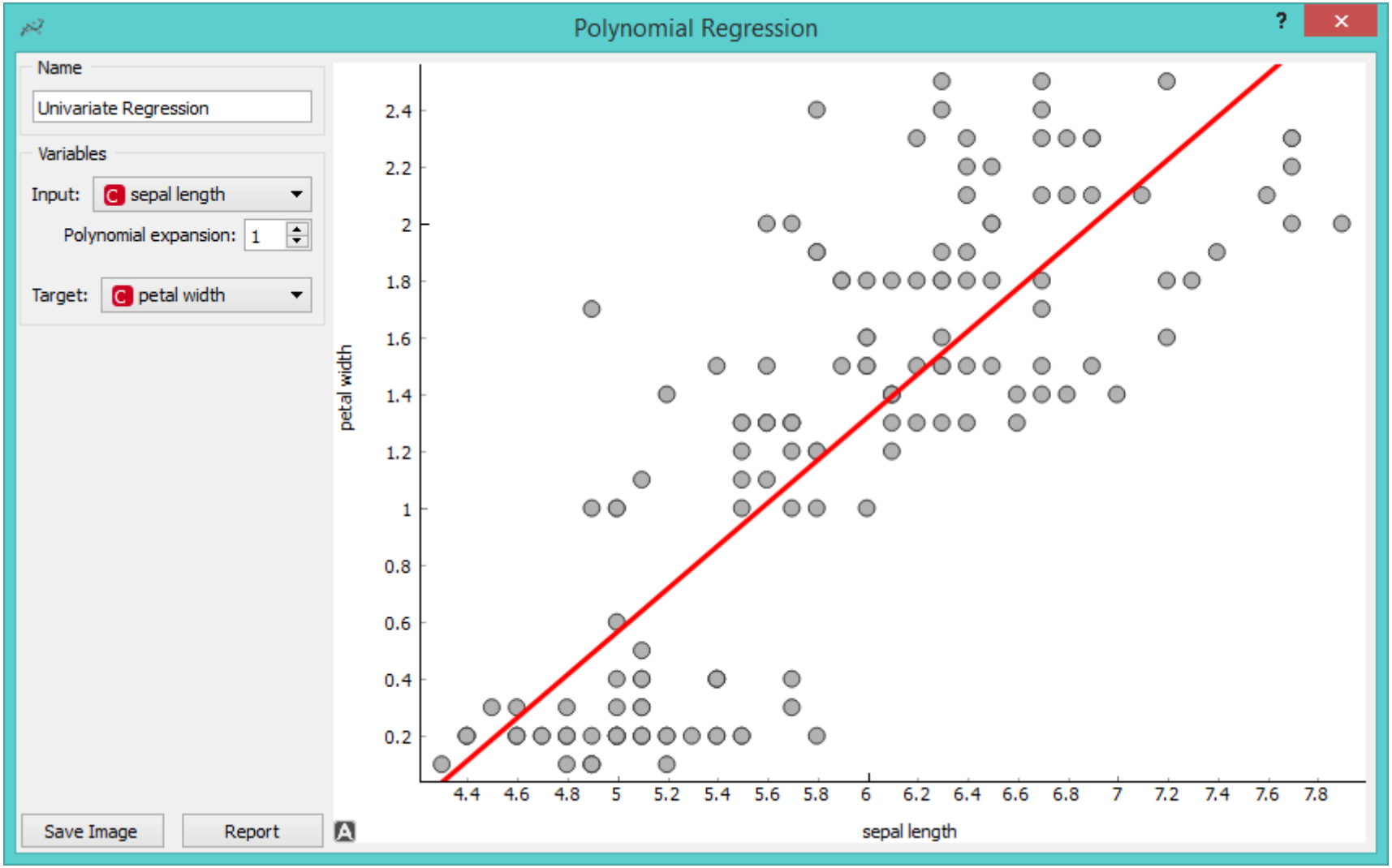


1. Regressor name.
2. *Input*: independent variable on axis x. *Polynomial expansion*: degree of polynomial expansion. *Target*: dependent variable on axis y.
3. *Save Image* saves the image to the computer in a .svg or .png format. *Report* includes widget parameters and visualization in the report.

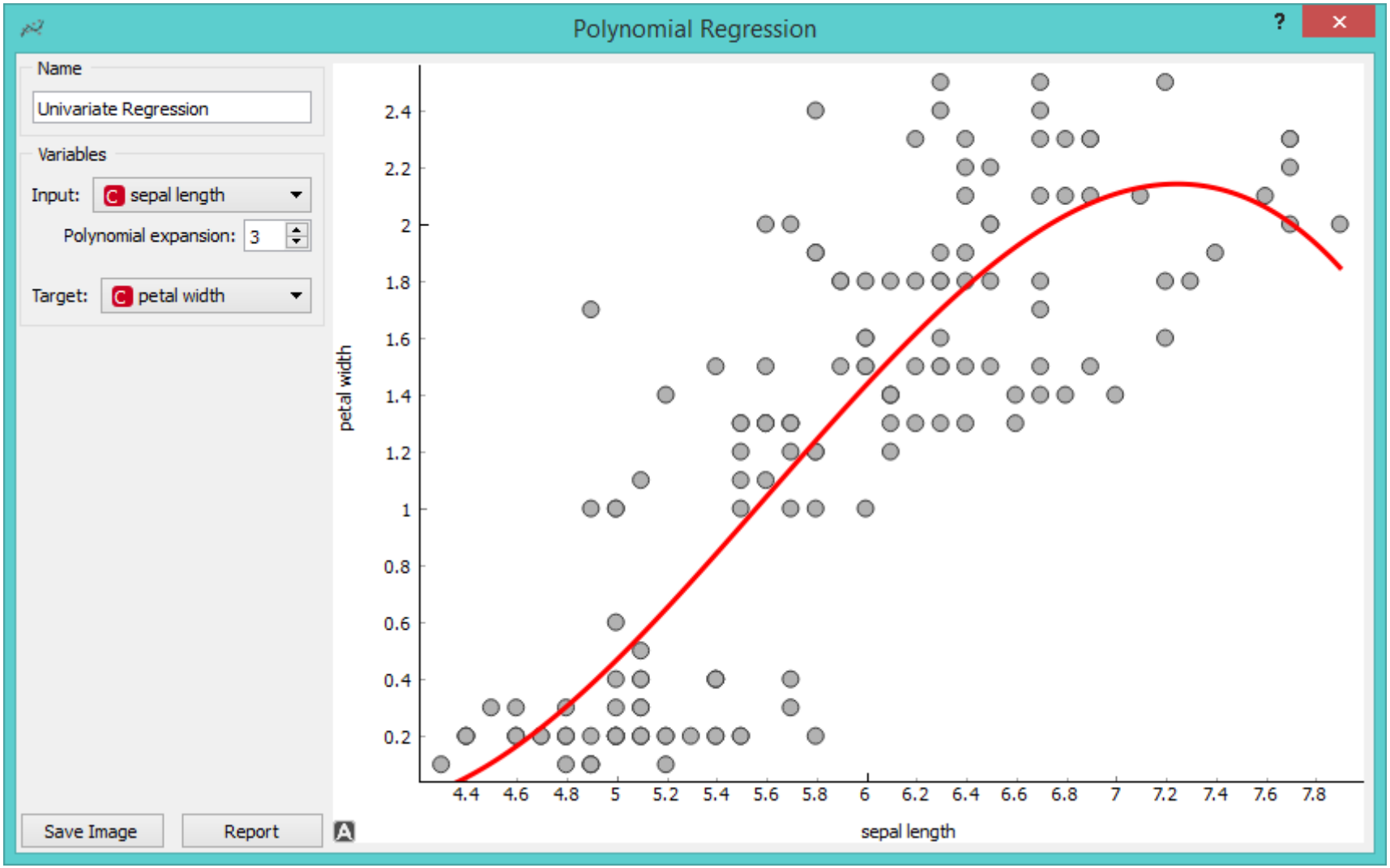
Example



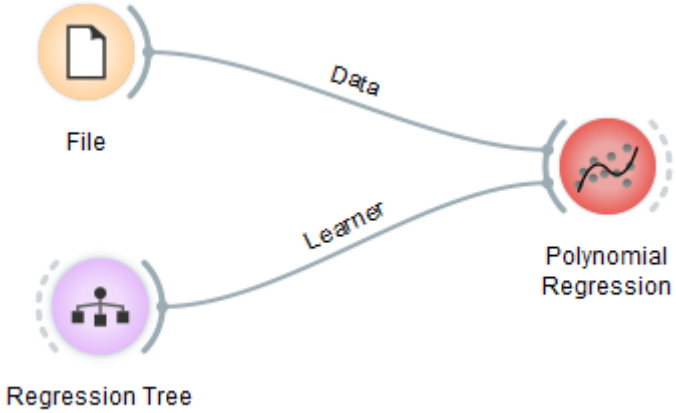
We loaded *iris* data set with the **File** widget. Then we connected **Linear Regression** learner to the **Polynomial Regression** widget. In the widget we selected *petal length* as our *Input* variable and *petal width* as our *Target* variable. We set *Polynomial expansion* to 1 which gives us a linear regression line. The result is shown in the figure below.

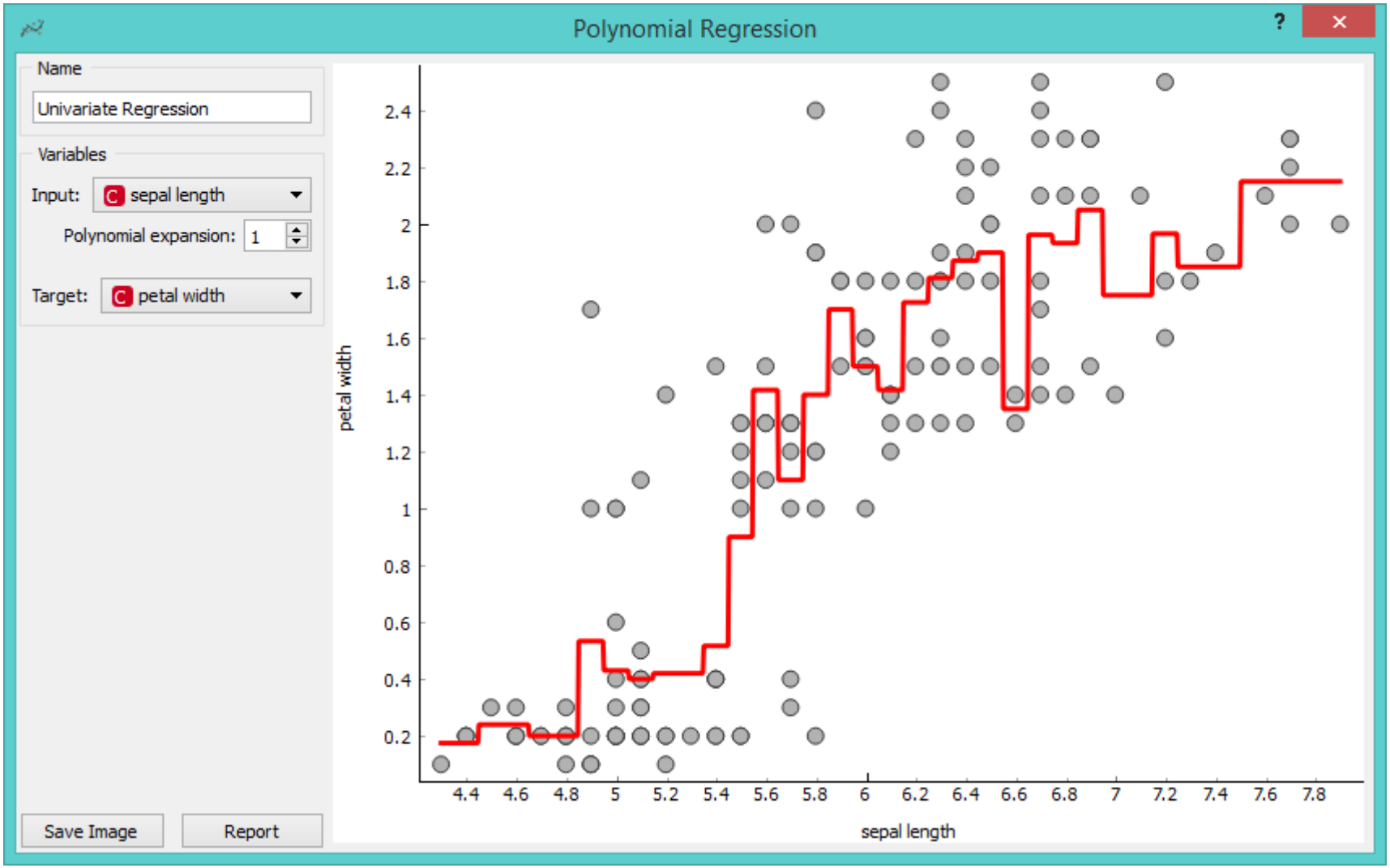


The line can fit better if we increase the **Polynomial expansion** parameter. Say, we set it to 3.



To observe different results, change **Linear Regression** to any other regression learner from Orange. Example below is done with the **Tree** learner.


Data
File
Learner
Polynomial
Regression
Regression Tree


Polynomial Regression
Name
Univariate Regression
Variables
Input: sepal length
Polynomial expansion: 1
Target: petal width
Save Image
Report
petal width
sepal length
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
4.4 4.6 4.8 5 5.2 5.4 5.6 5.8 6 6.2 6.4 6.6 6.8 7 7.2 7.4 7.6 7.8