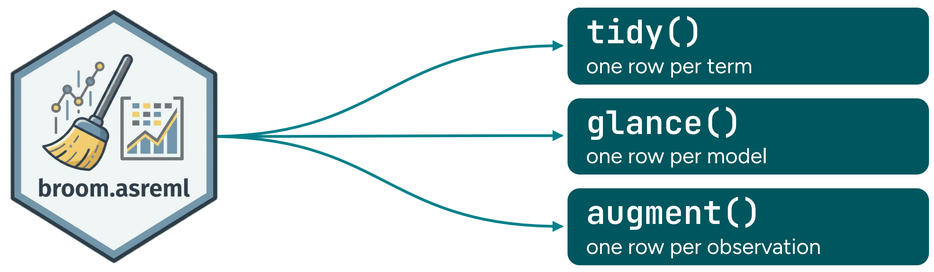
Tidy, analysis-ready output from ASReml-R models

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The `broom.asreml` R package brings the `tidy()`, `glance()` and `augment()` methods of broom to models fitted with ASReml-R, so estimates, model summaries and fitted values come out as consistent tibbles that follow the conventions the R community already uses for other models.

Open source on GitHub



Background

ASReml-R is widely used to fit linear mixed models to plant breeding and field trials, but its fitted objects store estimates in many places and formats.

Motivation

1. Each type of model object has its own output format.
2. Learning and remembering these formats creates a cognitive burden for those who analyse data regularly and need results quickly.
3. Adopting a familiar framework ensures users benefit from their prior knowledge of other systems.

Main features

1. `tidy()`, `glance()` and `augment()` methods for asreml models, with the same column names and structure the community uses in broom and broom.mixed.
2. Consistent, analysis-ready tibbles that work directly with the tidyverse.
3. Easy access to model components such as design matrices and prediction error variances.

Usage

```
library(broom.asreml)
fit <- asreml(yield ~ Variety, random = ~ Column + Row, data = wheat)
tidy(fit, "vcomp")
```

```
# A tibble: 3 × 5
  term    estimate std.error statistic constraint
  <chr>      <dbl>     <dbl>     <dbl> <chr>
1 Column    64035.    32779.      1.95 P
2 Row       11286.     8052.      1.40 P
3 units!R   74466.    10130.      7.35 P
```

Use `"fixed"` for fixed effects (E-BLUEs), `"random"` for random effects (E-BLUPs) or `"wald"` for Wald tests.

One row per model

`glance()` makes models easy to compare. Here, adding AR1 × AR1 spatial residuals raises the log-likelihood and lowers both AIC and BIC.

```
fit_ar1 <- update(fit, residual = ~ ar1(Row):ar1(Column))
bind_rows(glance(fit), glance(fit_ar1)) |>
  select(logLik, AIC, BIC)
```

```
# A tibble: 2 × 3
  logLik   AIC   BIC
   <dbl> <dbl> <dbl>
1  -855. 2782. 5198.
2  -840. 2756. 5181.
```

Tidy data

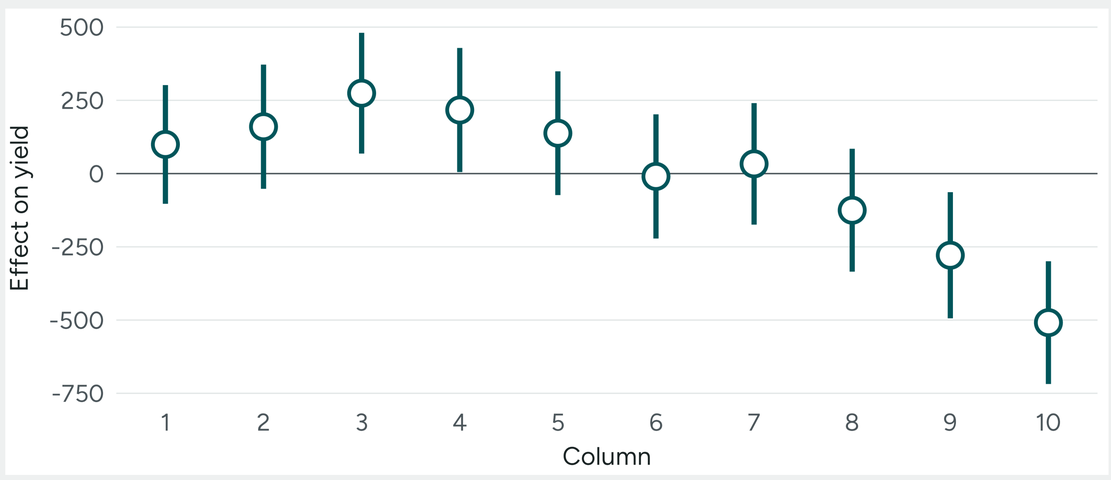
1. Each variable forms a column.
2. Each observation forms a row.
3. Each cell is a single value.

broom.asreml output follows these tidy data principles (Wickham, 2014), so it is ready to work with the tidyverse (Wickham et al., 2019) and other tidy frameworks.

From model to plot

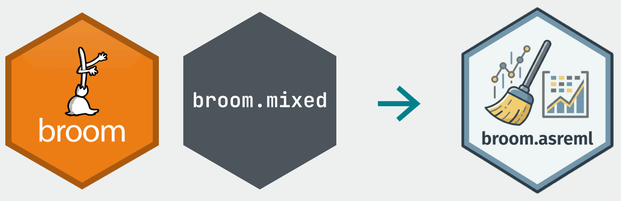
Because every result is a tibble, it flows straight into dplyr and ggplot2.

```
tidy(fit, "random") |>
  filter(group == "Column") |>
  ggplot(aes(as.integer(level), estimate)) +
  geom_pointrange(aes(ymin = estimate - 2 * std.error,
                      ymax = estimate + 2 * std.error))
```



Column effects (E-BLUPs ± 2 standard errors) for the `wheat` trial in asreml: 532 varieties on 670 plots in 10 columns. Yield falls away towards column 10.

Built on familiar conventions



broom.asreml follows the conventions of the broom and broom.mixed R packages: the same `tidy()`, `glance()` and `augment()` methods, returning the same column names. If you already tidy lm or lme4 models with them, there is nothing new to learn, which lowers the cognitive load for users.

Beyond broom

`is_outlier()`	Flags outliers (the model needs `aom = TRUE`).
`bootstrap_data()`	Simulates responses for a parametric bootstrap.
`asreml_model_matrix()`	Extracts X, Z, G, R and V and their inverses.
`PEV_XX()` `PEV_XZ()` `PEV_ZZ()`	Prediction error variance matrices.
`converge_asreml()`	Keeps updating a model until it converges.

Impact

Less time decoding ASReml-R objects, more time on the science.

Feedback and contributions welcome

- Install: `pak::pak("anu-aagi/broom.asreml")`
- Code, docs and issues: github.com/anu-aagi/broom.asreml
- Contact: Emi Tanaka, emi.tanaka@anu.edu.au

References

Butler DG, Cullis BR, Gilmour AR, Gogel BJ, Thompson R (2023). *ASReml-R Reference Manual Version 4.2*. VSN International.
Robinson D, Hayes A, Couch S, Hvitfeldt E (2026). *broom: Convert Statistical Objects into Tidy Tibbles*. R package version 1.0.13.
Bolker B, Robinson D (2026). *broom.mixed: Tidying Methods for Mixed Models*. R package version 0.2.9.7.
Wickham H (2014). Tidy data. *Journal of Statistical Software* 59(10), 1–23.
Wickham H, Averick M, Bryan J, et al. (2019). Welcome to the tidyverse. *Journal of Open Source Software* 4(43), 1686.

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