
9. PIGBLUP Interface Specifications

Input Files

For most clients, the only file format of interest is that for the file containing the animal pedigree and performance data – the *data input file*. There are, however, many other files containing configuration settings (PBLUP.FIG), limits of various sorts (LIMITS.TXT), economic and market data (ECONX.TXT), payments grid data (AUSMEAT.DAT, PAYGRIDS.TXT, and various .GRD files), genetic parameters (GENPAR.DAT), breed analysis settings (FARM1.INP), etc.

With version 4.00, most of these files were made self-explanatory: settings are identified by a meaningful parameter name and may be accompanied by descriptive comments.

Most of these files may be edited from within PIGBLUP. The exceptions are the configuration file and, currently, the payments grid file. We recommend files be edited within PIGBLUP when possible.

Prior to version 4.20 of PIGBLUP, animal Id width was fixed at 10 characters. With version 4.20, clients can arrange to be supplied with a version with a different animal Id width. The data input file layouts below all assume a 10-character animal Id. If a different Id width is used, the field start columns must be adjusted accordingly.

The Id width supplied to a client is indicated in the PIGBLUP configuration file, PBLUP.FIG, as a record of the form:

AnimalIdWidth=10 # comment

However, changing this setting does not alter the Id width, it is purely indicative.

PIGBLUP versions prior to 4.20 lack this record in their configuration files. Absence of this record indicates a 10-character animal Id width.

Data File Formats

As of PIGBLUP version 4.20, data files should begin with a header record indicating the data file format in which it is encoded. This header is of the form

V2.1

This information is not used yet. PIGBLUP version 4.20 and later will read these files, but will not make use of the data file format header. PIGBLUP versions prior to version 4.20 will fail reading files containing this header information.

In the following tables:
 i = numeric field (integer)
 A = alphanumeric field
 • = compulsory fields.

| | Format | | Format | | Format | | Format | |
|--|--------|------|--------|------|--------|------|---------|------|
| | V1.0 | Col. | V1.1 | Col. | V2.0 | Col. | V2.1 | Col. |
| Record Type Identification | • 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Animal Identification | • A10 | 2 | A10 | 2 | A10 | 2 | A10 | 2 |
| Animal Breed | • A2 | 12 | A2 | 12 | A2 | 12 | A2 | 12 |
| Dam Identification | • A10 | 14 | A10 | 14 | A10 | 14 | A10 | 14 |
| Sire Identification | • A10 | 24 | A10 | 24 | A10 | 24 | A10 | 24 |
| Date of Birth [1] | • 3i2 | 34 | 3i2 | 34 | 2i2,i4 | 34 | 2i2, i4 | 34 |
| Sex | • A1 | 40 | A1 | 40 | A1 | 42 | A1 | 42 |
| Litter size the animal was born in [3] | | i2 | i2 | 41 | i2 | 43 | i2 | 43 |
| Number of Production+Carcase records [3] | • i1 | 43 | i1 | 43 | i1 | 45 | i1 | 45 |
| Number of Litter records [3] | • i2 | 44 | i2 | 44 | i2 | 46 | i2 | 46 |
| Flag if animal is 'active' [2] | A1 | 46 | A1 | 46 | A1 | 48 | A1 | 48 |
| Status Code [4] | A1 | 47 | A1 | 47 | A1 | 49 | A1 | 49 |
| Status Date [1],[5] | 3I2 | 48 | 3I2 | 48 | 2I2,I4 | 50 | 2I2,I4 | 50 |
| Status Parity | I2 | 54 | I2 | 54 | I2 | 58 | I2 | 58 |
| Status Boar | A10 | 56 | A10 | 56 | A10 | 60 | A10 | 60 |

Note:

[1] 3I2 for DDMMYY dates; 2I2,I4 for DDMMYYYY dates [2] "A" if active; otherwise, blank. [3] Now ignored. [4] User-assigned animal status codes (eg active, served, on-test). [5] Date on which animal's status altered to 'Status Code'. [6] For sow-related status codes, parity, incrementing at mating, currently not used. [6] If applicable, Boar associated with current sow-related status code – eg mate if pregnant, sire of litter if lactating.

| | Format | | Format | | Format | | Format | |
|--------------------------------|--------|------|--------|------|---------|------|---------|------|
| | V1.0 | Col. | V1.1 | Col. | V2.0 | Col. | V2.1 | Col. |
| Record Type Identification | • 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| Animal Identification | • A10 | 2 | A10 | 2 | A10 | 2 | A10 | 2 |
| Animal Breed | • A2 | 12 | A2 | 12 | A2 | 12 | A2 | 12 |
| Weight at End of Test | • I3 | 14 | I3 | 14 | I3 | 14 | I3 | 14 |
| Date at End of Test [1] | • 3I2 | 17 | 3I2 | 17 | 2I2,I4 | 17 | 2I2,I4 | 17 |
| User Recorded Management Group | A1 | 23 | A2 | 23 | A1 | 25 | A2 | 25 |
| Back Fat [2] | I2 | 24 | I3 | 25 | I2 | 26 | I3 | 27 |
| Ultrasonic Muscle Depth | I3 | 40 | I3 | 40 | I3 | 28 | I3 | 30 |
| Weight at Start of Test | I2 | 26 | I2 | 28 | I2 | 31 | I2 | 33 |
| Date at Start of Test [1] | 3I2 | 28 | 3I2 | 30 | 2I2, I4 | 33 | 2I2, I4 | 35 |
| Feed Conversion Ratio [4] | I3 | 34 | I3 | 36 | I3 | 41 | I3 | 43 |
| Limits over-ride flag [3] | 2X, A1 | 39 | A1 | 39 | A1 | 44 | A1 | 46 |

Note:

[1] 3I2 for DDMMYY dates; 2I2,I4 for DDMMYYYY dates. [2] In V1.1 and V2.1, 22 mm should appear as 220. [3] A "V" in this field indicates out-of-limits values on this record are valid. [4] Values for FCR are x100, ie 2.14 should appear as 214

| | Format | | Format | | Format | | Format | |
|-------------------------------------|--------|------|--------|------|--------|------|--------|------|
| | V1.0 | Col. | V1.1 | Col. | V2.0 | Col. | V2.1 | Col. |
| Record Type Identification | • 3 | 1 | 3 | 1 | 3 | 1 | 3 | 1 |
| Animal Identification | • A10 | 2 | A10 | 2 | A10 | 2 | A10 | 2 |
| Animal Breed Code | • A2 | 12 | A2 | 12 | A2 | 12 | A2 | 12 |
| Carcase Fat Depth [1] | I3 | 14 | I3 | 14 | I3 | 14 | I3 | 14 |
| Carcase Muscle Depth [1] | I3 | 17 | I3 | 17 | I3 | 17 | I3 | 17 |
| Lean Meat Percentage [1] | I3 | 20 | I3 | 20 | I3 | 20 | I3 | 20 |
| Slaughter Weight | I4 | 23 | I4 | 23 | I4 | 23 | I4 | 23 |
| Date of Slaughter [2] | • 3I2 | 27 | 3I2 | 27 | 2I2,I4 | 27 | 2I2,I4 | 27 |
| User Recorded Management Group | A2 | 33 | A2 | 33 | A2 | 35 | A2 | 35 |
| Limits over-ride flag [3] | A1 | 35 | A1 | 35 | A1 | 37 | A1 | 37 |
| Spare Carcase Trait Measurement [4] | I5 | 36 | I5 | 36 | I5 | 38 | I5 | 38 |

Note:

[1] In V1.1 and V2.1, there is an implicit decimal point (eg, 567 encodes 56.7). [2] 3I2 for DDMMYY dates; 2I2,I4 for DDMMYYYY dates. [3] A "V" in this field indicates out-of-limits values on this record are valid. [4] contact AGBU for guidance.

| | Format | | Format | | Format | | Format | |
|---|--------|------|--------|------|--------|---------|--------|---------|
| | V1.0 | Col. | V1.1 | Col. | V2.0 | Col. | V2.1 | Col. |
| Reproduction Record (Record type 4): | | | | | | | | |
| Record Type Identification | • 4 | 1 | 4 | 1 | 4 | 1 | 4 | 1 |
| Animal Identification | • A10 | 2 | A10 | 2 | A10 | 2 | A10 | 2 |
| Animal Breed Code | • A2 | 12 | A2 | 12 | A2 | 12 | A2 | 12 |
| Parity Number | • I2 | 14 | I2 | 14 | I2 | 14 | I2 | 14 |
| Mating date [1] | | 3I2 | 16 | 3I2 | 16 | 2I2,I4 | 16 | 2I2,I4 |
| Service Sire Identification | | A10 | 22 | A10 | 22 | A10 | 24 | A10 |
| Service Sire Breed | | A2 | 32 | A2 | 32 | A2 | 34 | A2 |
| Mating Type [2] | | A1 | 34 | A1 | 34 | A1 | 36 | A1 |
| Date of Farrowing [1] | • 3I2 | 35 | 3I2 | 35 | 2I2,I4 | 37 | 2I2,I4 | 37 |
| Piglets Born Alive | | I2 | 41 | I2 | 41 | I2 | 45 | I2 |
| Piglets Born Dead | | I2 | 43 | I2 | 43 | I2 | 47 | I2 |
| User-Recorded Management Group | | A1 | 45 | A1 | 45 | A1 | 49 | A1 |
| Number of Piglets at Transfer [5] | | I2 | 46 | I2 | 46 | I2 | 50 | I2 |
| Date of Transfer of Piglets [1] | | 3I2 | 48 | 3I2 | 48 | 2I2,I4 | 52 | 2I2,I4 |
| Total weight of Piglets at Transfer [6] | | I3 | 54 | I3 | 54 | I3 | 60 | I3 |
| Number of Piglets at Weighing | | I2 | 57 | I2 | 57 | I2 | 63 | I2 |
| Date of Weighing [1] | | 3I2 | 59 | 3I2 | 59 | 2I2, I4 | 65 | 2I2, I4 |
| Total weight of piglets at weighing [7] | | I3 | 65 | I3 | 65 | I3 | 73 | I3 |
| Weaning Date [4] | | 3I2 | 70 | 3I2 | 70 | 2I2, I4 | 76 | 2I2, I4 |
| Farrowing limits over-ride flag [3] | | A1 | 68 | A1 | 68 | A1 | 84 | A1 |
| Litter weight limits over-ride flag [3] | | A1 | 69 | A1 | 69 | A1 | 85 | A1 |

Note:

[1] 3I2 for DDMMYY dates; 2I2,I4 for DDMMYYYY dates. [2] Eg, "P" for Purebred, "C" for Cross-bred, "A" for AI. [3] A "V" in this field indicates out-of-limits values on this record are valid. [4] Weaning-to-Conception uses Weaning Date, if given; otherwise, Date of Weighing. [5] Refers to the number of piglets in the litter after transfer. In some cases, there will be piglets added from the litter of a sow with too many piglets. [6] Refers to the combined weight of the piglets transferred (usually at 3 days of age). This information is needed only when 'Weight pre-adjust method 2' is selected. [7] At the weighing date (about 20-30 days after transfer, the number and combined weight of the remaining piglets are recorded.

| | Format | | Format | | Format | | Format | |
|-------------------------------------|--------|------|--------|------|---------|------|---------|------|
| | V1.0 | Col. | V1.1 | Col. | V2.0 | Col. | V2.1 | Col. |
| IGF1 Record (Record type 5): | | | | | | | | |
| Record Type Identification | • 5 | 1 | 5 | 1 | 5 | 1 | 5 | 1 |
| Animal Identification | • A10 | 2 | A10 | 2 | A10 | 2 | A10 | 2 |
| Animal Breed Code | • A2 | 12 | A2 | 12 | A2 | 12 | A2 | 12 |
| IGF1 Value | • I3 | 14 | I3 | 14 | I3 | 14 | I3 | 14 |
| Date of Sampling | • 3I2 | 17 | 3I2 | 17 | 2I2, I4 | 17 | 2I2, I4 | 17 |
| User Recorded management Group | | A2 | 23 | A2 | 23 | A2 | 25 | A2 |
| IGF1-Batch Number within day | • A2 | 25 | A2 | 25 | A2 | 27 | A2 | 27 |
| IGF1 Parity of Dam | | I2 | 27 | I2 | 27 | I2 | 29 | I2 |
| IGF1 Limits over-ride flag [1] | | A1 | 29 | A1 | 29 | A1 | 31 | A1 |
| Extended Batch No. [2] | | A15 | 30 | A15 | 30 | A15 | 32 | A15 |

Note:

[1] A "V" in this field indicates out-of-limits values on this record are valid. [2] If non-blank, Extended Batch No. is used; otherwise IGF-1 Batch No. is used.

Further Notes:

Where measurements are missing, the corresponding data file field should be left blank – not set to zero or some other value.

Animals should be flagged as “active” only if they are not parents and are too old to be *implicitly* flagged as “active”.

The Active Flag in Record Type 1

The flag in the animal record (record number 1) indicates that the animal has been selected for breeding and is still active in the herd.

Animals need to be explicitly flagged as active **only** when they would not be treated as ‘active’ automatically. That is, if they were born more than 200 days ago (the default implicit flagging setting in the Alter BLUP Model Parameters screen) and are not indicated as being parents by virtue of being recorded as a parent or service sire or having reproduction records.

Flagging all animals as being active in a data file can cause the size limits of your version of PIGBLUP to be exceeded.

The output of PIGBLUP contains only parents (boars or sows with tested offspring) and tested piglets younger than 200 days (this value is variable). For example, a selected gilt will disappear from the output until she farrows. To avoid this you can flag these animals with an “A” for active to indicate that you are still interested in their EBVs.

This is also important for the Mate Selection Module, to mark animals that have to be mated.

Sequence of Records

The data file must be sorted by date of birth (oldest animals first).
Within animal the records have to be sorted by record type and record type 4 has to be sorted by parity number.

This means: The oldest animal comes first, beginning with its animal record, then the production record (if available), the carcass record (if available) followed by the reproduction records (if it's a sow and litter records are available) with the record for the first litter first, next the second litter and so on.

Animals to be Extracted

All animals should be extracted from the herd management system which have either production or reproduction observations recorded.

Any animal which only appears as a sire or dam and has unknown parentage does not need its own type 1 record, except in a multiple breed evaluation.

It is important that both production and reproduction data are supplied where available to allow PIGBLUP to use the pedigree information and to make comparisons across years possible (eg estimation of Genetic and Environmental Trends).

User-recorded Management Groups

The “User recorded Management Groups” in record types 2, 3 and 4 should be included if you are employing different housing or management regimes for raising animals in the particular herd, to identify animals that have suffered prolonged illness or pigs taken to different abattoirs. This makes sure that only animals that have been treated the same way are compared.

Failure to use management groups will cause poor performance, eg due to sickness, to be attributed to inferior genetics. Such animals and their relatives will be penalised wrongly.

Currently, there is a maximum of 50 different user recorded management subgroups possible.

Output Files

PIGBLUP's analytic modules output a number of files containing *estimated breeding values* (EBV's), trend information, and trait identification information.

For those users wishing to upload the EBV's into a herd recording database, the descriptions are given for the EBV's file and the trait identification file (new with version 4.20).

EBVs File (CUSTOM.INX)

Record 1:

This record contains a 0 or 1 for each possible trait to indicate whether the trait was ‘ticked’ when the analysis that generated the CUSTOM.INX file was run.

The format used is ‘(50i2)’.

With PIGBLUP versions prior to V4.00, the corresponding traits are

ADG TDG BF FCR CFAT CMUS LMY NBA LW21

Followed, in V3.00 and later versions, by mean weights for sows, boars and castrates and regression coefficients for sows and boars

For example, a V3.31 CUSTOM.INX may read

If BF was also ticked, the EBV fields would become:

\$INDEX, \$INDEX + *Offset*, 0.0, ADG, BF, FCR

Requesting a Fixed Field file:

A fixed field file may be output *in addition to CUSTOM.INX* by editing the **Write_Fixed** parameter in the PBLUP.FIG file.

If you want a fixed field file with comma-delimited fields, edit the **FieldSeparator** parameter to read '**FieldSeparator=comma**'. Any setting other than *comma* generates a blank separator.

With the fixed field FCUSTOM.INX file, every EBV (whether it is ticked or not) will have a column of numbers and always the same column regardless of which EBV's are ticked. The traits are output in the order they are coded in record 1.

Altering the Index Format:

For PIGBLUP to write the \$INDEX into a 12-character wide field, say, edit the **IndexFormat** parameter in the PBLUP.FIG file from its default setting of '**IndexFormat=f9.3**' to '**IndexFormat=f12.1**'.

Trait Identification File (TRAITS.LST)

This file is new with version 4.20 of PIGBLUP.

Its purpose is to enable users to map the 0's and 1's mask in record 1 of the CUSTOM.INX file to trait names and thus upload the EBV's to the appropriate fields in their database. This is necessary as users can re-define the standard traits as other traits and because future versions of PIGBLUP may define new traits. Thus, a herd may contain several 'breeds' with each 'breed' corresponding to a different set of traits on the same animals.

As yet, trait re-definition is not completely general; it should be attempted only with the assistance of AGBU - the developers of PIGBLUP.

To make trait identification easy for users, TRAITS.LST is an ASCII text file with one record per possible trait. Each record contains a *default trait mnemonic* and, if the trait is defined, the *used trait mnemonic*. The record format is:

***default trait mnemonic* , [*used trait mnemonic*]**

Where the square brackets indicate the mnemonic may be present or absent. For example, ***OCl,IGF1*** indicates the first *other carcass trait* slot is being used for the IGF1 trait. However, ***OPI***, indicates that the *other production trait* slot is spare – because there is no *used trait mnemonic*.

The order of the mnemonics in this file is **fixed** as it must correspond with the mask of 0's and 1's in the first record of the CUSTOM.INX file. Thus, if ***OCl,IGF1*** is the seventh record in the file, the seventh mask digit will correspond to this trait.