



A SIL Web Note

2010 changes to SIL Growth & Meat indexes

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Why were changes needed?

Since SIL began operation in 1999, a number of index variants have been added for Growth and Meat evaluations. This led to confusion between index names (Growth, Growth with Meat, Meat with Growth, Growth with CT Meat, *etc.*). User feedback on this and other issues led SIL to commission a revision of SIL Growth and Meat indexes. The objectives were to;

1. Make Growth index breeding values (BVs) independent of Meat index BVs so that Meat BVs tell us something above and beyond “size”
2. Separate Lamb Growth from Adult size for Dual Purpose sheep
3. Use more adult ewe LW information to predict EWT (adult ewe size) BV
4. Update the Meat index by incorporating lean yield traits
5. Reduce the number of indexes available

What has changed?

Growth & Meat indexes have only ONE variant per sheep type (Dual Purpose (DP) or Terminal Sire (TS)). Growth BV index weightings will not change whether Meat is in the evaluation or not. Similarly, Meat BV index weightings do not change if different types of “scan” information are used in the evaluation.

The Growth Goal Trait Group now produces TWO sub-indexes for DP sheep – one for “Lamb Growth” (DPG) and one for “Adult Size” (DPA). This makes clearer how gains from lamb growth are offset, to some extent, by costs associated with increased ewe size.

SIL will now use more adult ewe LW information to improve the precision with which EWT BV is estimated. This trait is critical for DP sheep since, with no feed intake information, it is used to estimate the costs of a ewe size in the DPA sub-index.

SIL believes ALL Dual Purpose sheep flocks should record LWMATE¹ (pre-mating LW in ewes) for 2-tooth ewes as a minimum, and seriously consider recording pre-mating liveweight each year for older ewes².

The new TS (Lamb) Growth index is almost identical to the old TS Growth index.

The new Meat indexes are really Meat “Yield” indexes that tell us about carcass merit above and beyond carcass size. Genetic merit for carcass size is in the “Lamb” Growth sub-indexes.

How will these changes affect BVs & indexes?

Growth BVs have not changed. Growth BVs tell us about “size” at a given age. You can think of this as growth rate in lambs and adult size in ewes. Selection emphasis on growth rate has switched to be entirely in the new Growth index. Previously some of the weighting for growth was put on the old LEAN and FAT BVs.

¹ LWMATE is a repeated measures trait and so can be recorded for a ewe each year. Previously LWMATE for 2-tooths was known as LW18.

² SIL will not use any LW data collected after 5 years of age

Meat BVs are replaced by Meat Yield BVs which are **fundamentally different**. The Yield BVs tell us how much lean is in three regions of the carcass (hindquarter, loin & shoulder) and how much fat is in the carcass, at a constant carcass weight. The old BVs were adjusted to constant age. This change makes Meat Yield BVs independent of Growth BVs. Meat Yield BVs now tell us about carcass composition (lean vs. fat) and lean distribution but not tissue weight. They are proportions, not the sizes that the old Meat BVs were.

The majority of variation in carcass lean weight comes from carcass weight. The new Growth index has a larger weighting on carcass weight. You should always consider the new Growth index WITH the new Meat Yield index for informed selection decisions.

Fat Yield is included in the TS Meat Yield index but not the DP Meat Yield index, reflecting the value fat has in ewes compared to carcass lambs.

The new Growth & Meat indexes combined will rank animals similarly to the old Growth & Meat indexes combined.

How will figures on my SIL reports be affected?

In terms of SIL total merit indexes (DPO, DPP, TSO, TSP),

- Growth contributes more because the size component that was in Meat has moved to Growth. Genetic merit for growth rate is entirely in the new (Lamb) Growth index.
- For DP sheep, Growth BVs and their index weightings have not changed significantly. The DPG (Lamb Growth index) will increase in size for fast growing sheep because the penalty for ewe size has been pulled out into its own sub-index “DP Adult size” (DPA). The net effect of DPG & DPA will be close to that of the old DPG index.
- Animals rated highly for Lamb Growth (new DPG) are more likely to have large, negative indexes for Adult size (DPA).
- We expect more accurate EWT BVs where there is good adult ewe LW information. This will cause greater variation in the EWT BV and DPA index. SIL recommends DP sheep breeders collect information on mating LW (LWMATE) on at least 2-tooth ewes (approx 1½ years old) and consider doing so for ewes in the next three older age groups (i.e. approx. 2½, 3½, 4½ years of age).
- For TS sheep, the new Growth index is essentially the old TS Growth index.
- **Meat BVs and indexes are fundamentally different.** SIL recommends you “get your eye in” by looking at these on SIL reports for animals you know.
- The new Meat “Yield” BVs tell you how a carcass differs from others of the same size. Genetic merit for carcass size is now entirely in the Growth index (DPG or TSG).
- The new Meat index BVs are FATY (Fat yield), HQLY (hindquarter lean yield), LNLN (loin lean yield) and SHLY (shoulder lean yield).
- Meat will contribute less to overall indexes because there is less variation in carcass tissue size at a constant carcass weight. This is somewhat offset by the new Meat index accounting for variation in lean distribution, which the old index did not.
- Previously, genetically fast growing (large) sheep had higher values for LEAN and FAT BVs. Some of these will now have lower (negative) BVs because FAT or LEAN is below average for their size e.g. a big animal could be above average for total carcass fat weight but have below average fatness for its size (carcass weight).

What about the old indexes I have been using?

You will not be forced to switch to the new indexes right away. SIL will maintain existing indexes for much of 2010 so that you can use the old indexes on reports you produce for groups of animals that are part way through the selection cycle.

SIL recommends you use the new indexes for 2010 born animals as well as on associated sire and dam summaries.

The old indexes will be renamed with the word “old” as part of their name and a letter added to the abbreviations used on reports e.g the old “DP Growth” index will be renamed as “old DP Growth” with an abbreviation of “oDPG”.

If a new index has the same name as an old index, existing SIL Report templates will use the new index. SIL bureaus must change a report template to use the renamed “old” index.

Why haven't the index abbreviations been changed?

We had consistent feedback from experienced users that we should not change the sub-index names from Growth and Meat.

- Growth (DPG & TSG) will now mean “Lamb” Growth since Adult Size has been removed from DPG.
- The new Adult size sub-index for DP sheep (DPA) is separated from Lamb Growth and flags the cost of running large ewes.
- Growth is the only SIL Goal Trait Group that produces TWO sub-indexes – Lamb Growth and Adult Size in DP sheep (DPG & DPA, respectively).
- The new carcass merit index is really Meat “Yield” but SIL will use the term “Meat” and the abbreviations TSM and DPM for the sub-indexes.

We expected this might cause confusion and considered changing sub-index names and abbreviations but users unanimously rejected that idea. They wanted the terms Growth and Meat to remain together with the “G” and “M” abbreviations.

With these similar names, you must take care to check that the index you are expecting is that used on SIL reports (notes on the cover page will confirm what they are).

Index weightings

On the SIL website (www.sil.co.nz) you will find a separate Technical Note detailing the weightings placed on BVs in these SIL indexes.

Need more information?

If you have any queries about the ideas or terms in this document, please send them by email to silhelp@sheepimprovement.co.nz or telephone 0800-silhelp (0800-745-435)

About Sheep Improvement Ltd (SIL)

Sheep Improvement Ltd (SIL) is the national performance recording and genetic evaluation system, and is part of Meat & Wool New Zealand. It is funded by fees from breeder's using the system and from levy money.

Quick guide to interpreting the new (2010) **SIL Growth & Meat indexes:**

For TS and DP indexes

- **new [Growth + Meat] = old [Growth + Meat]** , for LW & ultrasound data
- Growth indexes have only ONE variant per sheep type (one DPG, one DPA, one TSG)
 - Old TSG = **new TSG**
 - Old DPG = **new DPG** (Lamb Growth) + **new DPA** (Adult size)
 - The new (Lamb) Growth indexes tell us about growth rate and carcass size. DPG also has a component for ewe milking ability (WWTM BV). The new DPA is the cost of carrying bigger ewes - previously this was in the old DP Growth indexes
 - Growth indexes use the same BVs as before. The only significant, but small, change is that SIL will use LWs of ewes older than 18months to better predict genetic merit for adult size (EWT BV). EWT BV is now in its own sub-index, DPA
- There is now only ONE Meat (Yield) index per sheep type (one DPM, one TSM)
 - Old Meat indexes were based on BVs for carcass tissue weight
 - New Meat (Yield) indexes are based on BVs for carcass tissue proportion, because we adjust the Lean and Fat weights to a constant carcass weight to produce tissue “yields”
 - Carcass lean yield and distribution is built into the new Meat index through three BVs – Hindquarter lean yield (HQLY), Loin lean yield (LNLY) and Shoulder lean yield (SHLY). These BVs reward higher lean yields and better lean tissue distribution when there is CT or VIAscan information that discriminates for these things
 - Fat Yield is in the new TSM index but not the new DPM index. This difference reflects the value that fat has in productive ewes compared to carcass lambs
- The new Meat (Yield) index looks at differences in carcass merit at the same size (carcass weight). This tells us something other than what the Growth index tell us
 - The new Meat (Yield) index rewards animals with better lean distribution. You need to have CT (InnerValue) or commercial meat yield (e.g. VIAscan) information to discriminate for this
 - Total lean weight is a function of the three yields and of carcass size. Size or growth rate traits are totally accounted for by BVs in the new Growth index. In the old index size or growth rate effects were split between the Growth and Meat indexes
 - Two animals can have the same “new” Meat BVs but very different “new” Growth BVs. This implies they have similar carcass tissue proportions but one carcass is bigger than the other

Index weightings are detailed in a separate Technical Note on the SIL website (www.sil.co.nz).