THE GLOBAL STANDARD FOR LIVESTOCK DATA

Appendix 1 of Section 2 of the ICAR Guidelines – Adjustment factors to calculate 24-hour yields using the Liu method

Adjustment factors to calculate 24-hour yields using the Liu method

Version May, 2022

Network. Guidelines. Certification.

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Change Summary

Date of Change	Nature of Change
May 2022	Update of Liu method to calculate 24-hour yields in Procedure 1 Section 2. Adjustment factors of Liu method added in separate Appendix.

1 Adjustment factors to calculate 24-hour yields using the Liu method

In Table 1 the adjustment factors to calculate 24-hour yields, using the Liu method, can be found. The description of the Liu method can be found in Procedure 1 of Section 2.

Table 1. Adjustment factors to calculate 24-hour yields using the Liu method. Milking time (MT) is either 1 (PM) or 2 (AM), i = parity class, j= milking interval class and k = stage of lactation class.

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
				Intercept	Slope	Intercept	Slope	Intercept	Slope
1	1	1	1	5.29333	1.83283	0.30911	1.43518	0.18984	1.77461
1	1	1	2	4.17676	1.97447	0.2803	1.56914	0.12246	2.00568
1	1	1	3	4.26476	1.95945	0.18826	1.82468	0.12624	2.0137
1	1	1	4	3.41282	2.01814	0.25025	1.64707	0.12519	1.99629
1	1	1	5	1.79548	2.22665	0.06578	2.09515	0.05249	2.24065
1	1	1	6	3.7751	1.95508	0.12854	1.93892	0.11936	2.00979
1	1	1	7	1.544	2.1478	0.06425	2.06779	0.0569	2.13851
1	1	2	1	5.8584	1.79409	0.33193	1.42953	0.20756	1.7288
1	1	2	2	5.45524	1.84258	0.32877	1.43235	0.21332	1.74001
1	1	2	3	4.64052	1.86706	0.27155	1.57017	0.16439	1.84539
1	1	2	4	2.86835	2.06209	0.18647	1.79403	0.10803	2.0193
1	1	2	5	2.11336	2.12055	0.10435	1.97206	0.07193	2.10651
1	1	2	6	2.00673	2.0636	0.1386	1.83336	0.06892	2.06532
1	1	2	7	1.71752	2.11269	0.06501	2.0379	0.05569	2.12881
1	**1**	**3**	**1**	**2.80244**	**2.02183**	**0.17663**	**1.72438**	**0.11078**	**1.96422**
1	**1**	**3**	**2**	**3.47396**	**1.98268**	**0.2135**	**1.6805**	**0.10471**	**1.99092**
1	1	3	3	2.81702	2.04348	0.20754	1.71868	0.1127	1.98403
1	1	3	4	3.1989	1.998	0.21578	1.6991	0.10802	1.99517
1	1	3	5	2.47055	2.04826	0.15418	1.83151	0.07492	2.07547
1	1	3	6	1.923	2.07728	0.11783	1.89678	0.06457	2.08391
1	1	3	7	1.85264	2.0873	0.13047	1.86711	0.071	2.06917
1	1	4	1	2.75042	1.96631	0.24794	1.61741	0.09248	1.95376
1	1	4	2	2.97505	1.96711	0.20029	1.71842	0.09381	1.97081
1	1	4	3	2.33365	2.02986	0.17021	1.79996	0.07631	2.03167

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
1	1	4	4	3.41505	1.94107	0.1845	1.76799	0.10989	1.95456
1	1	4	5	2.67488	1.97797	0.13433	1.85893	0.09432	1.97755
1	1	4	6	1.89907	2.04841	0.08715	1.96251	0.07132	2.04225
1	1	4	7	1.80326	2.03554	0.1251	1.86477	0.06072	2.04747
1	1	5	1	2.76763	1.92863	0.15754	1.72474	0.10187	1.88749
1	1	5	2	3.36896	1.92048	0.2236	1.64149	0.12369	1.8823
1	1	5	3	2.22763	2.00452	0.17614	1.7474	0.08019	1.9782
1	1	5	4	2.44625	1.97049	0.17217	1.74753	0.0889	1.94647
1	1	5	5	2.379	1.97307	0.15965	1.76134	0.0896	1.94575
1	1	5	6	1.62948	2.02491	0.11021	1.85546	0.0852	1.94593
1	1	5	7	1.45651	2.0254	0.07479	1.92789	0.05846	2.00196
1	1	6	1	2.01088	1.9497	0.16548	1.68143	0.101	1.85846
1	1	6	2	2.96605	1.93064	0.25841	1.52566	0.12097	1.86061
1	1	6	3	2.2281	1.96085	0.19036	1.69013	0.08032	1.9375
1	1	6	4	2.39473	1.952	0.17854	1.72423	0.06863	1.97582
1	1	6	5	2.37955	1.94127	0.19579	1.66419	0.08447	1.93156
1	1	6	6	0.36203	2.12393	0.14291	1.75822	0.03845	2.04562
1	1	6	7	1.5702	1.96794	0.1336	1.76796	0.06449	1.94829
1	1	7	1	3.93654	1.82772	0.2359	1.61894	0.15032	1.76054
1	1	7	2	4.39662	1.81581	0.24969	1.5881	0.16909	1.74794
1	1	7	3	3.78325	1.82778	0.19228	1.71802	0.12368	1.8268
1	1	7	4	3.39116	1.86302	0.1969	1.71838	0.12282	1.848
1	1	7	5	3.20111	1.83255	0.09893	1.86309	0.1044	1.84257
1	1	7	6	3.75639	1.78665	0.25205	1.56174	0.14105	1.76802
1	1	7	7	1.42153	1.95649	0.09226	1.85882	0.04636	1.96245
1	1	8	1	2.3454	1.90436	0.14321	1.77423	0.10703	1.82306
1	1	8	2	3.97557	1.82746	0.26651	1.58374	0.15298	1.76385
1	1	8	3	4.26939	1.80503	0.22918	1.64925	0.12924	1.81061
1	1	8	4	2.90779	1.89861	0.18578	1.73968	0.13948	1.79679
1	1	8	5	2.8265	1.87632	0.19374	1.67929	0.12377	1.80944
1	1	8	6	2.26312	1.87397	0.09917	1.82528	0.08819	1.84453

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
1	1	8	7	0.31382	2.04402	0.05049	1.95773	0.02612	1.99012
1	2	1	1	4.63752	1.99615	0.31102	1.58962	0.16637	1.96686
1	2	1	2	5.56226	1.91521	0.26761	1.64342	0.16973	1.94145
1	2	1	3	4.51983	1.96962	0.26221	1.65088	0.12245	2.03857
1	2	1	4	4.51563	1.93033	0.18468	1.80715	0.15252	1.94807
1	2	1	5	2.60334	2.07338	0.16011	1.81257	0.09892	2.05493
1	2	1	6	2.86068	1.98457	0.15381	1.79197	0.08619	2.04046
1	2	1	7	1.6596	2.11753	0.13089	1.83687	0.09908	1.96479
1	2	2	1	3.94656	2.03607	0.23716	1.6988	0.19559	1.88765
1	2	2	2	4.20525	1.98621	0.3553	1.46663	0.1657	1.92175
1	2	2	3	3.31729	2.04589	0.29682	1.57761	0.12491	2.00945
1	2	2	4	1.95977	2.13926	0.16059	1.79846	0.06713	2.12835
1	2	2	5	1.49014	2.14889	0.10057	1.90772	0.05279	2.14047
1	2	2	6	0.82235	2.22517	0.07573	1.94963	0.04014	2.17549
1	2	2	7	1.53608	2.08972	0.11472	1.81148	0.0676	2.03957
1	**2**	**3**	**1**	**3.85525**	**2.00429**	**0.27991**	**1.62403**	**0.12863**	**1.98973**
1	**2**	**3**	**2**	**4.1508**	**1.9852**	**0.3635**	**1.47515**	**0.13952**	**1.97074**
1	2	3	3	3.31493	2.02332	0.31131	1.55183	0.11703	2.00696
1	2	3	4	2.47354	2.0652	0.20828	1.71637	0.09402	2.04147
1	2	3	5	1.68517	2.08809	0.14418	1.80246	0.06917	2.05808
1	2	3	6	1.316	2.12714	0.11206	1.87179	0.04723	2.12486
1	2	3	7	0.4841	2.20538	0.04633	2.02915	0.02369	2.18113
1	2	4	1	2.82623	2.01819	0.25826	1.69268	0.11251	1.97665
1	2	4	2	3.24039	1.9811	0.36283	1.50648	0.11719	1.96246
1	2	4	3	2.4545	2.03386	0.19627	1.75339	0.09698	2.00807
1	2	4	4	2.46446	2.01626	0.17827	1.76414	0.08026	2.02912
1	2	4	5	2.11339	2.00724	0.14884	1.77964	0.07749	2.00585
1	2	4	6	1.51141	2.04563	0.11559	1.82474	0.06194	2.02586
1	2	4	7	0.95936	2.09963	0.07044	1.95281	0.03645	2.0993
1	2	5	1	3.36561	1.97323	0.2649	1.65361	0.13019	1.92402
1	2	5	2	3.66222	1.95479	0.35065	1.51028	0.14652	1.89882

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
1	2	5	3	3.20442	1.96165	0.28676	1.58823	0.12031	1.93028
1	2	5	4	1.78673	2.0426	0.17183	1.75198	0.0678	2.02025
1	2	5	5	1.61868	2.01988	0.11914	1.80878	0.06624	1.99283
1	2	5	6	1.30123	2.02218	0.10515	1.80653	0.05345	2.00292
1	2	5	7	0.65695	2.08269	0.06835	1.89102	0.0332	2.0525
1	2	6	1	2.3773	1.9669	0.24867	1.6336	0.08319	1.94741
1	2	6	2	2.82556	1.95506	0.31731	1.51798	0.12008	1.89324
1	2	6	3	2.7235	1.94883	0.30621	1.5177	0.09365	1.93764
1	2	6	4	1.77727	1.98273	0.17989	1.69341	0.07314	1.95161
1	2	6	5	0.81041	2.05295	0.13961	1.74391	0.04468	2.01091
1	2	6	6	0.72188	2.0465	0.09874	1.79927	0.03137	2.03309
1	2	6	7	1.21598	1.97942	0.07065	1.87211	0.04484	1.98491
1	2	7	1	3.55054	1.89128	0.27402	1.61031	0.10827	1.89085
1	2	7	2	5.0062	1.81574	0.3119	1.54857	0.18009	1.76865
1	2	7	3	3.95204	1.84947	0.30465	1.53907	0.16048	1.789
1	2	7	4	2.36233	1.9168	0.18751	1.70412	0.09531	1.88355
1	2	7	5	1.48851	1.94443	0.09973	1.81041	0.05904	1.92497
1	2	7	6	1.22525	1.94454	0.06617	1.87082	0.05516	1.91259
1	2	7	7	1.13847	1.93756	0.08109	1.83388	0.04706	1.93165
1	2	8	1	4.09874	1.87708	0.20312	1.73434	0.15506	1.83083
1	2	8	2	4.66403	1.84302	0.31808	1.56093	0.18049	1.78288
1	2	8	3	3.24375	1.89351	0.2827	1.59546	0.13583	1.83427
1	2	8	4	2.24175	1.92084	0.17795	1.72611	0.09636	1.87438
1	2	8	5	1.63783	1.93625	0.1225	1.78642	0.0659	1.90934
1	2	8	6	2.01753	1.89095	0.13742	1.74752	0.08289	1.86553
1	2	8	7	0.97568	1.97215	0.05926	1.88807	0.04057	1.95672
2	1	1	1	3.44076	1.73133	0.27759	1.55037	0.13323	1.68913
2	1	1	2	4.99596	1.64527	0.2322	1.58033	0.17533	1.62422
2	1	1	3	3.83372	1.68144	0.25087	1.52033	0.14525	1.66706
2	1	1	4	3.87034	1.68102	0.20979	1.60153	0.13627	1.68885
2	1	1	5	1.76134	1.80424	0.15241	1.70485	0.06231	1.81524

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
2	1	1	6	0.79304	1.89072	0.09906	1.80312	0.03277	1.89435
2	1	1	7	1.43535	1.80614	0.0593	1.81589	0.0407	1.85002
2	1	2	1	3.72284	1.68499	0.19226	1.66567	0.1237	1.66453
2	1	2	2	4.42667	1.66508	0.24314	1.55652	0.14361	1.66251
2	1	2	3	2.7019	1.75871	0.32717	1.38452	0.11056	1.72312
2	1	2	4	2.41538	1.75937	0.14575	1.68355	0.09038	1.74138
2	1	2	5	1.65412	1.81649	0.13926	1.70623	0.0597	1.81378
2	1	2	6	2.0843	1.7735	0.21052	1.57508	0.07244	1.78566
2	1	2	7	1.43238	1.80651	0.08031	1.78712	0.05269	1.81727
2	1	3	1	2.45314	1.77068	0.18152	1.73443	0.07657	1.78025
2	1	3	2	3.01217	1.70966	0.19388	1.66175	0.05624	1.80606
2	1	3	3	2.09997	1.74945	0.14493	1.68277	0.05446	1.7922
2	1	3	4	2.36683	1.71741	0.12244	1.71407	0.06775	1.75721
2	1	3	5	1.56776	1.75755	0.08776	1.76946	0.04244	1.79675
2	1	3	6	1.63824	1.75452	0.09422	1.76794	0.04181	1.80604
2	1	3	7	0.74114	1.83421	0.08039	1.78306	0.02347	1.85596
2	1	4	1	1.47047	1.78588	0.17271	1.69379	0.06511	1.74985
2	1	4	2	2.22168	1.72985	0.20701	1.59429	0.08178	1.71455
2	1	4	3	2.50108	1.69618	0.16828	1.61962	0.08598	1.70516
2	1	4	4	1.97141	1.7202	0.1446	1.66357	0.06856	1.73201
2	1	4	5	1.17054	1.75879	0.1172	1.69234	0.04624	1.75806
2	1	4	6	1.74755	1.70968	0.12562	1.67603	0.0629	1.72333
2	1	4	7	0.52482	1.80155	0.07345	1.75615	0.02671	1.79288
2	1	5	1	1.76464	1.76219	0.24301	1.59094	0.07156	1.73136
2	1	5	2	1.99594	1.73438	0.1984	1.5954	0.06489	1.73449
2	1	5	3	1.8804	1.72362	0.13019	1.67977	0.06783	1.71916
2	1	5	4	1.83337	1.71477	0.11197	1.70244	0.05764	1.73194
2	1	5	5	1.49752	1.72615	0.13128	1.65461	0.04656	1.7433
2	1	5	6	1.3042	1.7305	0.07173	1.75315	0.04482	1.7399
2	1	5	7	2.00868	1.67669	0.12298	1.64761	0.09175	1.64669
2	1	6	1	0.84993	1.75972	0.12918	1.74026	0.0328	1.74802

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
2	1	6	2	1.93666	1.67406	0.16606	1.59943	0.04535	1.7106
2	1	6	3	2.12115	1.64964	0.19988	1.50821	0.05229	1.68986
2	1	6	4	0.68831	1.73901	0.09674	1.6838	0.01696	1.75787
2	1	6	5	1.13081	1.69479	0.06413	1.72559	0.04936	1.67757
2	1	6	6	0.5893	1.72537	0.02598	1.80138	0.01591	1.74082
2	1	6	7	0.72519	1.71955	0.03157	1.78405	0.02889	1.71972
2	1	7	1	1.85937	1.66064	0.2416	1.49676	0.06807	1.63599
2	1	7	2	1.8527	1.64892	0.2374	1.43845	0.06336	1.6431
2	1	7	3	1.56905	1.66084	0.15434	1.55598	0.04336	1.68109
2	1	7	4	0.74968	1.69857	0.13496	1.56636	0.02871	1.6933
2	1	7	5	1.08222	1.65925	0.10847	1.613	0.03305	1.67829
2	1	7	6	1.1124	1.68059	0.14267	1.57525	0.04416	1.6776
2	1	7	7	0.88031	1.6751	0.10534	1.60483	0.04216	1.66444
2	1	8	1	0.62802	1.72402	0.19225	1.54631	0.03247	1.69368
2	1	8	2	0.83902	1.68303	0.15492	1.53421	0.05922	1.61411
2	1	8	3	1.33727	1.63407	0.19835	1.43309	0.05874	1.61141
2	1	8	4	1.06381	1.64762	0.11026	1.58762	0.04019	1.64574
2	1	8	5	1.13714	1.61716	0.13322	1.53166	0.05648	1.59149
2	1	8	6	1.19134	1.60463	0.11089	1.54864	0.06258	1.56912
2	1	8	7	1.58872	1.60204	0.066	1.64659	0.04748	1.63282
2	2	1	1	3.46775	1.78609	0.28956	1.68515	0.15003	1.72171
2	2	1	2	5.69879	1.67614	0.3725	1.5045	0.19774	1.64659
2	2	1	3	5.18985	1.66571	0.40124	1.40574	0.17828	1.65793
2	2	1	4	3.43435	1.74182	0.20332	1.66994	0.11075	1.76221
2	2	1	5	2.48643	1.76219	0.13714	1.7396	0.09636	1.75624
2	2	1	6	1.41151	1.82292	0.15415	1.6725	0.06549	1.80013
2	2	1	7	0.9096	1.8409	0.08811	1.7823	0.03467	1.85275
2	2	2	1	1.85358	1.83615	0.28355	1.64765	0.06055	1.83138
2	2	2	2	3.81188	1.74978	0.25972	1.62799	0.11238	1.7646
2	2	2	3	3.16717	1.76679	0.29832	1.53409	0.09407	1.78959
2	2	2	4	2.33664	1.78934	0.22694	1.60101	0.07273	1.80371

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
2	2	2	5	2.01675	1.79303	0.10664	1.79792	0.06062	1.8184
2	2	2	6	1.80809	1.80081	0.13659	1.70935	0.07335	1.79213
2	2	2	7	1.01661	1.8295	0.0548	1.84688	0.03414	1.84213
2	2	3	1	2.01474	1.8142	0.21867	1.74325	0.05359	1.83088
2	2	3	2	3.53989	1.71985	0.28196	1.60868	0.10823	1.73763
2	2	3	3	3.38412	1.69907	0.27409	1.56164	0.11042	1.71397
2	2	3	4	2.2171	1.74622	0.16076	1.70107	0.07372	1.75906
2	2	3	5	1.11799	1.80944	0.11087	1.75678	0.03792	1.81891
2	2	3	6	1.40464	1.76033	0.10048	1.72933	0.05342	1.75745
2	2	3	7	0.11328	1.8972	0.04052	1.87101	0.00787	1.88753
2	2	4	1	2.59777	1.74476	0.28154	1.66509	0.10763	1.71072
2	2	4	2	3.53853	1.69511	0.38311	1.46839	0.13243	1.66523
2	2	4	3	2.80538	1.70587	0.26686	1.55787	0.1126	1.68024
2	2	4	4	2.18191	1.72068	0.18333	1.65612	0.085	1.71029
2	2	4	5	1.23383	1.7716	0.12824	1.71179	0.04845	1.76628
2	2	4	6	0.85652	1.79279	0.0763	1.79314	0.03563	1.78528
2	2	4	7	0.97995	1.77178	0.0797	1.7577	0.03846	1.77043
2	2	5	1	2.47016	1.74985	0.32061	1.60073	0.10455	1.71058
2	2	5	2	3.76194	1.68979	0.32787	1.54675	0.11781	1.69109
2	2	5	3	2.61421	1.70766	0.20307	1.64866	0.08315	1.71378
2	2	5	4	1.6809	1.74028	0.16795	1.66491	0.06202	1.73305
2	2	5	5	1.31241	1.75722	0.14383	1.68302	0.05338	1.74562
2	2	5	6	1.66563	1.71781	0.12721	1.69231	0.06147	1.72101
2	2	5	7	0.87471	1.74991	0.07882	1.71706	0.04173	1.73246
2	2	6	1	1.70055	1.72832	0.20839	1.67759	0.06001	1.71779
2	2	6	2	3.20558	1.65143	0.33676	1.47797	0.09642	1.6546
2	2	6	3	1.5827	1.71538	0.19719	1.62038	0.05324	1.71254
2	2	6	4	1.7692	1.69473	0.14854	1.66225	0.05758	1.69946
2	2	6	5	1.33003	1.70542	0.10726	1.69398	0.04565	1.7096
2	2	6	6	1.01266	1.71155	0.09376	1.70285	0.04005	1.70822
2	2	6	7	0.9856	1.70091	0.06454	1.73063	0.0394	1.69796

MT	i	j	k	Milk yield (DMY)		Fat yield (DFY)		Protein yield (DPY)	
2	2	7	1	2.02441	1.67788	0.30435	1.5407	0.08673	1.63673
2	2	7	2	1.43949	1.71143	0.30098	1.47963	0.06527	1.67295
2	2	7	3	1.68946	1.66442	0.24777	1.47116	0.06594	1.64834
2	2	7	4	1.10967	1.68591	0.15663	1.60109	0.04949	1.67069
2	2	7	5	0.77866	1.70882	0.11248	1.64389	0.03402	1.70215
2	2	7	6	0.67502	1.69719	0.10289	1.62419	0.03507	1.67744
2	2	7	7	0.65216	1.70336	0.05545	1.73388	0.02233	1.72102
2	2	8	1	1.33877	1.67358	0.18369	1.64385	0.06055	1.63818
2	2	8	2	0.71697	1.71038	0.25461	1.49037	0.04798	1.66397
2	2	8	3	2.13197	1.62429	0.2393	1.47673	0.08136	1.6065
2	2	8	4	1.16932	1.66188	0.13759	1.60108	0.0463	1.64856
2	2	8	5	1.48369	1.62387	0.12547	1.58988	0.06919	1.5925
2	2	8	6	1.18879	1.65442	0.10031	1.62813	0.07392	1.58846
2	2	8	7	0.58052	1.68546	0.02696	1.7382	0.01982	1.70519