

صنایع لبنی 2

دکتر علی نصیرپور

Examples of fat products (Sweden)

Product/ Composition	Butter	Margarine	Dairy Spread Bregott (Margarine)	Low fat Dairy spread Lätt & Lagom (Minarine)	M-cocos	Lard
Basic material	Cultured cream	Veg. oils and fats	Cultured cream and vegetable oil	AMF* + vegetable oil + conc. of butter milk pref.	Coconut oil	Lard
Fat, %	80	80	80	40	100	100
Moisture, %	16 – 18 **	≈18	17 – 18**	48	0	0
Salt, %	0 – 2	1.5 – 2.0	1.4 – 2.0	1.2	0	0
Protein, %	0.7	0.2 – 0.4	0.6	7.5	0	0
Specific energy kJ/100 g	3 140	3 100 – 3 150	3 140	1 710	3 900	3 900
Vitamins	A 2 500	A 3 000	A 3 000	A 3 000	0	0
I.U./100 g	D 55	D 300	D 300	D 300	0	0
Keeping quality at 6–7°C	2 – 3 months	3 months	2 – 3 months	1.5 months	6 – 12 months	6 months
Usage	Table Cooking	Table Cooking	Table Cooking	Table	Cooking Confectionery	Frying Baking

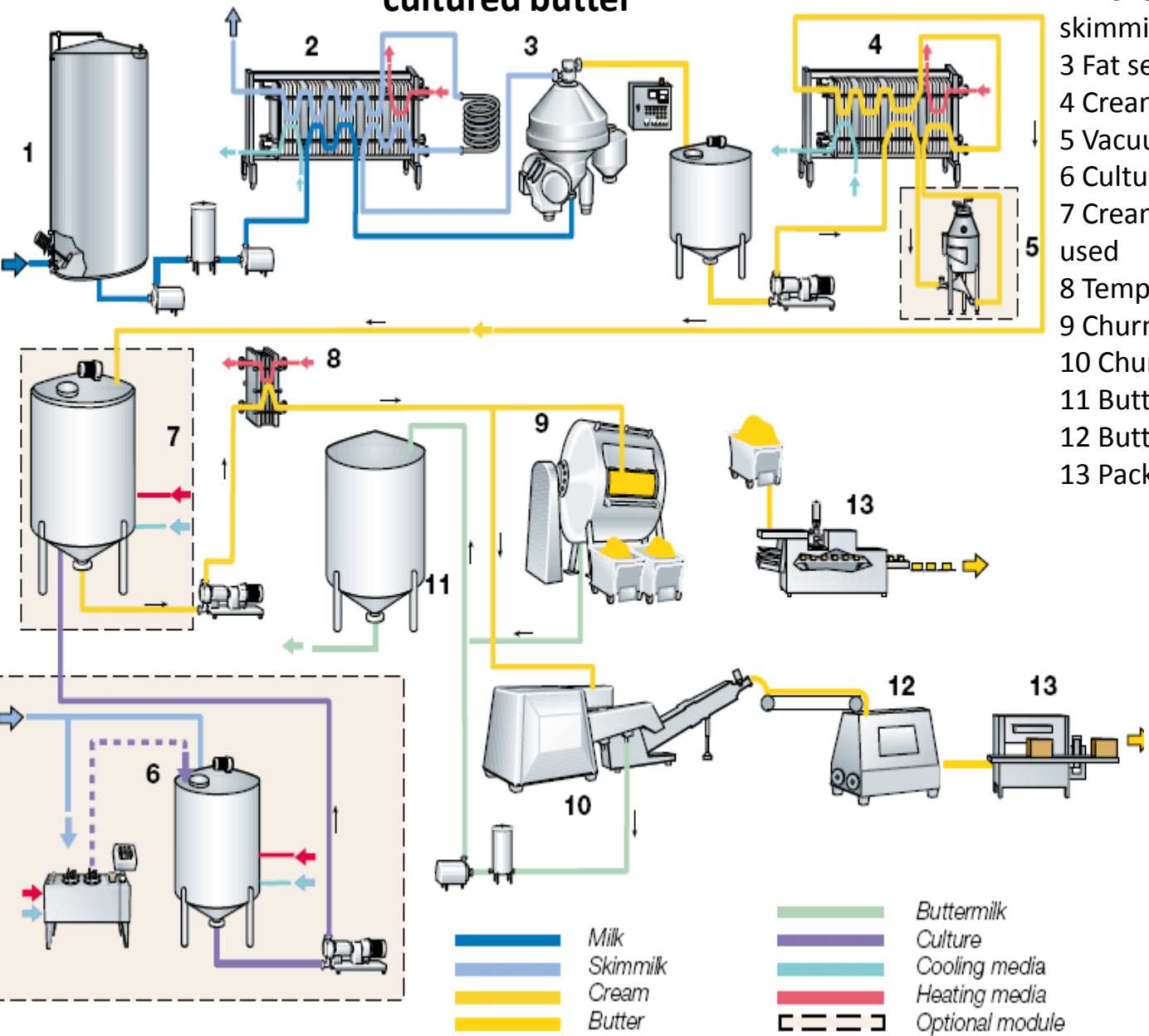
* AMF = Anhydrous Milk Fat

** Varies with salt content

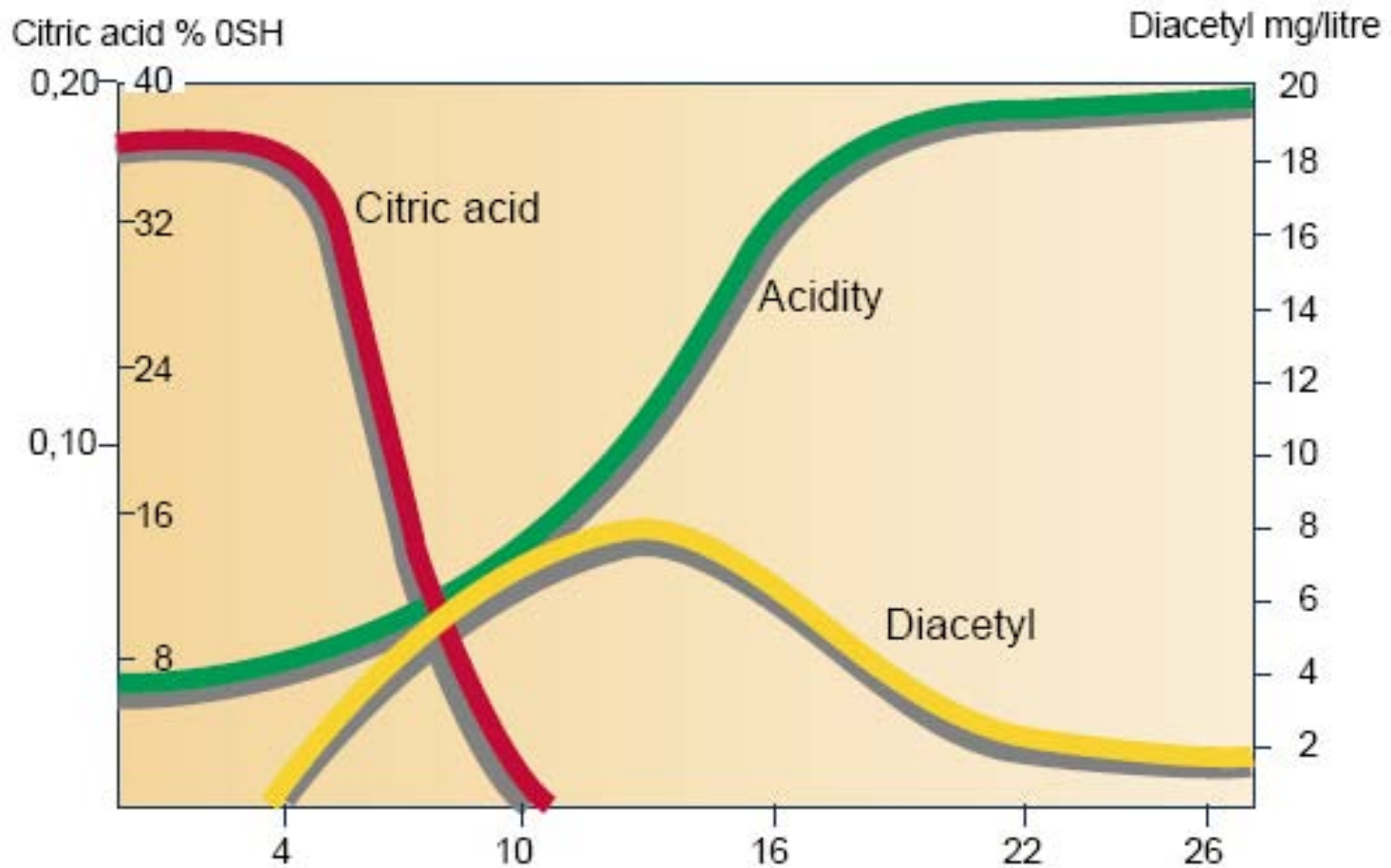
Table from Livsmedelsbranschens Utbildningsorgan, Brevskolan, Sweden

General process steps in batch and continuous production of cultured butter

- 1 Milk reception
- 2 Preheating and pasteurisation of skim milk
- 3 Fat separation
- 4 Cream pasteurisation
- 5 Vacuum deaeration, when used
- 6 Culture preparation, when used
- 7 Cream ripening and souring, when used
- 8 Temperature treatment
- 9 Churning/working, batch
- 10 Churning/working, continuous
- 11 Buttermilk collection
- 12 Butter silo with screw conveyor
- 13 Packaging machines



Acid and aroma development in skimmilk at 20°C and an LD culture dosage of 1%.

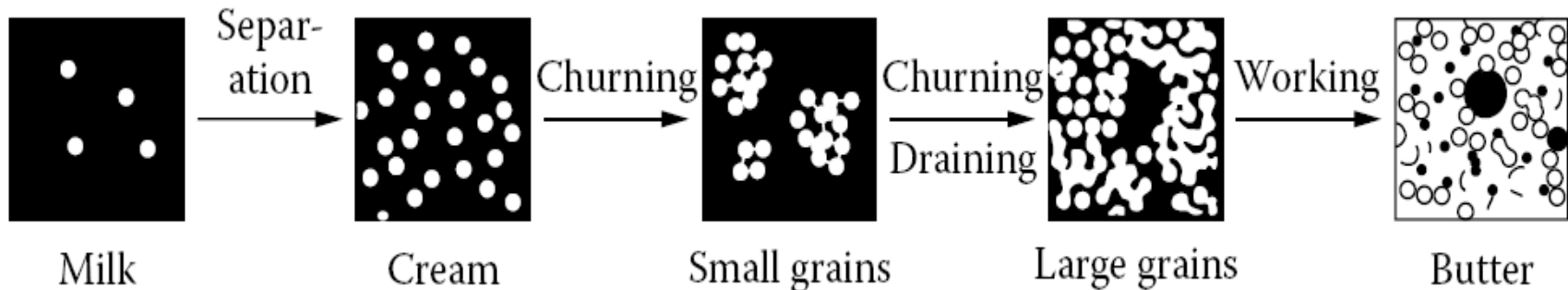
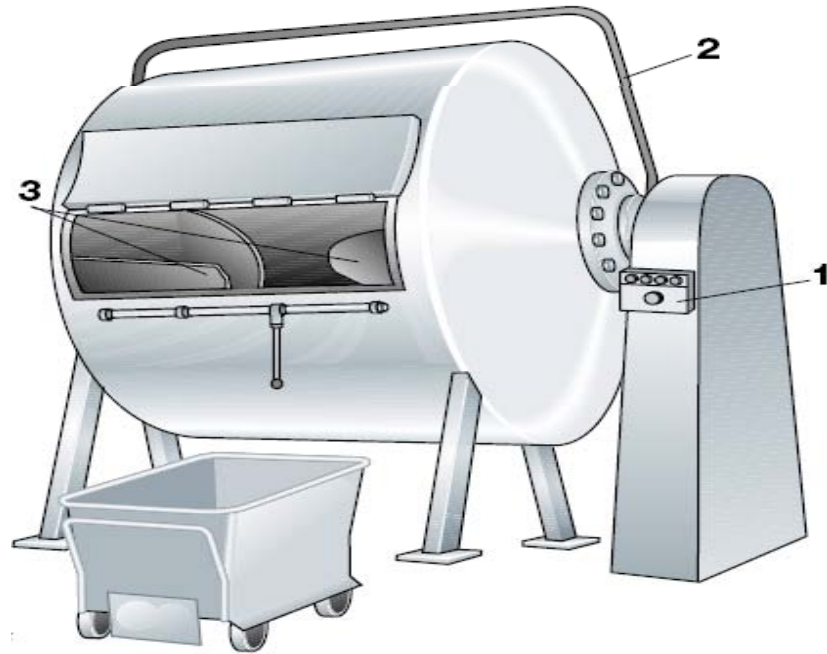


Principal temperature programmes adjusted to the iodine value and recommended volumes of culture, when used.

Iodine value	Temperature programme, °C	Approx % of starter in cream
<28	8 – 21 – 20	1
28 – 29	8 – 21 – 16	2 – 3
30 – 31	8 – 20 – 13	5
32 – 34	6 – 19 – 12	5
35 – 37	6 – 17 – 11	6
38 – 39	6 – 15 – 10	7
>40	20 – 8 – 11	5

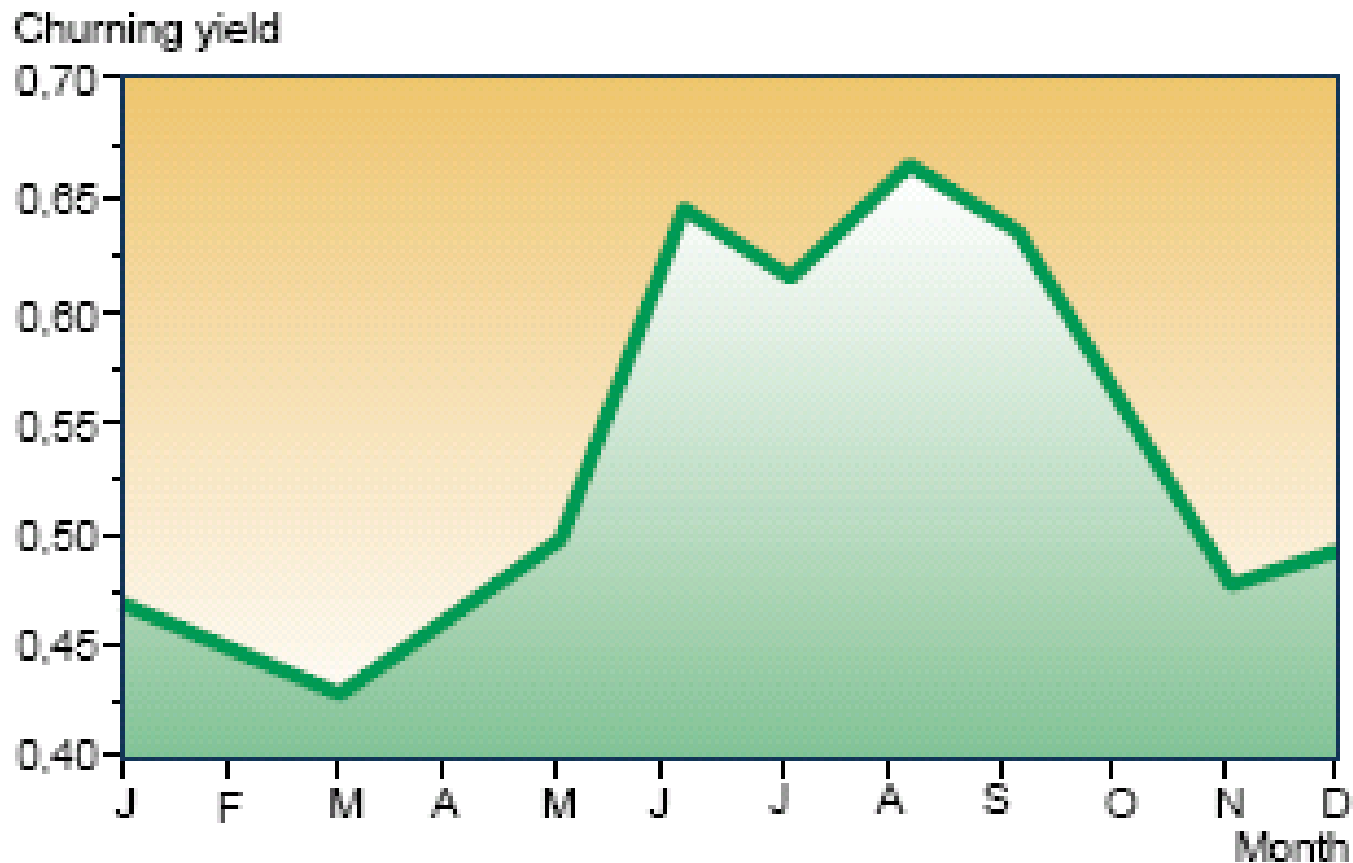
Butter churn for batch production.

- 1 Control panel**
- 2 Emergency stop**
- 3 Angled baffles**

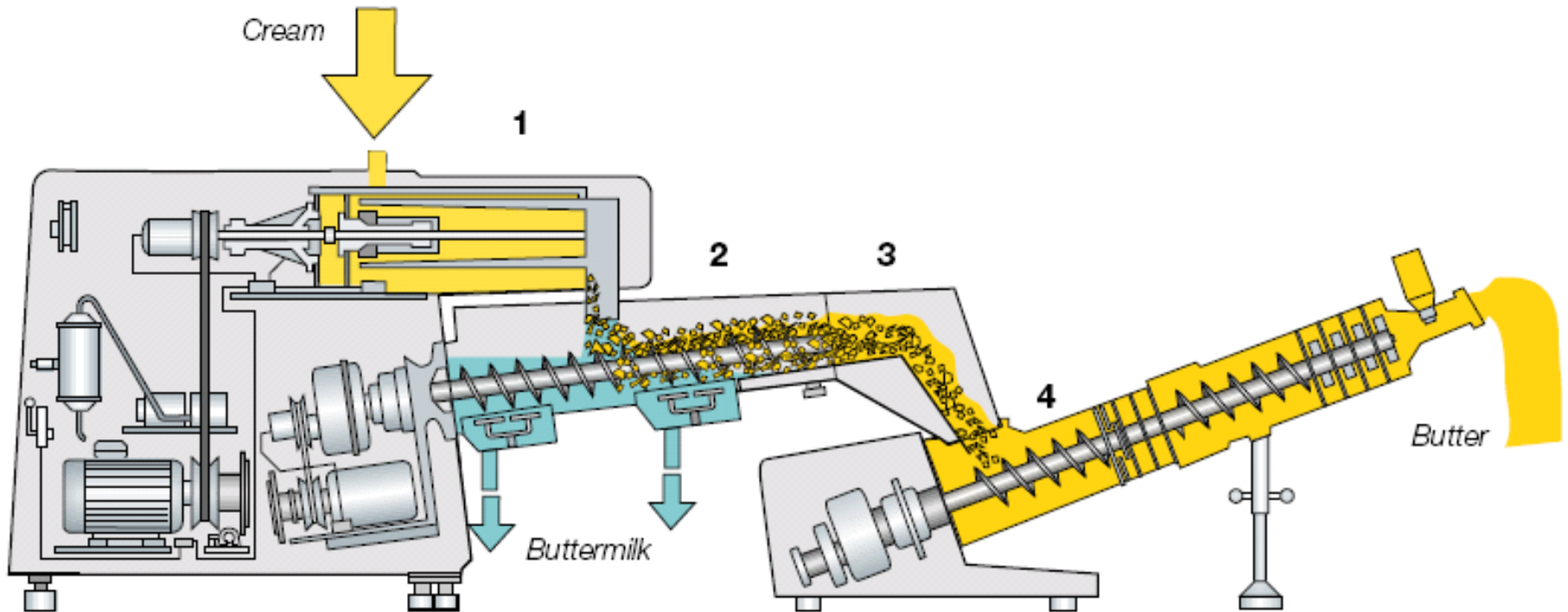


Stages in the formation of butter. Greatly simplified, not to scale. Black represents the aqueous phase; white represents fat.

How churning yield can vary during the year (Sweden)



A continuous buttermaking machine



- 1 Churning cylinder**
- 2 Separation section**
- 3 Squeeze-drying section**
- 4 Second working section**