

THE ART OF BREWING



Madrid, April 24th 2018

YOUR OFFICE FOR TODAY!

ON BEHALF OF A.E.T.C.M WELCOME !

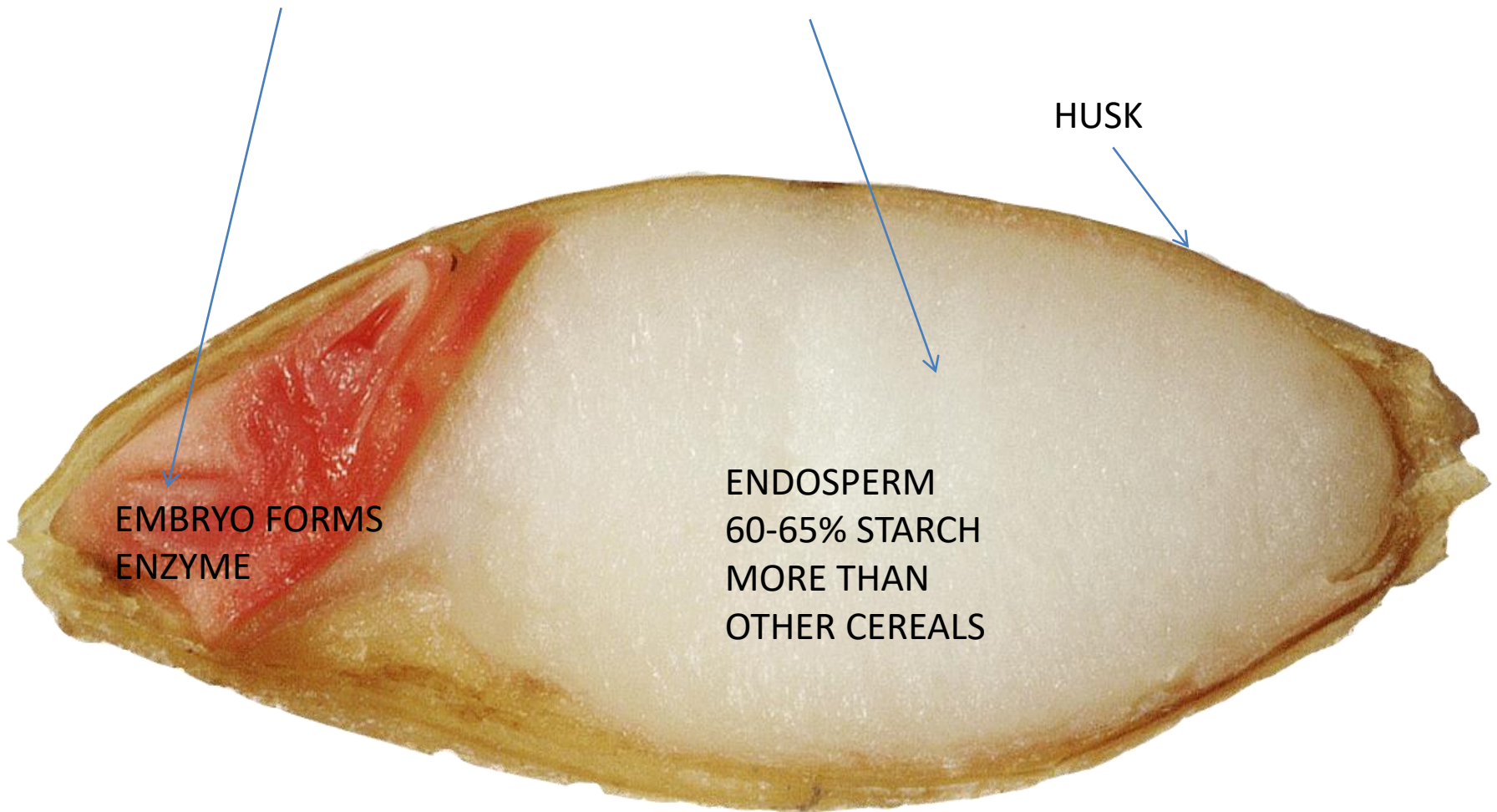


STUPID QUESTIONS DO NOT EXITS

BARLEY GRAIN, THE BEGINNING “baere” saxon word of barley



BRAIN AND BODY OF BARLEY



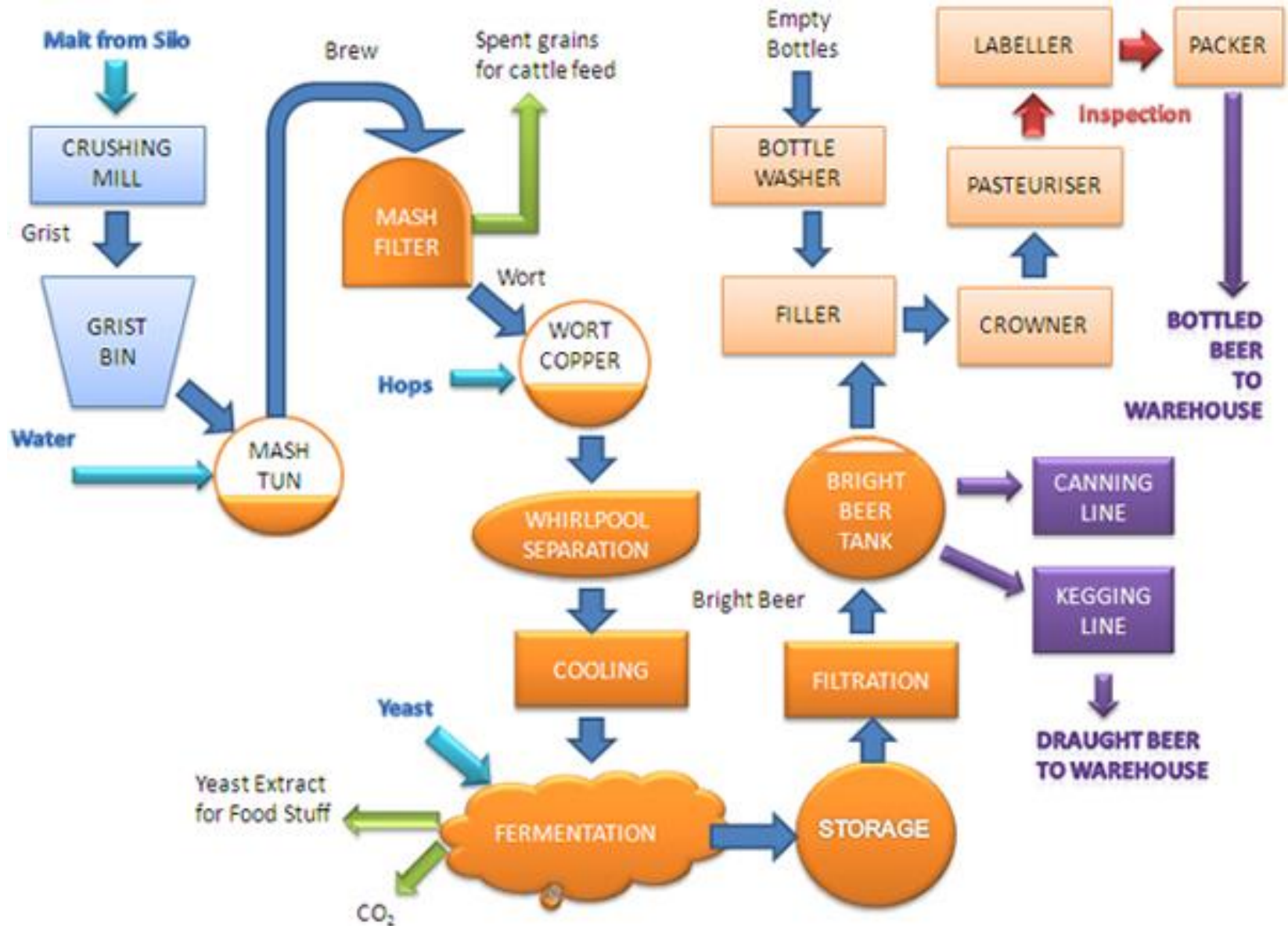
MALTING PROCESS



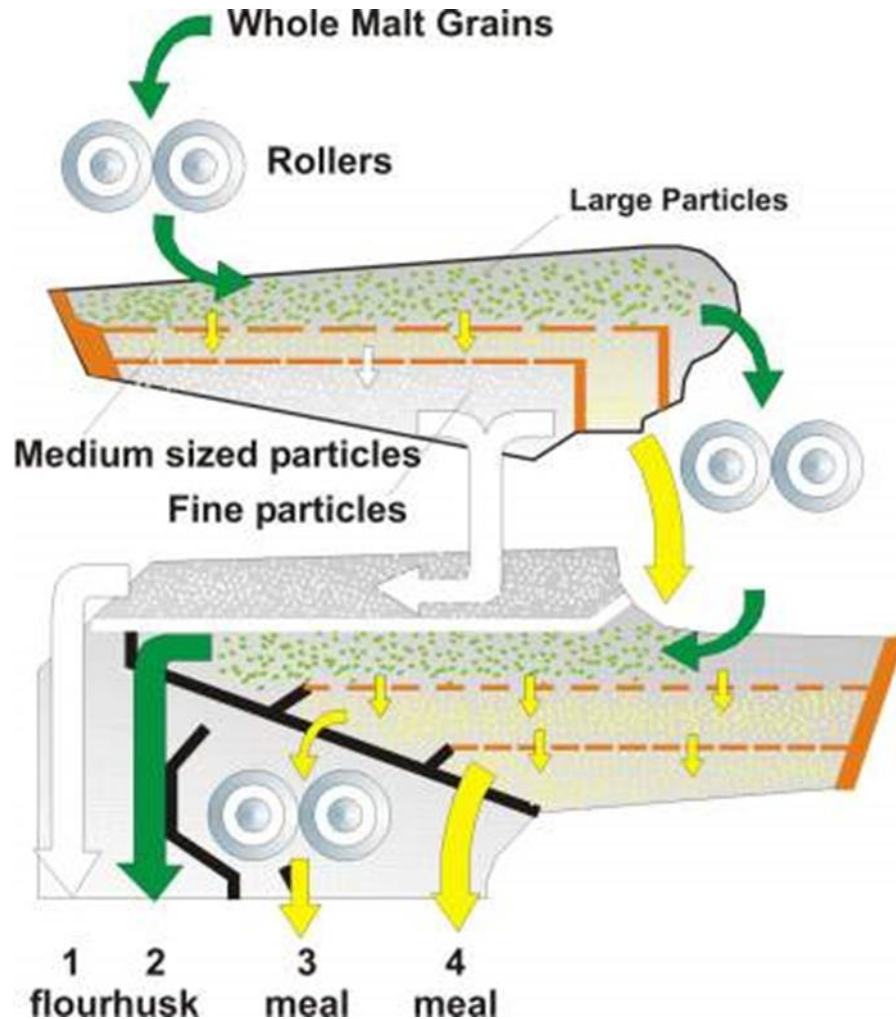
COLOUR OF BEER = MIXTURE OF MALTS IN RECIPE



BREWERY DIAGRAM

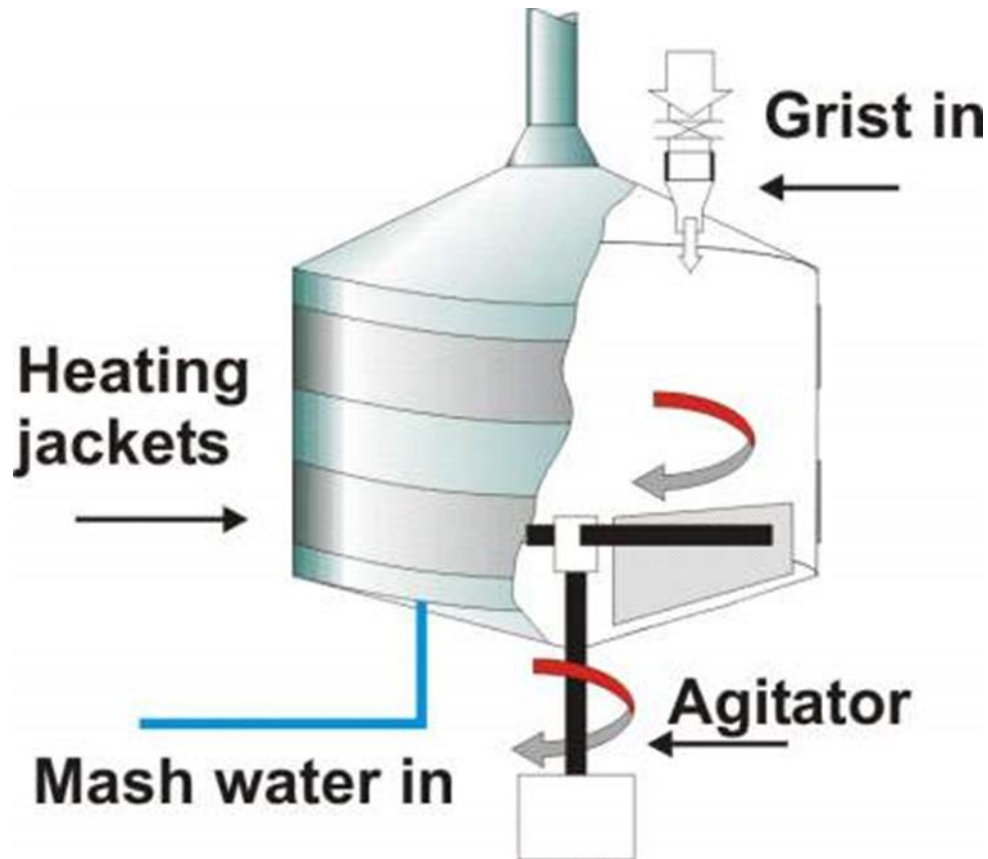


WHY MILLING



- ✓ BREAKING OPEN THE CORN OF CEREALS USED IN RECIPE
- ✓ EXPOSES THE STARCHY ENDOSPERM
- ✓ PARTICLE SIZE CONTROL
- ✓ HUSK AND STARCHY FLOUR

WHAT DOES MASHING MEANS

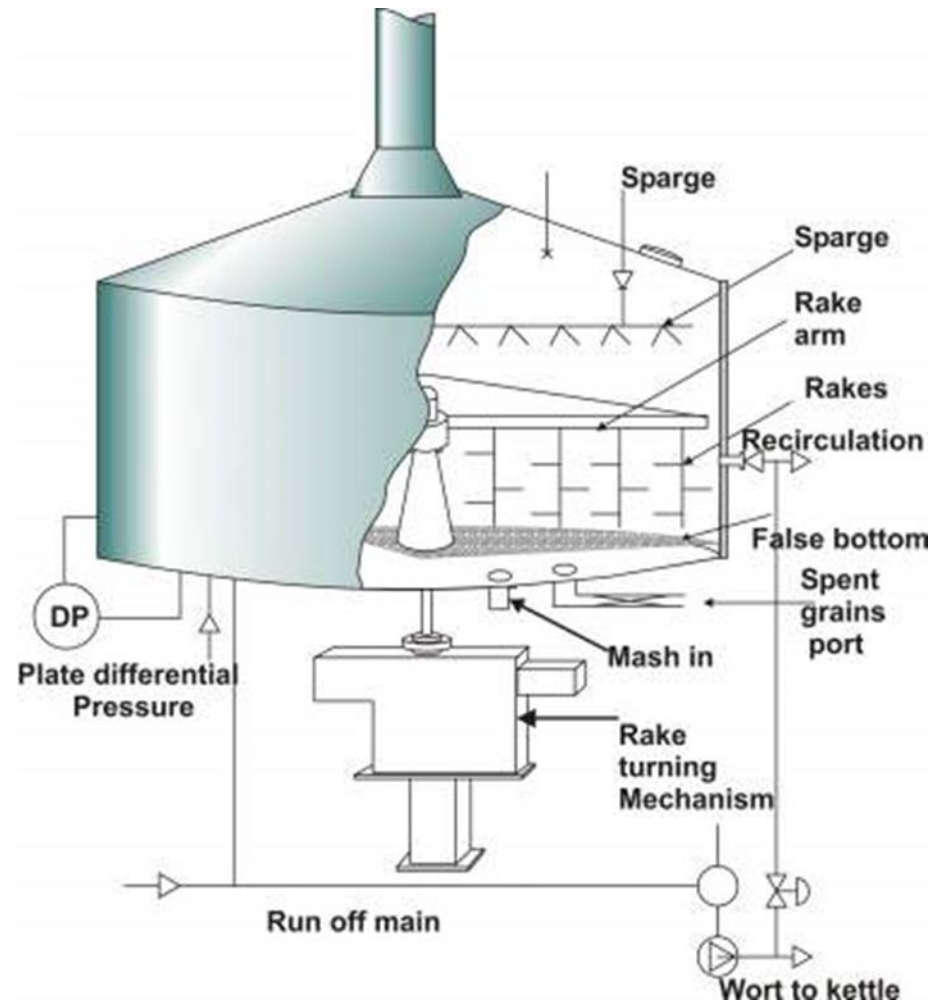
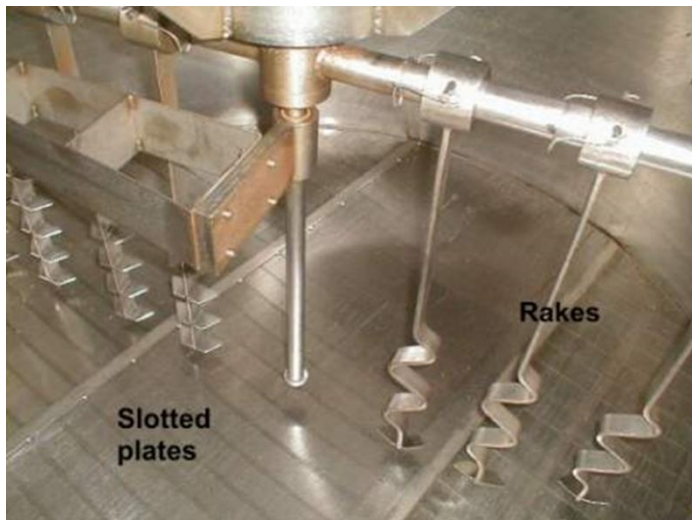


- ✓ GROUNDED BARLEY MALTS AND OTHER CEREALS ARE MIXED IN A SET OF WATER = **GRIST**
- ✓ THE BARLEY MALT ENZYMES CONVERT THE STARCH TO SUGARS , AND PROTEINS TO AMINOACIDS.
- ✓ ALL COMPOUNDS ARE DISSOLVED IN WATER TO MAKE **THE WORT**

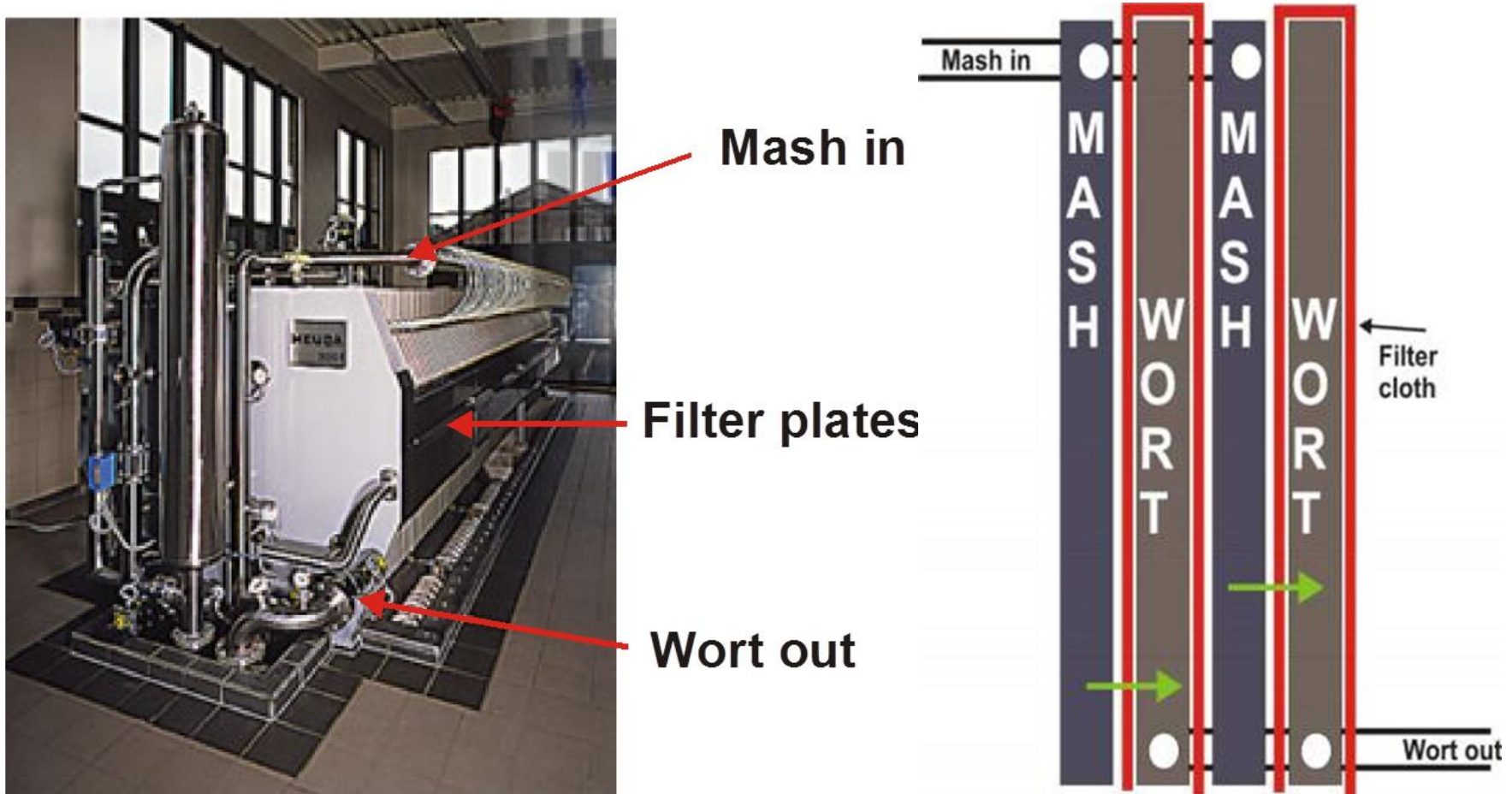
THE BREWER MAKES THE WORT , THE YEAST MAKES THE BEER

- ✓ MORE SUGAR DISSOLVES IN WORT = MORE ALCOHOL BECOMES THE BEER
- ✓ BREWER DEFINES IN WORT PERCENTAGE OF FERMENTABLE AND NON FERMENTABLE SUGAR = THE BODY OF FINAL BEER.
- ✓ BREWER DEFINES IN WORT THE COLOUR OF FINAL BEER , DEPENDING ON THE MIXTURE OF BARLEY MALT USED IN RECIPE.
- ✓ BREWER DEFINES THE BITTERNESS OF THE BEER , DEPENDING ON THE HOP ADDED.

WORT FILTRATION – LAUTER TUN

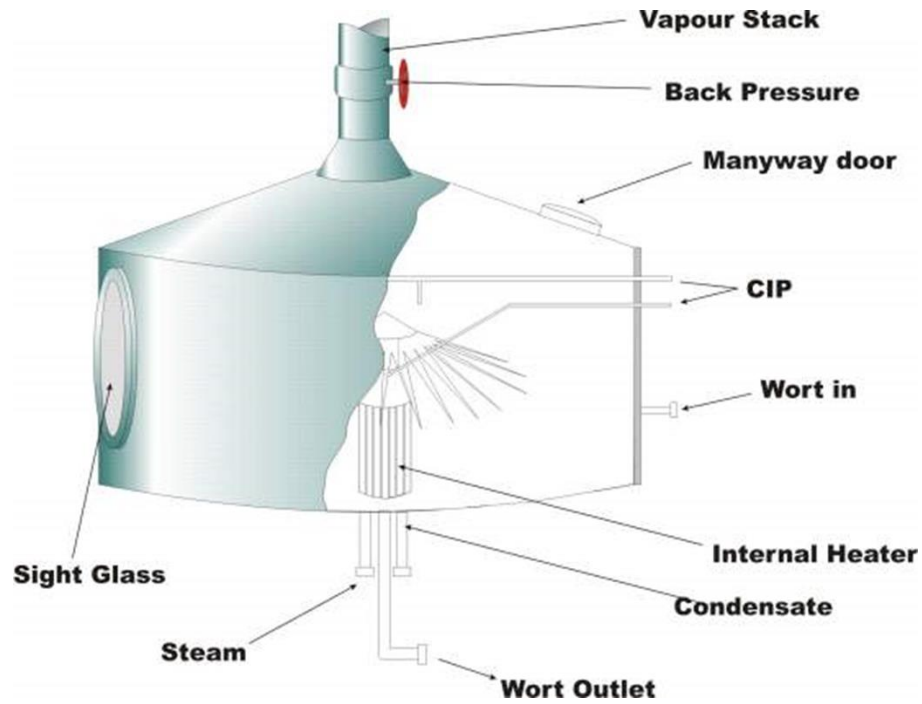


WORT FILTRATION - MASH FILTER



IT IS LIKE A LARGE PRESS, CONTAINING INDIVIDUAL CHAMBERS WITH RELATIVE LOW BED HEIGHT

HOP BOILING



- ✓ ISOMERISATION OF BITTER SUBSTANCES
- ✓ STERILISATION OF WORT
- ✓ STOPPING ENZYMATIC ACTION
- ✓ REMOVAL OF SOME VOLATILES
- ✓ CONCENTRATION OF WORT



HOP = HUMULUS LUPULUS

HOPS IN BINES (LONG FLEXIBLE STEM WHERE THE LONG STALK OF HOP IS CLIMBING)



- ✓ FLOWERS OF THE PLANT WITH A RESIN LUPULIN
- ✓ PROVIDE FLAVOUR, TASTE , AND BITTERNESS TO BEER.
- ✓ HELP TO PRESERVE CONTAMINATION OF BEER.



WHIRPOOL

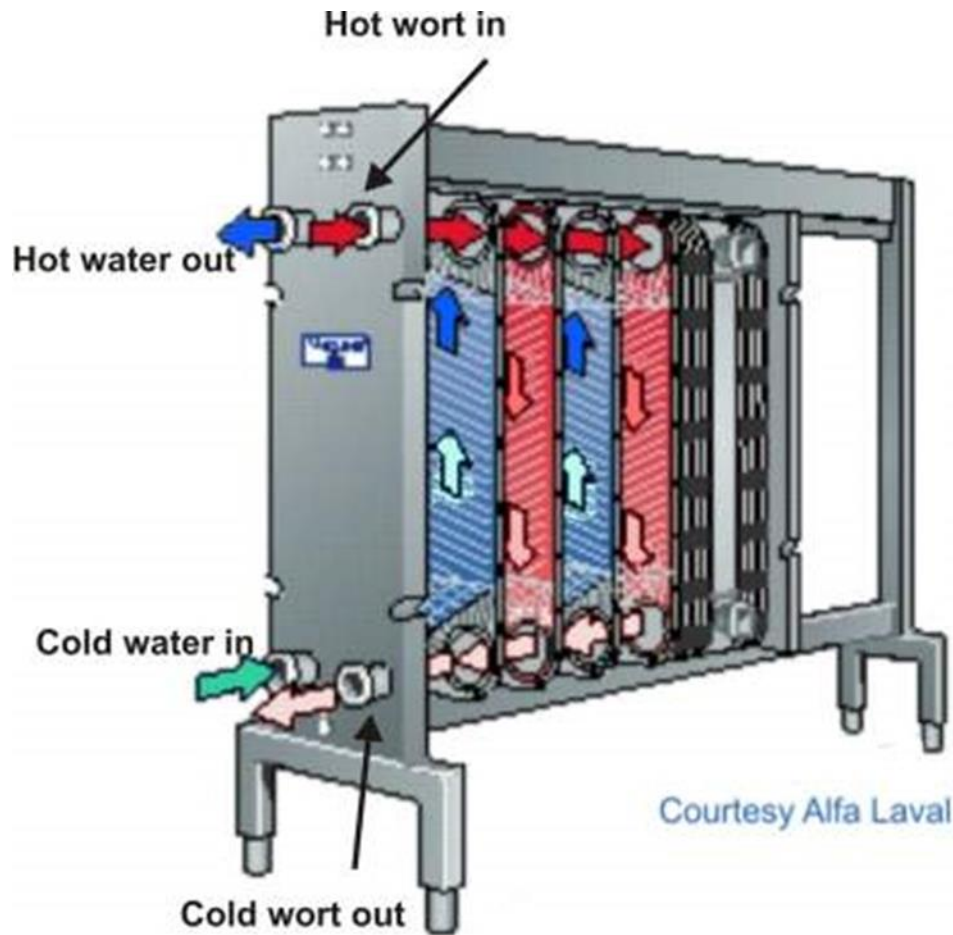


- ✓ IT IS A CIRCULAR VESSEL.
- ✓ THE WORT IS PUMPED TANGENTIALLY TO THE WALL
- ✓ THE CIRCULATION MAKES A FORCE THAT ACCELERATES THE TRUB PARTICLES TOWARDS THE CENTRE
- ✓ THEY FORM A LARGE FLOCS WHICH THEN SETTLE DOWN IN CENTRE OF THE VESSEL AS THE SPEED OF WORT PUMPED DOWN FORMING A TRUB CONE.
- ✓ CLEAN WORT OUT TROUGH BOTTOM OF VESSEL

But no sharks!

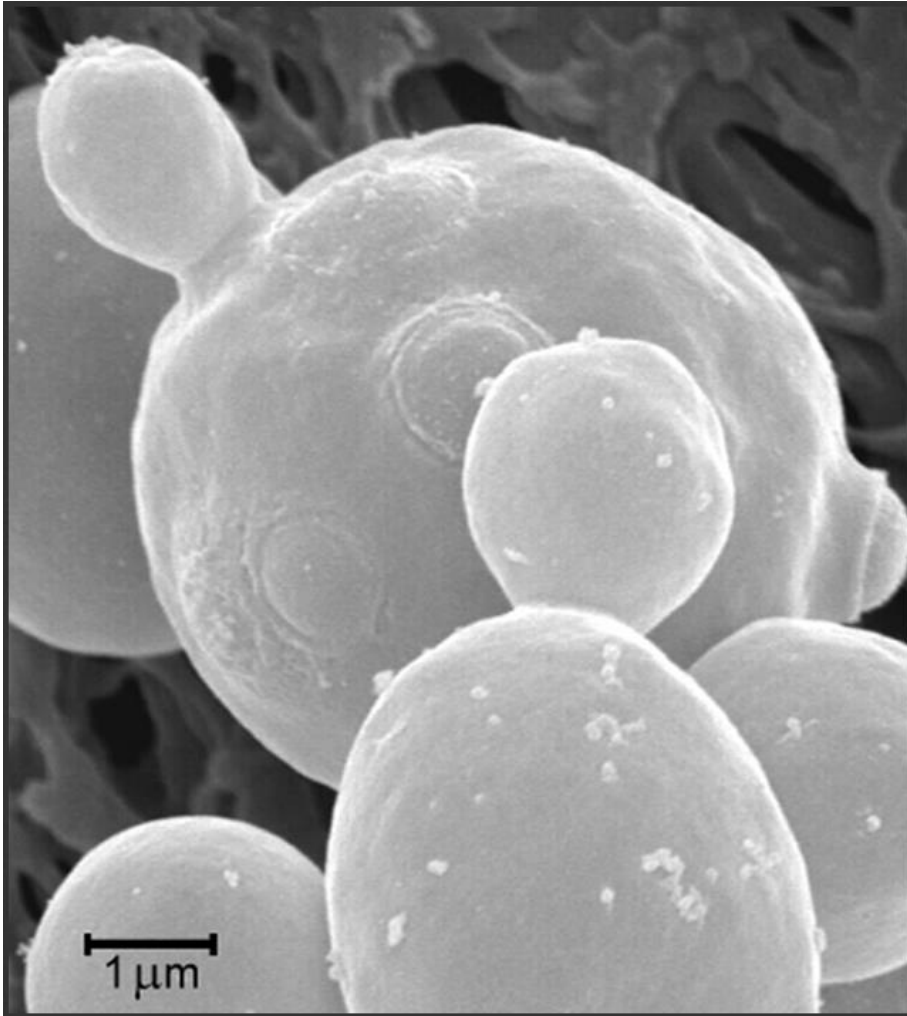
COOLING + AIREATION OF WORT

PLATE HEAT EXCHANGER



- ✓ AERATION FOR QUICK BEGINNING OF FERMENTATION.
- ✓ ALLOW TO FORM A COLD TRUB
- ✓ YEAST DOSIFICATION

FERMENTATION



- ✓ MAIN DIFFERENCE BETWEEN ALES (16-25°C) AND LAGERS (5-15°C) BEERS.
- ✓ MORE THAN 800 BEER YEAST.
- ✓ EVERY YEAST PRODUCE A DIFFERENCE RANGE OF VOLATILE DEPENDING TYPE AND FERMENTATION TEMPERATURE

WORT + YEAST CONVERT TO Etanol + CO₂ + VOLATILES (GREEN BEER)

MATURATION



- ✓ COOLING DOWN TO 0-4°C
- ✓ CLARIFY THE BEER THROUGH THE SETTLEMENT OF YEAST AND SUSPENDED SOLIDS.
- ✓ IMPROVE FLAVOUR THROUGH SECONDARY AND SLOW FERMENTATION.
- ✓ DEFINE THE PERSONALITY OF FINAL PRODUCT.

FILTRATION



- ✓ TO BRIGHT UP THE BEER
- ✓ CO2 ADJUSTMENT
- ✓ TASTING BEFORE SENDING TO BOTTLING HALL.



BOTTLING & CANNING & KEGGING



- ✓ PASTEURIZATION
- ✓ PRODUCE ALL SKU THAT MARKETING APPROVES.
- ✓ PALLETISING



MAIN STEPS IN MALTING AND BREWING

- ✓ YEAST TO PRODUCE BEER NEEDS SUGAR , VITAMINS, PROTEINS , AND BARLEY CONTAINS ALL THESE IN THE RIGHT PERCENTAGE BETTER THAN OTHER CEREALS.
- ✓ STARCH IS THE DEPOSIT OF SUGAR OF BARLEY.
- ✓ MALTING PROCESS FORMS ENZYMES TO BREAK DOWN THE STARCH, AND CONVERT BARLEY INTO BARLEY MALT.
- ✓ BREWING DISSOLVE ALL THESE SUGARS IN WORT THAT IS THE FOOD OF THE YEAST.
- ✓ YEAST DURING FERMENTATION TRANSFORMS WORT INTO GREEN BEER
- ✓ COOLING DOWN THE BEER DEFINES ITS FINAL PROFILE.
- ✓ AFTER ALL, COULD BE FILTERED OR NOT , AND PASTEURIZE OR NOT.

NUTRITIONAL VALUES

WATER (90- 95% aprox.)

FIBER (NON FERMENTBLE SUGARS) .- 2- 3,5%

PROTEINS .- 0,1 -0,2 %

FAT : 0%

ETANOL VOLUME % .- 3,5 – 10%

CO2 (3.5 –6.2 g/l)

FOLATES , prevent formation of spine bífida in neonatals

TANINS, natural antioxidant

VITAMINES (Types B, A, D, E, K)

MINERAL SALTS (Silica, K , and very low in Na) good hydration

CALORIES PER 100 ML .- 40 – 50 BEER ; 18 – 22 NAB

MODERATE CONSUMPTION OF BEER IS GOOD FOR YOUR HEALTH

WHEAT BEER



German sausage with ketchup and Dijon mustard.

Ingredients: pork, onion, parsley, salt, mustard, spices, ketchup

Perfect pairing with wheat beer that contributes to add new banana and clove flavours in mouth, while clean the taste buds with its CO₂ in excess.

ABBAY STYLE



Chicken pate with caramelized onion topping.

Ingredients: chicken liver, chicken breast, butter, white wine, Pedro Ximenez wine, pepper, salt. White onion, brown sugar, Pedro Ximénez wine, liquid caramel, butter.

Caramelized beer , with toasted background , and well carbonated for cleanig the fat of pate and enjoy every bite.

IPA STYLE



Chicken "peruindio" with accompaniment of basmati rice.

Ingredients: Chicken, coconut milk, cinnamon, black pepper, cardamom seeds, coriander seeds, turmeric, green chili, yogurt, tomato, onion, garlic, fresh ginger, cumin, cloves, ground almonds, olive oil, Peruvian chili, salt.

Refresh the taste buds after each bite of spiced chicken.

OAK BEER



Vanilla aroma Panacotta:

Ingredients: cream cheese, cream, milk, curd, sugar, vanilla aroma of Madagascar, liquid caramel.

Beer aged in oak french barrels for 12 month , its flavour to vainilla impart a sweet background for this dessert