

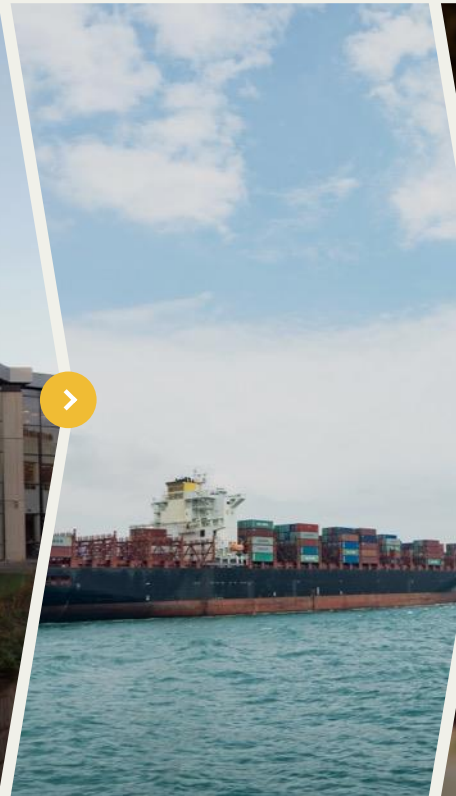
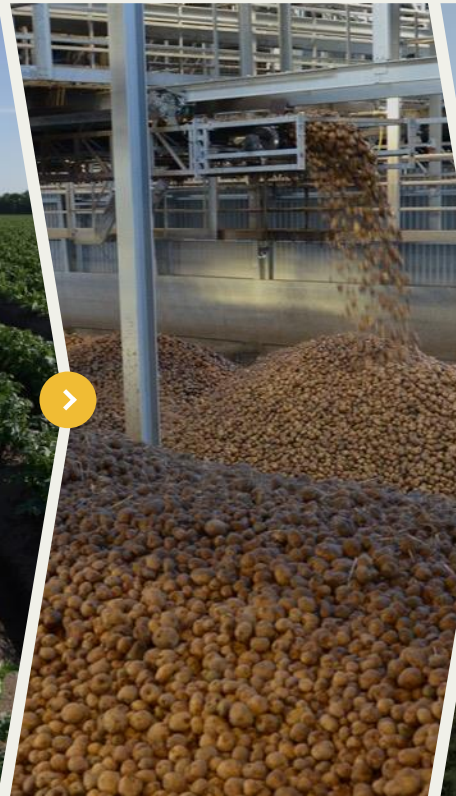
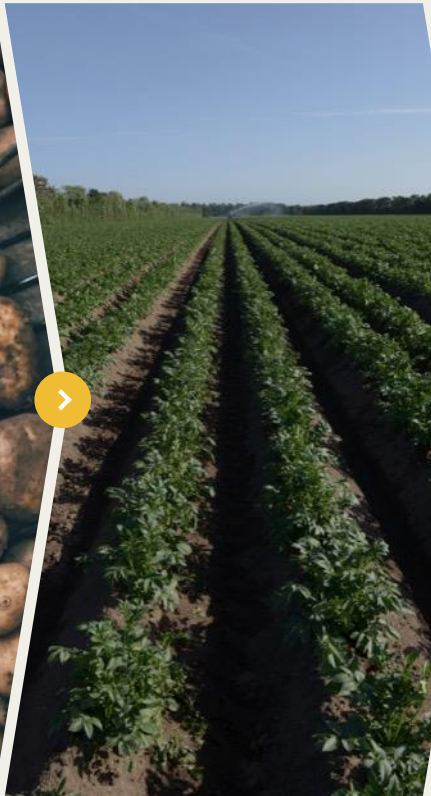
March 2022

N'TOP Variety selection and trials in Denmark

From a starch potato point of view!

v. Kristian Elkjær, KMC

Who we are - KMC – Starch Potato Producing Cooperative



Raw materials. Also producing seed potato

KMC is owned by **800 potato growers**

Factories only in DK Toftlund, Brande, Karup

KMC HQ and Sales offices

Distribution

International customers

Variety selection (starch)

- ◆ Has changed focus several times, but
- ◆ Always yield, starch percentage, starch per hectare
- ◆ Development in breeding (needs from growers)
 - ◆ Potato Cyst Nematodes: Ro1,2,3,4 to Pa2,3 (Ems)
 - ◆ Wart disease: Wart1, Wart18 (Wart 2,6,8) (38 NL)
 - ◆ IPM and Farm to Fork
 - Late Blight and Early Blight
 - Potato top properties (fast germination, good weed competition, mechanical haulm killing)
 - Potato tubers (storage, number of tubers, virus, soft rot and more)
 - What about pests and the limited options for treatment



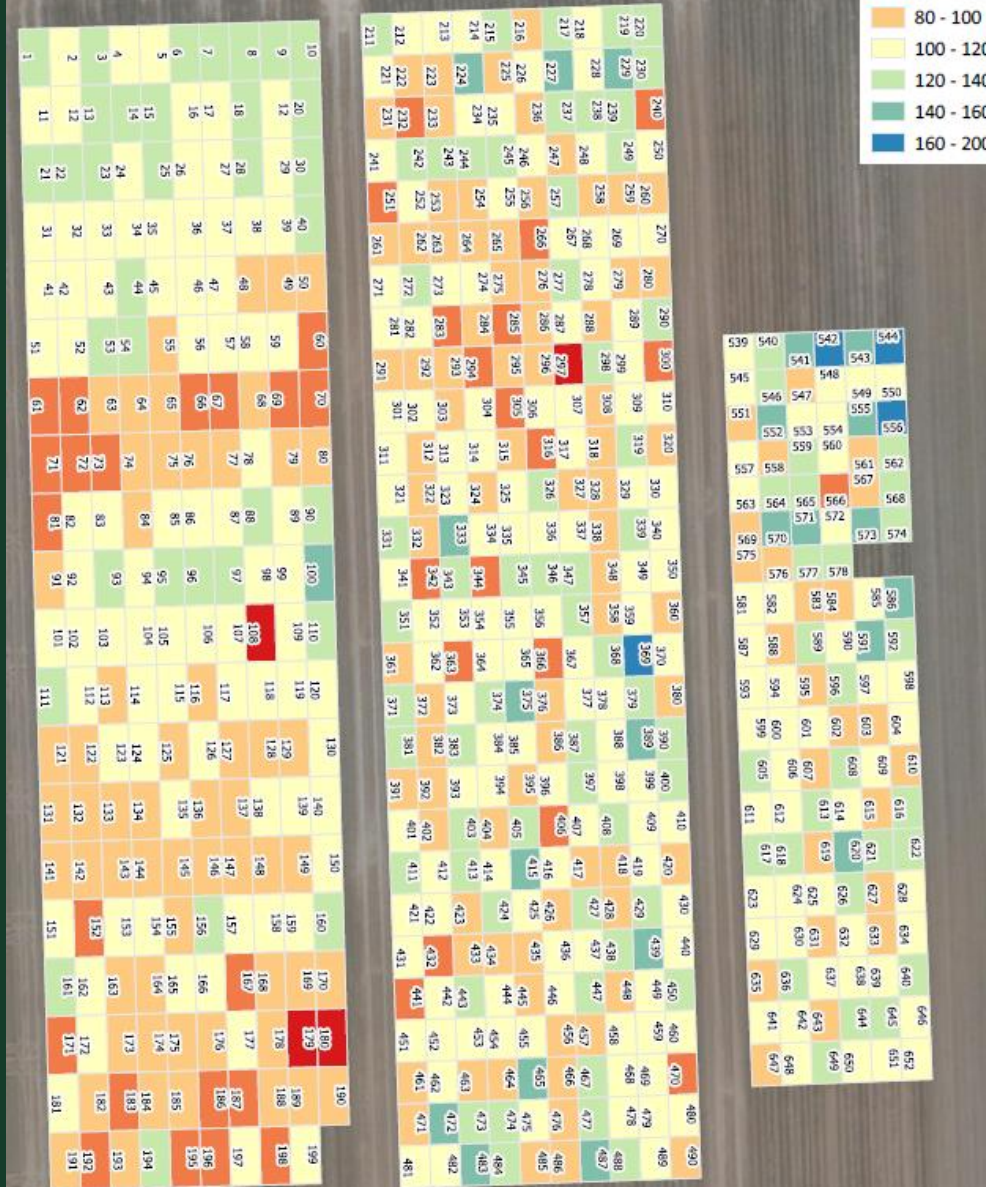
Variety selection (starch)

- ◆ KMC has 2 breeding programs
 - ◆ Traditional: Yield, nematodes, wart
 - ◆ Focused: Late blight and (Early blight)
- ◆ New breeding techniques
 - ◆ CrisprCas, others
 - ◆ Requires elite varieties, preferably our own



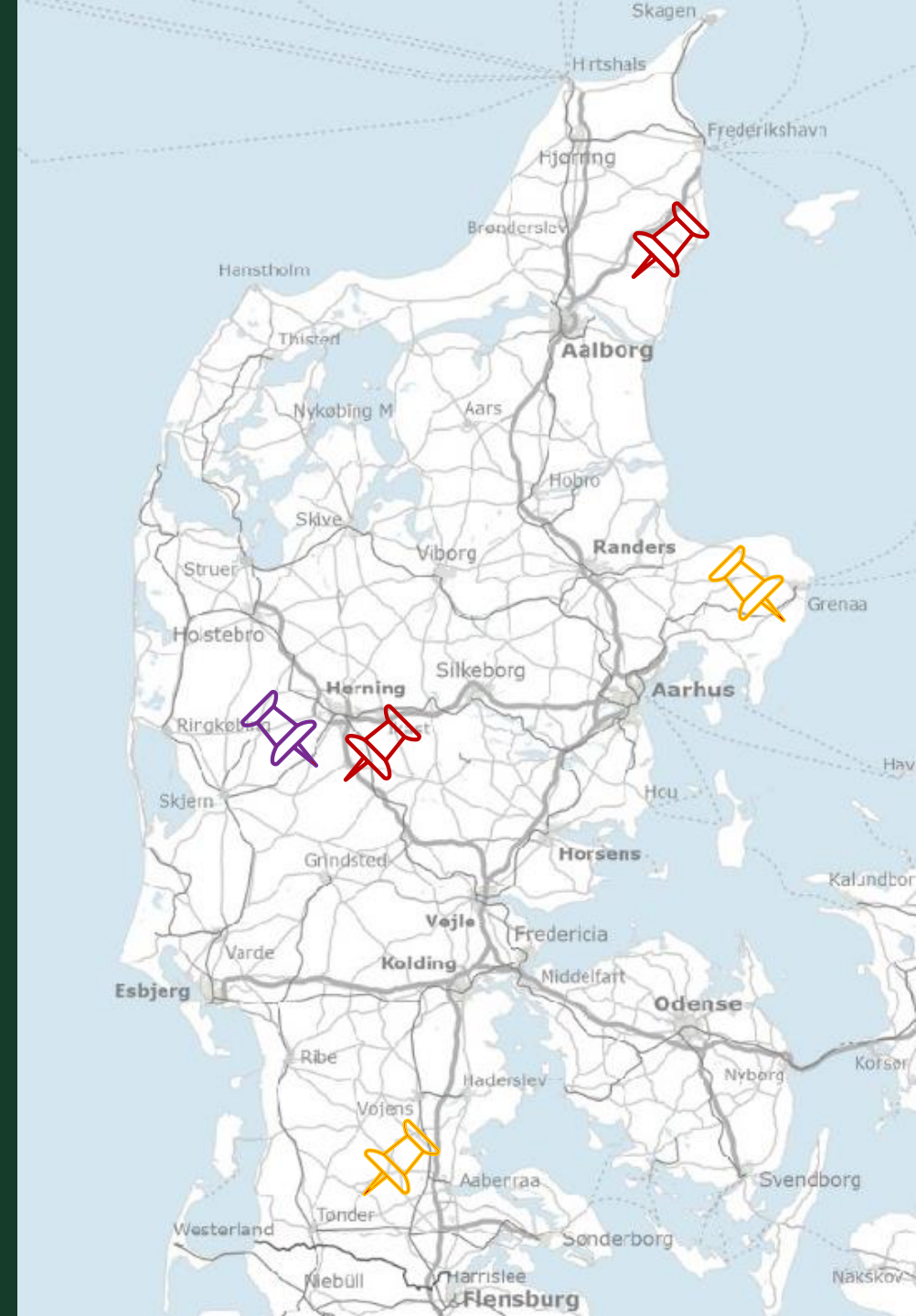
Early Variety trials (starch)

- ◆ KMC and AKV have demo trials for variety screening
- ◆ 40 tubers 3 repetitions
- ◆ Test of varieties from NL, DE etc. but also our own varieties
- ◆ Pre variety test under Danish conditions
- ◆ Which varieties should be passed on to our variety trials?
- ◆ Which varieties should be passed on for mini-tuber and multiplication in pre-basis?



Variety trials (starch)

- ◆ 10 varieties, 4 nitrogen levels 0, 100, 200, 300 kg N, 4 repetitions, 2 locations
- ◆ Additional trials with one nitrogen level
- ◆ Mostly starch varieties but also granules/flakes
- ◆ Varieties are included in trials for 3 years
- ◆ Seresta and Kuras are used as a reference for an early and late variety
- ◆ Seed production and storage in one place



Variety trials (starch)

- ◇ Yield, starch content
- ◇ Petiole sap for nitrate
- ◇ Economic nitrogen optimum
- ◇ Registration of:
 - ◇ Early blight
 - ◇ Late blight
 - ◇ Maturity
- ◇ Tuber assessments
 - ◇ Tuber blight %
 - ◇ Deformities %
 - ◇ Hollow heart %
 - ◇ Scab, index
 - ◇ Internal rust, % tubers



Variety introduction

- ◆ The basis for the introduction of a new starch variety in Denmark
- ◆ Updated fertilizer instructions by soil type
- ◆ Information about the production of seed potatoes and storage recommendations

TABEL. Relative økonomisk optimale kvælstofmængder i sorter af stivelseskartofler. Indeks er vist i forhold til det gennemsnitlig økonomisk optimale kvælstofmængder de enkelte år. Gennemsnit det enkelte år = 100. Opdelt på jordtyper.

Stivelses- kartofler	Relativ økonomisk optimal kvælstofmængde							
	2015	2016	2017	2018	2019	2020	2021	2015-21 ¹⁾
<i>JB 2+4</i>								
Allstar		106	130				100	112
Ardeche		114	95					105
Avenue						138	92	115
Axion		85	88					86
Balder					89	127		108
Euroviva						88	88	88
Fyone				145			106	125
Kuba	89		95	140	85			102
Kuras		74	90	78			104	87
Nofy			71	73	126	81		88
Novano	120	127						123
Saprodi				112	143	84		113
Sarion				88	118	96		100
Scarlet		75	99					87
Seresta		99	106	97	88	88	110	98
Signum		121	152					137
Skawa				68	95	87		83
Smaragd		90	103	95				96
Starne				97	82			90
Stratos		104	86				110	100
Supporter		139	78	107				108
Tarzan					93	112	101	102
Fht. gns.	121	87	111	74	101	122	85	100
N-min	29	60	78	37	40	21	51	46

¹⁾ Indekstillene skal tolkes således, at en høj relativ værdi betyder, at sorten i gennemsnit af årene har givet merudbytte for stor tilførsel af kvælstof (= relativ højt N optimum), og tilsvarende er en lav relativ værdi udtryk for lav kvælstofrespons og et lavt N-optimum.