

'Rendezvous': portrait of a new European strawberry cultivar

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Abstract

Early cultivars are particularly important in the assortment of European strawberry production. All breeding programmes in Europe focus on this harvest segment with their breeding strategies. Hansabred is presenting its first early ripening cultivar 'Rendezvous'. 'Rendezvous' is a very early June-bearer with large to medium-sized fruits (20-29 g on average, with primary fruit weighing up to 34 g), a high percentage of class 1 fruit, shiny bright red, very attractive, very glossy fruit appearance, that is also stable after cold storage, firm fruit flesh, medium firm fruit skin and superior scores for shelf life. 'Rendezvous' has a very pleasant, aromatic flavour, with no aroma drift under different climatic conditions, and maintains a stable aroma after storage. The yield is high depending on the cultivation system (up to 1300 g plant⁻¹ if planted as plug plant on the field the year before). Typically plants have a vigorous habit with no apparent susceptibility to diseases when planted in open field and protected tunnel cultivation. European plant breeder's rights for 'Rendezvous' have been applied for. Concurrently, the cultivar is being commercially launched, targeted for the fresh market, the early market, self-picking, and the home garden market.

Keywords: *Fragaria × ananassa* Duch., June-bearer, breeding, cultivar

INTRODUCTION

Consumption of strawberries in Germany is high with 3.5 kg capita⁻¹ year⁻¹ (data 2018/19, <https://www.bmel-statistik.de/landwirtschaft/gartenbau/markt-und-weitere-fachinformationen/?L=0>). In 2019, 58% of sold strawberries were imported, whereas 42% (92,476 t) were produced on German farms (<https://de.statista.com/themen/6736/erdbeeren-in-deutschland/>). Production is relatively low (average 10.9 t ha⁻¹) due to 84% of production being in open field cultivation (data 2018/19, <https://www.zeit.de/2019/25/erdbeeren-fruechte-herkunft-konsum-anbaugebiete>). The dominance of this traditional cultivation system requires robust cultivars.

Since its foundation in 2008, the strawberry breeding programme at Hansabred GmbH & Co. KG, Dresden, Germany focuses on vigorous high performance cultivars with outstanding flavour. Four cultivars have been released so far. The latest introduction is 'Rendezvous'. This cultivar combines different genetic origins in its pedigree, including both historic and modern cultivars (including 'Senga Sengana', 'Earliglow', 'Honeoye', 'Roxana', and 'Elegance') as well as breeding clones developed by crossing with wild species such as *Fragaria chiloensis* ssp. *lucida*. Subsequent selection and recombination of different pedigree strategies resulted in this new cultivar that can compete with the existing high-performance cultivars in the early harvest sector. This study shows first results from evaluation at different trial stations.

MATERIALS AND METHODS

Plant material and cultivation

Horticultural testing was performed at several German trial stations, some of which are reported here: Dresden-Weixdorf (Hansabred GmbH & Co. KG in 2018, 2019, 2020), Telgte (Kraege Beerenpflanzen GmbH & Co. KG in 2018, 2019, 2020), Dresden-Pillnitz (Sächsisches

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Landesamt für Umwelt, Landwirtschaft und Geologie in 2018, 2019, 2020), Köln-Auweiler (Versuchszentrum Gartenbau Straelen, Köln-Auweiler in 2017, 2019, 2020), Oberkirch, OGM (Markus Litterst, 2020), Obstbauberatung Bodensee (Wolfgang Jäger, 2020), and Planasa trial, the Netherlands (2020).

'Rendezvous' (Figure 1) was evaluated in comparison to commercial standard cultivars 'Clery', 'Flair', 'Malling™ Centenary', 'Darselect', and 'Donna'. All investigated plants were planted as plug or cold stored (frigo) plants in different cultivation systems (as described in the Results section) and as tray plants in substrate (Planasa trial in 2020). Economically important parameters were measured, including total yield and class 1 yield (g plant⁻¹), percentage class 1 fruit (%), beginning of harvest (date where >20 g plant⁻¹ were picked), mid-harvest date and end of harvest (date where <20 g plant⁻¹ were picked), and average fruit weight (g). In addition, fruit parameters such as shelf life, skin colour, skin and flesh firmness, attractiveness, soluble solids, and "mouthfeeling" were evaluated by subjective scoring systems or objective measurements.

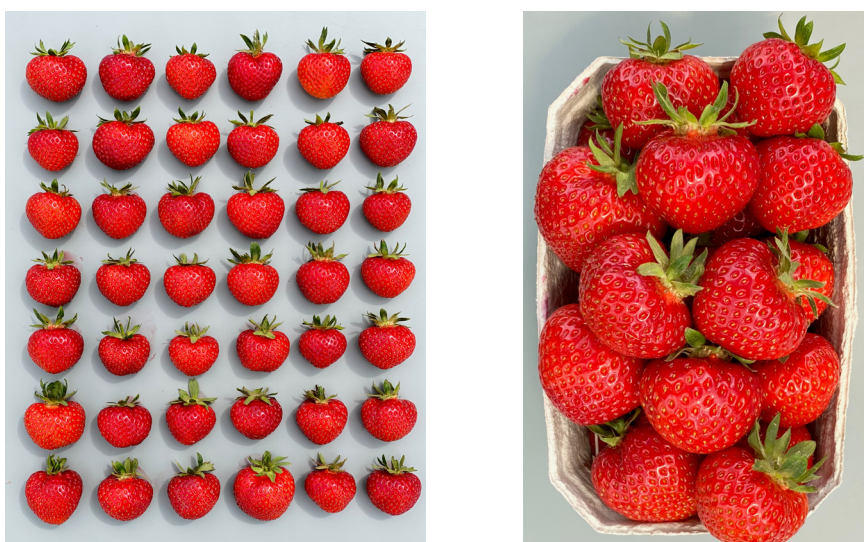


Figure 1. Fruits of 'Rendezvous'.

RESULTS AND DISCUSSION

'Rendezvous' was assessed in both open field and protected (tunnel) trials, and at different geographical stations throughout Germany and the Netherlands and was considered a cultivar with high potential in terms of total yield, the proportion of class 1 fruits, and the proportion of fruit produced in the early season. The beginning of the harvest and the harvest profile is similar to 'Clery', but with larger average single fruit weight and higher yield.

The fruits are bright red, very glossy even after storage and usually have a globose (round) shape. Harvested fruit are very attractive, with good firmness without a negative effect on the "mouthfeeling". 'Rendezvous' has an aromatic flavour, although the primary fruits at the beginning of the harvest and under cooler weather conditions in outdoor production were slightly acidic (2020). The vigorous cultivar has good production properties (visual appearance, fruit size, skin colour, and yield) and therefore high potential for the fresh market.

Results from different trial sites including cultivation schemata, harvest data and fruit evaluation data are shown in Tables 1 to 12.

Table 1. Results of Hansabred trial station, Germany, evaluation in 2018-2020.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Harvest 2020							
Clery	487	90	542	05.06.2020	15.06.2020	22.06.2020	13.4
Rendezvous	672	90	750	05.06.2020	12.06.2020	22.06.2020	19.0
Flair	335	87	386	01.06.2020	08.06.2020	17.06.2020	14.6
Malling Centenary	458	92	495	01.06.2020	08.06.2020	20.06.2020	17.7
Planted in week 33, 2019, open field, in rows, spacing 0.25 m, min. 15 plug plants per trial							
Harvest 2019							
Clery	654	89	735	01.06.2019	08.06.2019	14.06.2019	14.8
Rendezvous	875	88	996	01.06.2019	08.06.2019	19.06.2019	17.9
Flair	571	81	703	01.06.2019	07.06.2019	14.06.2019	16.4
Malling Centenary	352	79	443	01.06.2019	10.06.2019	14.06.2019	17.7
Planted in week 32, 2018, open field, in rows, spacing 0.25 m, min. 15 plug plants per trial							
Harvest 2018							
Clery	n.d.	n.d.	237	25.05.2018	01.06.2018	04.06.2018	10.4
Rendezvous	n.d.	n.d.	264	28.05.2018	01.06.2018	13.06.2018	13.2
Flair	n.d.	n.d.	245	23.05.2018	30.05.2018	04.06.2018	8.8
Malling Centenary	n.d.	n.d.	233	25.05.2018	01.06.2018	11.06.2018	13.1
Planted in week 31, 2018, open field, in rows, spacing 0.25 m, min. 15 plug plants per trial							

Table 2. Fruit quality of Hansabred trial station, Germany, evaluation in 2018-2020.

Cultivar	Attractiveness	Glossiness	Colour	Skin firmness	Flesh firmness	Shelf life	Taste/aroma	Sugar/acid ratio	°Brix	Mouth feeling ("melting")
Harvest 2020										
Clery	4	4	1	7	5	6	4-5	8	10	6
Rendezvous	8	9	3	6	5	7	4-7	5-7	8.6	7
Flair	6	5	4	4	4	4	7	8	8.9	7
Malling Centenary	7	6	2	7	5	7	5-6	8	8.1	6
Harvest 2019										
Clery	5	4	1	7	5	5	5-6	8	10.0	5
Rendezvous	9	9	2	7	5	7	5-7	5-7	8.7	8
Flair	6	4	4-5	4	4	4	7	8	8.9	7
Malling Centenary	6	6	2-3	7	5	6	5-6	8	8	6
Harvest 2018										
Clery	6	3-4	1-2	6	5	6	4-5	8	10.1	6
Rendezvous	7	8	1-2	7	5	7	4-6	6-7	10.1	8
Flair	5	4	5	5	4	5	6	8	8.9	7
Malling Centenary	5	6	2	7	6	7	5	8	8.8	6

Table 3. Results of Kraege Beerenpflanzen trial station, Germany, evaluation in 2018-2020.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Harvest 2020							
Clery	1038	76	1.361	01.06.2020	12.06.2020	18.06.2020	20.2
Rendezvous	943	70	1.348	01.06.2020	15.06.2020	19.06.2020	29.5
Planting on 10.08.2020, open field, plug plants in row, spacing 0.25 m							
Harvest 2019							
Clery	669	81	831	27.05.2019	07.06.2019	19.06.2019	21.9
Rendezvous	890	94	1059	27.05.2019	07.06.2019	19.06.2019	26.9
Planting on 10.08.2018, open field, plug plants in row, spacing 0.25 m							
Harvest 2018							
Clery	n.d.	n.d.	382	23.05.2018	01.06.2018	11.06.2018	15.6
Rendezvous	n.d.	n.d.	822	23.05.2018	01.06.2018	11.06.2018	19.3
Planted in week 31, 2017, open field, in rows, spacing 0.25 m, min. Fifteen plug plants per trial							

Table 4. Fruit quality of Kraege Beerenpflanzen trial station, Germany, evaluation in 2020.

Cultivar	Attractiveness	Glossiness	Skin firmness	Flesh firmness	Taste/aroma
Harvest 2020					
Clery	5.7	5.8	5.4	5.5	4.1
Rendezvous	7.1	7.3	6	6.2	4.2

Table 5. Results of Dresden-Pillnitz trial station, Germany, evaluation in 2018-2020.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of Harvest >20 g plant ⁻¹	Mid of harvest	End of Harvest <20 g plant ⁻¹	Average single fruit weight (g)
Harvest 2020							
Clery	465	84	555	22.05.2020	02.06.2020	19.06.2020	17.5
Rendezvous	721	86	834	22.05.2020	02.06.2020	19.06.2020	20.7
Planting on 17.05.2019, open field, frigo plants in rows, spacing 0.25 m							
Harvest 2019							
Clery	473	83	571	27.05.2019	03.06.2019	14.06.2019	18.1
Rendezvous	524	69	757	27.05.2019	05.06.2019	17.06.2019	20.9
Planting on 15.05.2018, open field, frigo plants in rows, spacing 0.25 m							
Harvest 2018							
Clery	302	74	409	22.05.2018	28.05.2018	04.06.2018	14.2
Rendezvous	320	82	388	22.05.2018	28.05.2018	28.05.2018	17.9
Planting on 09.08.2017, open field, plug plants in rows, spacing 0.25 m							

Table 6. Results of Köln-Auweiler trial station, Germany, evaluation in 2018, 2019, and 2020.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of Harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Harvest 2020							
Clery	937	82	1141	11.05.2020	25.05.2020	15.06.2020	17.9
Rendezvous	1144	87	1317	14.05.2020	27.05.2020	15.06.2020	24.7
Malling Centenary	954	88	1085	18.05.2020	28.05.2020	15.06.2020	26.4
Planting on 07.08.2019, open field, raised bed, plug plants in rows, spacing 0.3 m, two repetitions with 15 plants per trial							
Harvest 2019							
Clery	810	85	956	28.05.2019	05.06.2019	17.06.2019	19.2
Rendezvous	1096	85	1288	21.05.2019	04.06.2019	17.06.2019	22.4
Planting on 06.08.2018, open field, raised bed, plug plants in rows, spacing 0.3 m, two repetitions with 15 plants per trial							
Harvest 2018							
Clery	518	82	629	29.05.2017	02.06.2017	12.06.2017	18.4
Rendezvous	460	89	518	24.05.2017	31.05.2017	05.06.2017	26.3
Planting on 11.08.2016, open field, raised bed, plug plants in rows, spacing 0.3 m, two repetitions with 15 plants per trial							

Table 7. Fruit quality of Köln-Auweiler, trial station, Germany, evaluation open field in 2020.

Cultivar	Attractiveness	Glossiness	Colour	Skin firmness	Flesh firmness	Taste/aroma	°Brix
Harvest 2020							
Clery	5.3	5.5	3	5	5.2	5	8
Rendezvous	5.9	6.2	3	4.9	5.2	5.6	8.9
Malling Centenary	6.5	6.3	3	5.5	5.2	5.6	7.7

Table 8. Results of Köln-Auweiler trial station, Germany, evaluation in 2020, open field, raised bed, double covering, plug plants.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Clery	778	87	898	07.05.2020	19.05.2020	04.06.2020	16.8
Rendezvous	715	85	840	30.04.2020	16.05.2020	04.06.2020	17.1
Malling Centenary	1007	91	1102	07.05.2020	22.05.2020	08.06.2020	25.4

Table 9. Results of Köln-Auweiler trial station, Germany, evaluation in 2020, tunnel, raised bed, plug plants.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Clery	885	86	1029	23.04.2020	08.05.2020	01.06.2020	16.3
Flair	715	88	810	17.04.2020	02.05.2020	21.04.2020	16.6
Malling Centenary	931	94	995	27.04.2020	14.05.2020	04.06.2020	28.8
Rendezvous	949	93	1023	27.04.2020	09.05.2020	01.06.2020	25.8

Table 10. Results of Obstbauberatung Bodensee trial station, Germany, evaluation in 2020, open field, raised beds, double covering, plug plants.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Clery	833	83	1001	28.04.2020	18.05.2020	30.05.2020	19.4
Rendezvous	983	85	1157	28.04.2020	14.05.2020	30.05.2020	25.3

Table 11. Results of OGM Oberkirch/OGM trial station, Germany, evaluation in 2020, open field, single covering, plug plants.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Begin of harvest >20 g plant ⁻¹	Mid of harvest	End of harvest <20 g plant ⁻¹	Average single fruit weight (g)
Clery	813	77	1060	30.04.2020	17.05.2020	28.05.2020	18.3
Rendezvous	1296	89	1460	30.04.2020	06.05.2020	02.06.2020	23.2

Table 12. Results of Planasa trial station, The Netherlands in 2020, substrate culture, greenhouse, tray plants.

Cultivar	Yield class 1 (g plant ⁻¹)	Percentage of class 1 from total yield (%)	Total yield (g plant ⁻¹)	Average single fruit weight (g)
Clery	357	91	393	20.8
Donna	383	94	408	18.2
Rendezvous	526	89	592	20.2

Planasa trial station, The Netherlands

Tray plants were planted in January 2020 in substrate. A high grade of flower induction was confirmed by microscopic investigation (data not shown).

CONCLUSIONS

'Rendezvous' is a new, early ripening cultivar successfully tested at different trial stations under open field conditions, raised beds, in tunnel and with single and double covering. The cultivar produces very attractive bright red fruit with high single fruit weight and with high yield. First results were collected from substrate cultivation under greenhouse conditions. Here further evaluation is requested. 'Rendezvous' is in registration at the Community Plant Variety Office (CPVO) under the number 2019/0144 and is commercially available as plug, bare rooted, waiting bed and tray plant.

ACKNOWLEDGEMENTS

We thank all our colleagues at the trial stations who carefully and independently tested 'Rendezvous' and provided the data for evaluation.

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