

An 18th Century Swedish Perspective on the Portuguese Salt Industry. With trade and production figures

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## An 18th Century Swedish Perspective on the Portuguese Salt Industry. With trade and production figures

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### Resumo

*No século XVIII, o sal português era uma verdadeira necessidade para o Estado sueco. Sendo um país do Norte sem possibilidades de produzir sal, a Suécia tinha de o importar. Uma grande parte vinha de Setúbal. Assim sendo, havia um interesse por parte do estado em conhecer as técnicas de produção das salinas de Setúbal e o funcionamento do mercado do sal português. A um dos mais conceituados economistas suecos do século XVIII, Anders Bachmansson, foi dada a tarefa de escrever um extenso relatório sobre o assunto. A minha comunicação incide sobre este relatório e tenta também salientar a importância do sal português para a prosperidade da população sueca.*

*In the 18th century, Portuguese salt was a true necessity for the Swedish state. Being a northern country with no salt production possibilities, Sweden had to import all its salt. A large part came from Setubal. Therefore, there was an intense interest from the side of the state to inquire into the production techniques of the Setubal salines, and how the Portuguese salt market worked. One of the most renowned 18th century Swedish economists, Anders Bachmansson, was given the task of writing a comprehensive report on the subject. My paper deals with this report, and I also try to put the importance of the Portuguese salt for the welfare of the Swedish population in perspective.*

### Introduction

In the 18th century, the economic relations between Portugal and Sweden were extensive. In the mid of the century around a quarter of all salt produced in Setubal, the largest production area in Portugal, was shipped directly to Sweden<sup>1</sup>. In the 1720's, more than half of the Swedish board exports went to Portugal, and data for the 1750's and 1780's indicates that the destination "Southern Europe" in the official export ledgers took 75 percent of the exported boards; no doubt the share of Portugal continued to be of great weight<sup>2</sup>. Bar iron

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<sup>1</sup> Angerstein, Reinhold R. 1996. *Om handeln på Cadix; Om handeln på Lissabon; Om handeln på Senegaglia och Ancona*. Stockholm: Jemkontoret, p. 136.

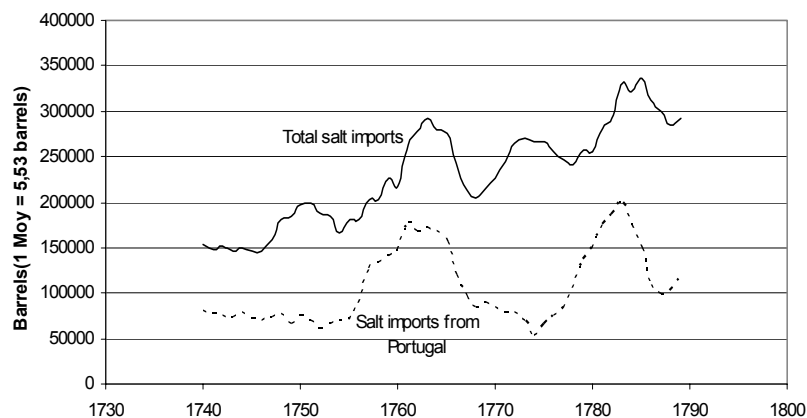
<sup>2</sup> Högberg, Staffan. 1969. *Utrikeshandel och sjöfart på 1700-talet: stapelvaror i svensk export och import 1738-1808*. Stockholm: Bonnier, p. 124.

and boards were the most important goods shipped from Sweden; salt the single most important Swedish import from Portugal<sup>3</sup>.

Foreign trade in Sweden was, of course, subject of considerable interest to the state and mercantilist writers alike. In 1730, a Swedish mercantilist, Anders Bachmanson, published an extensive economic treatise, the first published in the Swedish language<sup>4</sup>. Bachmanson, later ennobled and given the name Nordencrantz, devoted one full chapter to the salt trade, an indication of its great importance of its time. Between 1727 and 1738 Bachmanson was the appointed Swedish consul in Lisbon, but this economic treatise was probably finished as early as 1724<sup>5</sup>. As his treatise contains first hand data about the trade and production, he had apparently been acquainted with some aspects of the Portuguese economy early in his career. That a Swedish economist in the 18th century should pay close attention to especially the salt trade is not surprising. Due to the climate and to the lack of salty waters, it was impossible produce salt domestically in Sweden. Thus the country was depending on imports<sup>6</sup>. In times of war the salt provision could be cut off, with disastrous results. This was a major strategically weakness of the Swedish state.

The Portuguese salt was of utmost importance to the salt provision in Sweden. During the 18th century, Portugal was the major exporter of salt to Sweden (figure 1), followed by Spain and France. On average, the Portuguese salt made up almost half (46 percent) of the Swedish salt imports between 1738 and 1790. This is significantly higher than the Portuguese share of the salt coming through the Sound in the same period, as only about 30 percent of the total amount shipped through the Sound to the Baltic markets between 1740 and 1783 came from Portugal<sup>7</sup>. Sweden, thus, was one of the more important markets for Portuguese salt in the 18th century. Therefore, there is nothing surprising that the Swedish authorities and economists paid close attention to the question of the salt trade.

Figure 1. Swedish salt imports, 1738-1791, 5-year moving average



3 Müller, Leos. 2004. *Consuls, corsairs, and commerce: the Swedish consular service and long-distance shipping, 1720-1815*. Uppsala: Acta Universitatis Upsaliensis, p. 94ff.

4 Nordencrantz, Anders. 1730. *Arcana oeconomicæ et commercii*. Stockholm.

5 Magnusson, Lars. 1989. *Korruption och borgerlig ordning: naturrätt och ekonomisk diskurs i Sverige under frihetstiden*. Uppsala, s. 11.

6 Tegengren, Helmer. 1935. "Försök till saltproduktion i Sverige och Finland på 1500-, 1600- och 1700-talen." *Historisk tidskrift för Finland*, 19.

7 Unger, W.S. 1958. "De publikatie der sonttabellen voltoid." *Tijdschrift voor Geschiedenis*.

Source: Berättelser om utrikes handel och sjöfart. Serie 2. Kommerskollegiums arkiv. Riksarkivet. (Swedish national archives, Stockholm)

### Production techniques and production figures at Setubal

As production figures for the salt production in Portugal is scanty, the estimates Bachmanson put forward might be of some interest. The total production of salt in Portugal at the time of compiling information for his book, Bachmanson estimated to be 317 000 *moio*, c. 257 million litres<sup>8</sup>. Setubal's share was 65 percent, followed by the Lisbon area with 19 percent and the Algarve coast with 16 percent<sup>9</sup>. Presumably the production varied considerably, since another Swedish observer in 1753 claimed that the annual production in Setubal was only 90 000 *moio*<sup>10</sup>. At the bay of Setubal, production was carried out on both sides – the North and the South – in roughly equal proportions. In the early 1720's, on the north side, there were 245 salt pans, producing 108 400 *moio*. On the south side, 99 156 *moio* were produced in 228 pans (see appendix B for a list of production of the individual salt pans). According to Bachmanson, the salt was produced in different grades, according to quality. There were basically two quality grades of salt produced in Setubal, depending on the location of the salt pans. The salt of highest quality was produced in pans highly located, so that water could only fill the pans when the tide was at its highest.

Quality	Number of pans	Moio	(%)
Highest	182	84224	41
Lowest	238	96558	47
Medium	9	7014	3
Unknown	44	19761	9
Total	473	207557	100

Table 1 - Annual production figures for the Setubal salt production in the 1720's.

The salt of lowest quality was produced in pans that easily could be filled. The boats could always reach them at ordinary high tide. Further more, each pan could be harvested three times a summer. The first batch was considered the best, the third the poorest, and the salt of the poorest quality was consumed locally in Portugal and in the Spanish markets. Allegedly, the best salt was produced for foreign markets. The potential of the salt pans in Setubal was estimated to be "infinite". According to Bachmanson, the reason why the Swedish merchants sometimes were unable to buy salt in Portugal, was based on the peculiar business organization.

8 The Setubal salt measure – *moio* – was 810 litres in this period. (1 *moio* = 60 *alqueiros*. 1 *alquiro* = 13,5 litres). 1 *moio* = 5,53 Swedish barrels, making the Swedish salt barrel containing 146,5 litres (56 "kappar"). Troili, Uno. 1843. *Europeiska staternas matt- och viktordningar jemte tabeller för förvandlingen af främmande länders matt till svenska och för jämförelsen mellan olika länders*, p.225. Cf. the discussion in Carlén, Stefan. 1997. *Staten som marknadens salt: en studie i institutionsbildning, kollektivt handlande och tidig välfärdspolitik på en strategisk varumarknad i övergången mellan merkantilism och liberalism 1720-1862*. Stockholm: Almqvist & Wiksell International, p. 349.

9 Nordenrantz, Anders. 1730. *Arcana oeconomiae et commercii*. Stockholm, p. 350.

10 Angerstein, Reinhold R. 1996. *Om handelen på Cadix; Om handelen på Lissabon; Om handelen på Senegaglia och Ancona*. Stockholm: Jernkontoret, p.136.

### **Competition for property rights: The Roda system**

As has been observed in a number of studies of the history of the European economies, markets did work well in the early modern period. Our Swedish observer claimed to have observed an important institutional fact about the property rights system governing the salt trade and production, a fact with wider implications for the workings of the Portuguese economy.

What attracted Bachmanson's interest was the *Roda*. The *Roda* was described as a system of regulations. Apparently, salt from different pans had to be sold in a specific, regulated order. The system guaranteed every owner of salt pans a certain income. Furthermore, only a third of the annual total production was marketed. This, of course, restricted the amount of salt that reached the market. This system had several drawbacks, which Bachmanson enumerates:

- 1) Competition was reduced.
- 2) The price of the salt was raised.
- 3) It was against the principle of free trade.

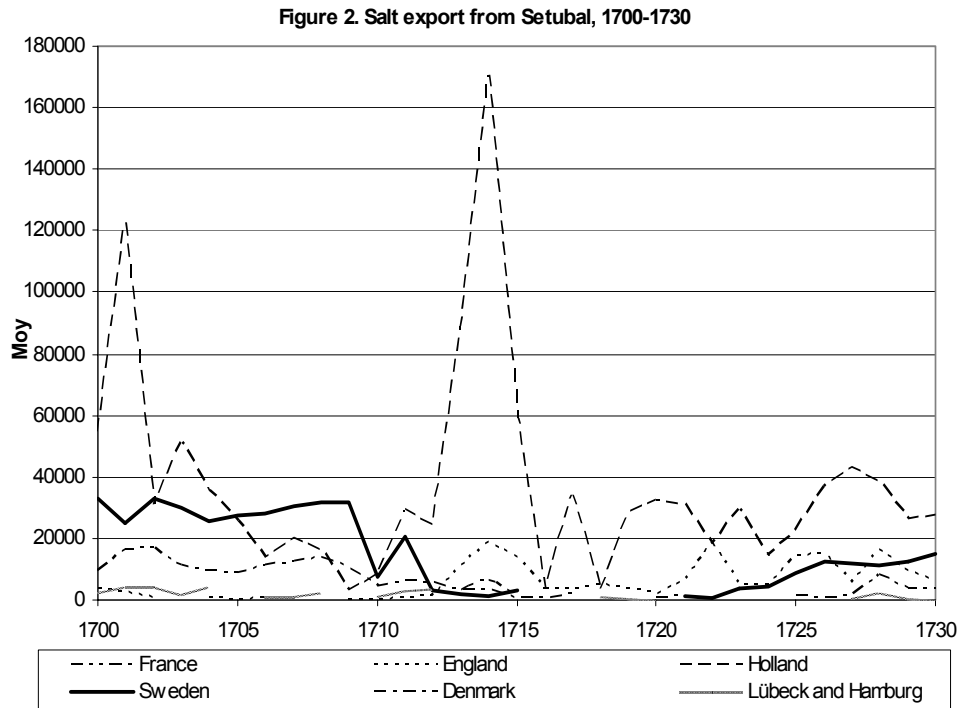
4) It could take several weeks to load the salt on to the ship. If one had bad luck, one was assigned salt from one of the highly situated pans, which could only be loaded when the tide was very high, which could mean waiting times of several weeks. And if it took a long time to load the ship, the ship was stranded. And one had to wait for the next spring tide, i.e. 14-15 days, to get back to the sea again.

5) Since the quality of the salt was different in the different pans and since it was prohibited to trade freely, one could never know what quality of salt one would get. And according to Bachmanson, this led to a deterioration of the general quality level, as there was no incentive among the producers to increase the quality of the salt, as quality was not a factor determining if the salt got sold or not.

What reasons could be found why this system prevailed? Apparently, there were some groups in the Portuguese society who were interested in keeping this system: the merchants, nobility and bureaucrats in Lisbon. And since the owners of the salt pans belonged to the wealthiest and most powerful families in Portugal, they had an economic interest in keeping this system as there was a connection between the salt prices in Setubal and the prices in Lisbon; Setubal was the price setter.

### **The attempt of the Dutch trying to monopolise the salt trade in the 1710's**

Bachmanson also published some export figures from Setubal, between the year 1700 and 1730 (appendix A). In the early 1700's, the figures disclose that Sweden and Holland were the biggest recipients of salt.



The most striking feature of figure 2 is the peak in the years 1713-15. This peak is due to the enormous growth of the Dutch shipments from Setubal. Several factors can explain the rise in the Dutch exports in this period:

1) The great Nordic war: Sweden is since more than a decade involved in a war with Russia, Poland and Denmark. In 1709, Denmark joins the war (again), with the result that the Sound is closed, and Sweden was unable to import any salt directly from Portugal. As Sweden was one of the major consumers of Portuguese salt, whether it was shipped directly or via Amsterdam, this was a crucial moment for the Swedish state, as the salt prices were very high.

2) The peak in the graph shows how the Dutch tried to monopolize the salt trade, by buying everything on the market. But according to Bachmanson, this attempt failed, since there were alternative ways of getting salt, and the result was over speculation, and many bankruptcies in Amsterdam.

That the attempt indeed concerned salt destined for the Baltic market is confirmed by the Sound toll registers, as a similar peak is to be found in the statistics for the eastward trade. The peak for 1713-1715 in figure 2 is correlated with a peak in 1714 and 1715 in table 2, as salt from Portugal went through the Sound in a quantity of more than four times the average for the rest of the years between 1710 and 1720.

Year	Total	From Portugal	(%)	From Holland	(%)
1710	28140	2180	8	8341	30
1711	15166	1126	7	5467	36
1712	10390	3985	38	3686	35
1713	16766	4441	26	3270	20
1714	22282	12198	55	4223	19
1715	27734	12249	44	6040	22
1716	21381	2865	13	5174	24
1717	21102	2582	12	2484	12
1718	33600	6178	18	5626	17
1719	31299	5318	17	4544	15
1720	30092	6919	23	4056	13

Source: *Tabeller over Skibsfart og Varetransport gennem Øresund 1661-1783 og gennem Storebælt 1701-1748. D.2: Tabeller over Varetransporten: Halvbd 1: 1661-1720.* Udgivne ved Nina Ellinger Bang og Knud Korst. København 1939.

Table 2 - Salt shipped eastwards through the Sound, 1710-1720. (Lasts)

The war in the Northern seas proved to be disastrous for the Swedish salt provision and the end of the decade. In 1717, only 429 lasts of salt was shipped through the Sound to Sweden – a tenth of the normal quantity (table 3). Even though some salt was shipped to Gothenburg situated on the Swedish west coast, outside the Sound, salt shortage was a pressing problem, which resulted in a sharp increase in the Swedish salt prices between 1716 and 1717<sup>11</sup>.

Year	Total	From Portugal	(%)	From Holland	(%)
1710	4545	680	15	2702	59
1711	3257	354	11	2589	79
1712	3475	1592	46	1816	52
1713	4559	2089	46	1015	22
1714	5539	4340	78	878	16
1715	3763	986	26	2069	55
1716	3733	985	26	1069	29
1717	429	0	0	259	60
1718	480	66	14	414	86
1719	4552	1544	34	1780	39
1720	4422	1754	40	1754	40

Source: *Tabeller over Skibsfart og Varetransport gennem Øresund 1661-1783 og gennem Storebælt 1701-1748. D.2: Tabeller over Varetransporten: Halvbd 1: 1661-1720.* Udgivne ved Nina Ellinger Bang og Knud Korst. København 1939.

Table 3 - Salt shipped to Sweden through the Sound, 1710-1720. (Lasts)

## Conclusion

The economic relations between Portugal and Sweden in the 18th century were extensive, but they are not well covered by historians. The report by Anders Bachmanson shows

<sup>11</sup> Carlén, Stefan. 1997. *Staten som marknadens salt: en studie i institutionsbildning, kollektivt handlande och tidig välfärdspolitik på en strategisk varumarknad i övergången mellan merkantilism och liberalism 1720-1862.* Stockholm: Almqvist & Wiksell International, p. 60.



that contemporaries considered these relations important, and the few data he presented might fill a small lacuna in describing trade and production of salt, especially for the early 18th century, where quantitative data are missing. Swedish official trade statistics of good quality exist from 1738 and a full treatment of the Portuguese-Swedish trade in the 18th century based on this material is forthcoming<sup>12</sup>.

### Appendixes

	France	England	Holland	Sweden	Denmark	Lübeck / / Hamburg	Total
1700		3938	54834	33190	9628	2707	104297
1701	770	2391	122638	24978	16170	4634	171581
1702		439	31316	32870	16589	4242	85456
1703			51159	30007	11088	1811	94065
1704		802	35243	25334	9081	4203	74663
1705		300	25454	27682	9022		62458
1706		545	13939	28239	11120	1340	55183
1707		450	19634	30630	12415	1100	64229
1708			16315	31714	13696	2382	64107
1709		18	3374	31454	10802		45648
1710		225	8276	7573	4402	1526	22002
1711		700	29016	20275	6275	2809	59075
1712		1244	24574	2877	5414	3544	37653
1713	3138	11139	88875	1808	2852		107812
1714	5975	18753	170578	970	3049		199325
1715	972	13744	59272	3371	920		78279
1716		3734	3508		879		8121
1717		3780	34412		1940		40132
1718		4925	3203			950	9078
1719		3803	28831			370	33004
1720		1949	32402		500	200	35051
1721		5953	30843	1230	1418		39444
1722		18450	18075	886			37411
1723	150	4965	29407	3752	1463	380	40117
1724		5110	14082	4510			23702
1725		14276	22324	8534	1427		46561
1726		15031	36670	12532	720		64953
1727		5865	42723	12078	1471	450	62587
1728	70	16472	38625	10940	7927	2330	76364
1729		9546	26000	12290	3760	530	52126
1730		6230	27464	15014	3799	310	52817

Appendix A: Salt exports from Setubal, 1700-1730. (Moio)

<sup>12</sup>Lindberg, Erik, forthcoming. "Portugal's trade with Sweden in the 18th century."

## THE NORTH SIDE

No	Area	Quality	Moio
1	Monte de Cabraz	highest	855
2	Monte de Cabraz	highest	855
3	Monte de Cabraz	highest	423
4	Monte de Cabraz	highest	858
5	Monte de Cabraz	highest	900
6	Monte de Cabraz	highest	423
7	Monte de Cabraz	highest	585
8	Monte de Cabraz	highest	549
9	Monte de Cabraz	highest	450
10	Monte de Cabraz	highest	423
11	Monte de Cabraz	highest	1011
12	Monte de Cabraz	highest	423
13	Monte de Cabraz	highest	630
14	Monte de Cabraz	highest	1155
15	Monte de Cabraz	highest	369
16	Motrema	highest	189
17	Motrema	highest	1113
18	Motrema	highest	606
19	Motrema	highest	324
20	Motrema	highest	525
21	Motrema	highest	450
22	Motrema	highest	513
23	Motrema	highest	1206
24	Motrema	lowest	504
25	Motrema	highest	162
26	Boranca	highest	432
27	Boranca	highest	525
28	Boranca	highest	579
29	Boranca	highest	87
30	Boranca	lowest	405
31	Boranca	lowest	378
32	Boranca	lowest	220,5
33	Boranca	lowest	220,5
34	Boranca	lowest	378
35	Boranca	lowest	63
36	Boranca	lowest	273
37	Boranca	lowest	558
38	Boranca	highest	346,5
39	Boranca	lowest	387
40	Boranca	highest	423
41	Boranca	lowest	171
42	Boranca	highest	270
43	Boranca	highest	459
44	Boranca	highest	315
45	Boranca	lowest	315
46	Boranca	lowest	525
47	Boranca	lowest	567
48	Boranca	highest	525
49	Boranca	highest	288
50	Boranca	highest	549
51	Boranca	highest	189
52	Boranca	highest	225

No	Area	Quality	Moio
53	Boranca	highest	135
54	Boranca	highest	189
55	Boranca	highest	657
56	Boranca	lowest	459
57	Boranca	highest	339
58	Boza da Cazada	highest	144
59	Boza da Cazada	lowest	333
60	Boza da Cazada	lowest	315
61	Boza da Cazada	..	225
62	Boza da Cazada	lowest	360
63	Boza da Cazada	lowest	585
64	Boza da Cazada	highest	279
65	Boza da Cazada	highest	207
66	Guarnadihlo	highest	294
67	Guarnadihlo	highest	99
68	Guarnadihlo	highest	63
69	Guarnadihlo	highest	189
70	Guarnadihlo	highest	450
71	Guarnadihlo	highest	171
72	Guarnadihlo	highest	234
73	Guarnadihlo	highest	135
74	Guarnadihlo	highest	387
75	Guarnadihlo	highest	315
76	Guarnadihlo	highest	207
77	Guarnadihlo	highest	405
78	Rio Frio	highest	504
79	Rio Frio	highest	198
80	Rio Frio	lowest	396
81	Rio Frio	lowest	432
82	Rio Frio	lowest	408
83	Rio Frio	lowest	144
84	Rio Frio	lowest	117
85	Rio Frio	lowest	513
86	Rio Frio	lowest	351
87	Rio Frio	lowest	204
88	Rio Frio	lowest	102
89	Rio Frio	lowest	99
90	Rio Frio	lowest	261
91	Rio Frio	lowest	144
92	Rio Frio	medium	1092
93	Painha	highest	513
94	Painha	highest	1053
95	Painha	highest	1224
96	Painha	highest	564
97	Esteiro de Joa Barlandrouve	highest	369
98	Esteiro de Joa Barlandrouve	highest	243
99	Esteiro de Joa Barlandrouve	highest	420
100	Esteiro de Joa Barlandrouve	highest	324
101	Esteiro de Joa Barlandrouve	highest	405
102	Esteiro de Joa Barlandrouve	highest	225
103	Esteiro de Joa Barlandrouve	highest	540
104	Esteiro de Joa Barlandrouve	highest	243
105	Esteiro de Joa Barlandrouve	highest	183

No	Area	Quality	Moio
106	Esteiro de Joa Barlandrouve	highest	189
107	Esteiro de Joa Barlandrouve	highest	225
108	Maria Mansa	highest	495
109	Maria Mansa	highest	207
110	Maria Mansa	highest	963
111	Maria Mansa	..	243
112	Maria Mansa	..	189
113	Maria Mansa	..	210
114	Maria Mansa	..	360
115	Maria Mansa	highest	741
116	Maria Mansa	highest	90
117	Maria Mansa	highest	45
118	Maria Mansa	highest	225
119	Maria Mansa	highest	180
120	Maria Mansa	highest	540
121	Maria Mansa	highest	1062
122	Maria Mansa	highest	216
123	Maria Mansa	highest	144
124	Maria Mansa	highest	99
125	Faralho	highest	558
126	Faralho	highest	621
127	Faralho	highest	468
128	Faralho	medium	252
129	Faralho	..	630
130	Faralho	..	225
131	Faralho	highest	585
132	Faralho	highest	528
133	Mourisca	medium	531
134	Mourisca	highest	180
135	Mourisca	..	90
136	Mourisca	highest	450
137	Mourisca	highest	405
138	Mourisca	highest	531
139	Mourisca	highest	405
140	Mourisca	highest	315
141	Cotouia	highest	351
142	Cotouia	highest	351
143	Cotouia	highest	315
144	Cotouia	..	351
145	Cotouia	highest	135
146	Cotouia	highest	135
147	Cotouia	..	180
148	Cotouia	highest	333
149	Cotouia	highest	261
150	Cotouia	highest	1116
151	Cotouia	highest	369
152	Cotouia	..	279
153	Cotouia	..	225
154	Cotouia	..	276
155	Cotouia	..	243
156	Cotouia	highest	270
157	Baya	lowest	909
158	Baya	lowest	558

No	Area	Quality	Moio
159	Baya	lowest	513
160	Baya	lowest	1029
161	Baya	..	252
162	Baya	..	657
163	Baya	..	630
164	Baya	..	693
165	Esteiro do Alemo	highest	279
166	Esteiro do Alemo	highest	288
167	Esteiro do Alemo	highest	240
168	Esteiro do Alemo	highest	324
169	Esteiro do Alemo	highest	1044
170	Mouta	highest	747
171	Mouta	highest	471
172	Mouta	highest	225
173	Mouta	highest	189
174	Esteiro das Carualhas	highest	720
175	Esteiro das Carualhas	highest	666
176	Esteiro das Carualhas	..	495
177	Esteiro das Carualhas	..	810
178	Esteiro das Carualhas	lowest	378
179	Esteiro das Carualhas	lowest	144
180	Esteiro das Carualhas	lowest	306
181	Esteiro das Carualhas	lowest	288
182	Esteiro das Carualhas	lowest	360
183	Esteiro das Carualhas	highest	270
184	Esteiro das Carualhas	..	423
185	Pinheiro Torte	highest	630
186	Pinheiro Torte	..	180
187	Pinheiro Torte	highest	276
188	Pinheiro Torte	highest	333
189	Pinheiro Torte	highest	360
190	Pinheiro Torte	highest	594
191	Valde Judeo	highest	81
192	Valde Judeo	highest	945
193	Valde Judeo	highest	372
194	Valde Judeo	..	486
195	Valde Judeo	highest	180
196	Valde Judeo	highest	270
197	Valde Judeo	..	369
198	Valde Judeo	..	279
199	Valde Judeo	..	270
200	Valde Judeo	..	576
201	Musgos	highest	540
202	Musgos	highest	666
203	Musgos	highest	711
204	Musgos	highest	189
205	Musgos	highest	360
206	Musgos	..	432
207	Musgos	..	462
208	Musgos	highest	1038
209	Gambea	lowest	2682
210	Gambea	lowest	423
211	Gambea	lowest	495

No	Area	Quality	Moio
212	Gambea	lowest	405
213	Gambea	medium	765
214	Gambea	highest	711
215	Gambea	lowest	576
216	Gambea	lowest	306
217	Gambea	lowest	135
218	Gambea	lowest	684
219	Gambea	lowest	639
220	Gambea	lowest	639
221	Gambea	..	270
222	Gambea	..	315
223	Gambea	..	180
224	Gambea	lowest	468
225	Gambea	..	162
226	Gambea	lowest	750
227	Gambea	..	240
228	Gambea	lowest	240
229	Gambea	..	120
230	Gambea	medium	441
231	Gambea	medium	810
232	Gambea	highest	621
233	Gambea	highest	864
234	Gambea	highest	1062
235	Gambea	highest	738
236	Gambea	..	720
237	Gambea	..	1266
238	Zumbujal	highest	663
239	Zumbujal	highest	729
240	Zumbujal	highest	495
241	Zumbujal	highest	945
242	Chaxolha	highest	834
243	Chaxolha	highest	180
244	Chaxolha	..	21
245	Chaxolha	highest	291

## THE SOUTH SIDE

1	..	highest	315
2		highest	360
3		highest	981
4	Murta	highest	724,5
5	Murta	highest	175,5
6	Murta	highest	360
7	Murta	highest	366
8	Cachopos	lowest	1035
9	Cachopos	lowest	774
10	Cachopos	lowest	1920
11	Cachopos	lowest	201
12	Espim	lowest	315
13	Espim	lowest	423
14	Espim	lowest	468
15	Espim	lowest	765
16	Espim	lowest	486
17	Espim	lowest	315
18	Espim	lowest	540

No	Area	Quality	Moio
19	Espim	lowest	495
20	Espim	lowest	360
21	Espim	lowest	1017
22	Espim	lowest	810
23	Espim	lowest	270
24	Espim	lowest	783
25	Espim	lowest	1593
26	Espim	lowest	630
27	Espim	lowest	1464
28	Espim	lowest	2229
29	Espim	lowest	906
30	Espim	lowest	1161
31	Espim	lowest	261
32	Espim	lowest	180
33	Espim	lowest	333
34	Espim	lowest	243
35	Espim	lowest	252
36	Espim	lowest	252
37	Espim	lowest	1071
38	Bombarahla	highest	585
39	Bombarahla	..	258
40	Bombarahla	..	327
41	Bombarahla	highest	60
42	Bombarahla	highest	129
43	Bombarahla	highest	210
44	Bombarahla	highest	603
45	Bombarahla	highest	324
46	Bombarahla	highest	333
47	Bombarahla	highest	306
48	Bombarahla	highest	396
49	Bombarahla	highest	405
50	Bombarahla	lowest	540
51	Bombarahla	lowest	450
52	Sambugeiro	lowest	270
53	Sambugeiro	lowest	144
54	Sambugeiro	lowest	45
55	Sambugeiro	lowest	423
56	Sambugeiro	lowest	270
57	Sambugeiro	lowest	99
58	Sambugeiro	lowest	414
59	Sambugeiro	lowest	288
60	Sambugeiro	lowest	288
61	Sambugeiro	lowest	378
62	Sambugeiro	lowest	441
63	Sambugeiro	lowest	144
64	Sambugeiro	lowest	225
65	Sambugeiro	lowest	360
66	Sambugeiro	highest	1341
67	Telhada	lowest	441
68	Telhada	lowest	144
69	Telhada	lowest	135
70	Telhada	lowest	144
71	Telhada	lowest	150
72	Telhada	lowest	144

No	Area	Quality	Moio
73	Telhada	lowest	135
74	Telhada	lowest	36
75	Telhada	lowest	117
76	Telhada	lowest	72
77	Telhada	lowest	234
78	Telhada	lowest	243
79	Telhada	lowest	135
80	Telhada	lowest	288
81	Telhada	lowest	324
82	Telhada	lowest	90
83	Telhada	lowest	90
84	Telhada	lowest	153
85	Telhada	lowest	117
86	Telhada	lowest	72
87	Telhada	lowest	81
88	Telhada	lowest	72
89	Telhada	lowest	108
90	Telhada	lowest	108
91	Telhada	lowest	108
92	Telhada	lowest	135
93	Telhada	lowest	153
94	Telhada	lowest	117
95	Telhada	lowest	378
96	Telhada	lowest	72
97	Telhada	lowest	423
98	Telhada	lowest	270
99	Telhada	lowest	306
100	Telhada	lowest	63
101	Telhada	lowest	72
102	Telhada	lowest	180
103	Telhada	lowest	153
104	Telhada	lowest	45
105	Telhada	lowest	216
106	Telhada	lowest	144
107	Telhada	lowest	81
108	Telhada	lowest	234
109	Telhada	lowest	360
110	Telhada	lowest	135
111	Telhada	lowest	234
112	Telhada	lowest	225
113	Telhada	lowest	135
114	Telhada	lowest	45
115	Telhada	lowest	81
116	Telhada	lowest	711
117	Telhada	lowest	144
118	Telhada	lowest	204
119	Telhada	lowest	315
120	Telhada	lowest	243
121	Potte Vueiro	lowest	135
122	Potte Vueiro	lowest	162
123	Potte Vueiro	lowest	135
124	Potte Vueiro	lowest	66
125	Potte Vueiro	lowest	87
126	Potte Vueiro	lowest	63



No	Area	Quality	Moio
127	Potte Vucero	lowest	63
128	Potte Vucero	lowest	117
129	Potte Vucero	lowest	483
130	Potte Vucero	lowest	198
131	Potte Vucero	lowest	198
132	Potte Vucero	highest	225
133	Potte Vucero	highest	315
134	Potte Vucero	highest	711
135	Potte Vucero	highest	864
136	Potte Vucero	highest	360
137	Potte Vucero	lowest	315
138	Potte Vucero	lowest	2430
139	Potte Vucero	lowest	270
140	Potte Vucero	..	1230
141	Espem da banda da-Norte	lowest	570
142	Espem da banda da-Norte	lowest	270
143	Espem da banda da-Norte	lowest	765
144	Espem da banda da-Norte	lowest	391,5
145	Espem da banda da-Norte	lowest	391,5
146	Espem da banda da-Norte	lowest	1233
147	Espem da banda da-Norte	lowest	675
148	Espem da banda da-Norte	lowest	120
149	Espem da banda da-Norte	lowest	240
150	Espem da banda da-Norte	lowest	120
151	Espem da banda da-Norte	lowest	120
152	Espem da banda da-Norte	lowest	120
153	Espem da banda da-Norte	lowest	201
154	Espem da banda da-Norte	lowest	201
155	Espem da banda da-Norte	lowest	540
156	Espem da banda da-Norte	lowest	684
157	Espem da banda da-Norte	lowest	270
158	Espem da banda da-Norte	lowest	270
159	Espem da banda da-Norte	lowest	238,5
160	Espem da banda da-Norte	lowest	465
161	Espem da banda da-Norte	highest	558
162	Espem da banda da-Norte	..	504
163	Espem da banda da-Norte	medium	144
164	Espem da banda da-Norte	lowest	144
165	Espem da banda da-Norte	lowest	144
166	Espem da banda da-Norte	lowest	72
167	Espem da banda da-Norte	lowest	657
168	Espem da banda da-Norte	lowest	306
169	Espem da banda da-Norte	lowest	522
170	Espem da banda da-Norte	lowest	1440
171	Espem da banda da-Norte	lowest	360
172	Espem da banda da-Norte	lowest	324
173	Espem da banda da-Norte	lowest	432
174	Espem da banda da-Norte	lowest	513
175	Espem da banda da-Norte	lowest	612
176	Espem da banda da-Norte	lowest	270
177	Espem da banda da-Norte	lowest	675
178	Espem da banda da-Norte	lowest	396
179	Espem da banda da-Norte	lowest	270
180	Espem da banda da-Norte	lowest	225

No	Area	Quality	Moio
181	Espem da banda da-Norte	lowest	225
182	Espem da banda da-Norte	lowest	252
183	Espem da banda da-Norte	lowest	639
184	Espem da banda da-Norte	lowest	369
185	Espem da banda da-Norte	lowest	666
186	Espem da banda da-Norte	lowest	531
187	Espem da banda da-Norte	lowest	765
188	Espem da banda da-Norte	..	1254
189	Espem da banda da-Norte	lowest	360
190	Espem da banda da-Norte	lowest	405
191	Espem da banda da-Norte	lowest	333
192	Palma	lowest	135
193	Palma	lowest	120
194	Palma	lowest	504
195	Palma	lowest	711
196	Palma	lowest	135
197	Palma	lowest	228
198	Palma	lowest	540
199	Palma	lowest	855
200	Rorbo Legao	lowest	447
201	Rorbo Legao	lowest	228
202	Rorbo Legao	lowest	315
203	Rorbo Legao	lowest	387
204	Rorbo Legao	lowest	819
205	Rorbo Legao	lowest	1296
206	Rorbo Legao	lowest	873
207	Rorbo Legao	lowest	387
208	Rorbo Legao	lowest	315
209	Rorbo Legao	lowest	279
210	Rorbo Legao	lowest	540
211	Rorbo Legao	lowest	540
212	Rorbo Legao	lowest	936
213	Rorbo Legao	lowest	724,5
214	Rorbo Legao	lowest	549
215	Rorbo Legao	highest	1524
216	Rorbo Legao	highest	1449
217	Rorbo Legao	medium	1497
218	Rorbo Legao	lowest	1119
219	Abul	medium	1482
220	Abul	highest	162
221	Abul	highest	627
222	Abul	highest	438
223	Abul	highest	351
224	Abul	highest	99
225	Abul	highest	99
226	Abul	highest	315
227	Abul	highest	792
228	Abul	..	2154

Appendix B: Production in the salt pans of Setubal in the 1720's