

# Seaweed and its Use in Jersey Agriculture

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ONE of the most interesting and important features of the agriculture of the Channel Islands, and particularly of the agriculture of Jersey before 1900 was the use of seaweed as a fertilizer. An habitual feature of the agricultural scene, seaweed was the cause of much litigation and legislation in Jersey, largely as a result of its supreme value when applied to the sandy soils which cover most of the island. One nineteenth-century writer commented as follows: "Besides his own estate or domain, in the shape of *terra firma*, every islander has a common right of great value, lying on the shore of the barren sea, and belonging to the sea itself. It is true that neither ox nor horse can browse on it, and yet it supplies provender for ox and horse as truly as if it were a field of clover or oats."<sup>1</sup> Though its efficacy was accepted and the benefits derived from its use widely enjoyed, it was not till the end of the nineteenth century that any serious scientific study of the types of seaweed and their chemistry was made.

'Vraic' or 'wrack', the Jersey terms, were used by many writers to cover all types of seaweed but especially those used for agricultural purposes. The derivation of the terms is obscure, probably being either a corruption of the French 'varech', or of the Old English 'wræc'.

Seaweed has been used for agricultural purposes in Jersey at least since the twelfth century but there are no detailed records which give any details of its application. A case referred to by de Gruchy<sup>2</sup> illustrates its

importance. A group of seigneurs tried to claim that all vraic washed onto the shore was "wreck of the sea" and therefore legally belonged to them; a judgment in their favour would have meant that all users would then have had to buy vraic from them. Fortunately for the medieval farmers, and probably for later generations as well, the case was dismissed and vraic remained a common right.

Camden found the use of seaweed one of the few features of the island worthy of record. Heylyn visited the island in 1629 and in his account, published twenty-seven years later, he mentions it as an outstanding feature of the agriculture of the island. However, it is Poingdestre who gives us the first detailed description of the collection and application of seaweed.<sup>3</sup>

After first noting its luxuriant growth in many parts of the island, especially in areas "environ'd with rocks, some flatt, others steepe and pointed, some hid at high water, others allways above water both farre and neere the shore . . .", he divides the seaweeds into those obtained by cutting and those thrown onto the shore by the sea. It was this latter type which he stated was so important to the people of St Ouen for "every one of them (had) enough to lay it upon their grounds as thick as ye spade or plough can turne and cover with conveniency." This, he claims, was the reason why "that Canton Otherwise barren produceth more plenty and better Corne than the best grounds in other parts of ye Island."

The division of vraic amongst the farmers

<sup>1</sup> D. T. Ansted in D. T. Ansted and R. G. Latham, *The Channel Islands*, 1893, p. 396.

<sup>2</sup> G. F. B. de Gruchy, *Medieval Land Tenures in Jersey*, 1958.

<sup>3</sup> W. Camden, *Britannia*, 1586; P. Heylyn, *Full Relation of Two Journeys . . . to France and the Adjacent Islands*, Book 6, 1641; J. Poingdestre, *Caesarea, Island of Jersey*, 1682. B.M. Harleian MS 5417, published as Société Jerseyaise Publication, no. 10, 1889.

was closely supervised by two "sworn officers", who ensured that each person received his due amount. These amounts, according to the *Code of Laws*<sup>1</sup> published in 1771, are set out in Table I. The "Act Concerning Vraic" of 1866,<sup>2</sup> though making changes in other aspects of the law, left these amounts unaltered. In 1771, all men resident in the parish who had no claim as a result of land ownership were allowed one lot, while this was limited, in 1866, to heads of families only.

TABLE I. THE DIVISION OF VRAIC

<i>Amount of workable land owned (including banks and ditches)</i>	<i>Number of lots of vraic</i>
Over 60 vergées	6
45-60	5
30-45	4
18-30	3
8-18	2
3- 8	1½

Cut vraic and vraic venant (a term used later to describe the vraic brought to the beach by wave action) were regarded differently, both with respect to the laws governing their collection and also their treatment and use by the islanders. Poingdestre describes these differences in detail. Vraic cast up by the sea was considered best both for fuel and for manure. This type could be collected at any time during the year. However, any gathered in May or June and later was dried, put into stacks, and left till ploughing time when it was spread and ploughed in only after the dew had moistened it slightly. Any remaining vraic was taken home to be used in conjunction with fern, furze, or brake as domestic fuel. This practice tended to die out in the nineteenth century with the rise in imports and increased availability of coal for heating purposes. The parish of St Ouen is again cited as an example of the efficacy of this treatment:

"There are many fields which . . . have been (by ye help of this manure) plowed every

yeare constantly, for soe many generations past, that there is none living that can say he ever sawe them rest one yeare only. And it is supposed that the plenty of ye sayd dung is ye cause that the Turnops which the sayd Parish affoards in great quantity have ye reputation to be ye best, ye sweetest & dryest in all ye Island."<sup>3</sup> Even allowing for some patriotic exaggeration, this is an impressive tribute to the value of seaweed as a fertilizer.

Cut vraic Poingdestre divides into two main types—a round-leafed and a flat-leafed variety. The former was found to be drier and used more often as a substitute for wood as a firing material, but the ashes were preserved either for making soap or for spreading on the land shortly before Christmas. This type was cut about midsummer: "about the Terms end, and before Hay-harvest the people are generally permitted by the Court to attend that occupation; which before they may not do, without danger of a fine. A fortnight the permission continueth." The second variety was found to be wetter and, rotting more easily, was merely strewn over the fields, allowed to rot, and then dug in. This type was used more on fields being prepared for grain crops than the round-leafed variety which was used largely on those being prepared for pasture. Again there was a limited cutting season—from February to St George's Day (23 April). Poingdestre notes that during this period "there is a perfect Truce from Ordinary Lawesuits, but not from those quarells which the communion of that weede produceth."

"We doe therefore order, that the saide Bayliffe and Justices only being in our opinions men of the best understanding and experience to deal in a matter of that nature, which soe much concerneth the common good, shall, from henceforth, as formerly they have done yearly, and at all times needful make and sett downe all orders whatsoever, they finde to be most convenient both for the places where, the times and seasons when, the

<sup>1</sup> Code of Laws of the Island of Jersey, 1771.

<sup>2</sup> Ordre . . . touchant la coupe, la pêche, et le partage du vraic, 1866.

<sup>3</sup> J. Poingdestre, *op. cit.*, p. 19.

saide vracke shall be gathered, and for the manner how the inhabitants shall performe the same."<sup>1</sup>

Poingdestre's differentiation of the different types of vraic on the basis of shape, though only partially correct, is the earliest 'scientific' distinction made in the accounts of the use of seaweed in Jersey (see below p. 126).

Dumaresq, writing in 1685, merely alludes to the use of vraic, noting that with its aid the soil "produces very good." Falle, in his history of the island, though less detailed than Poingdestre, is no less fulsome: "'tis incredible how with its fat unctuous substance it meliorates and fertilizes the Earth, imbibing itself into it, softening the Clod and keeping the Root of the Corn moist during the most parching Heats of Summer."<sup>2</sup>

Little further information relating to seaweed is found in the eighteenth century till Col. Rudolph Bentinck was sworn as Lieutenant Governor and Commander-in-Chief of the Island and appointed by Special Commission to enquire into the laws of the island. Jersey law was mainly Norman in derivation and entirely customary in operation, but one of Bentinck's first actions was to order the publication of the *Code of Laws*—the first time that Jersey laws had been printed (1771). It is from this publication that we can derive further details relating to the collection of seaweed. It is important to remember that this was not a new set of laws but a codification of existing practices and so gives an accurate picture of 'vraicking' activities before 1771 as well as after that date.

Of the twenty-seven articles in the Act, seven are concerned with the division of the seaweed (see above, Table I). This applied to the inhabitants of St Ouen, St Peter, St Brelade, St Lawrence, St John, and St Mary. In addition to these standard amounts the poor and widows of St Ouen, St Peter, and St Brelade, who were unable to collect the seaweed, whether because of infirmity or illness, could apply to the Constable of the Parish for

a share, which was not to exceed two dry cart-loads. It is probable that this provision was only possible in these three parishes because of the enormous amount of seaweed washed up onto the beach of St Ouen's Bay.

Strict supervision of the foreshore was enjoined. It was illegal to move any stones or rocks from the areas where seaweed was growing while certain areas were out of bounds to all collectors: these areas were at the extreme northern and southern ends of St Ouen's Bay, from Petit Etaquerel to Les Laveurs in the north, and between La Pulente and La Corbière in the south. This restriction appears to have been limited to the immediate inshore area. Times for collecting seaweed were also limited. None was to be collected before sunrise or after sunset—probably to give inland farmers an opportunity to obtain some or to ensure that supervision of all collecting activities was possible. Collecting from different parts of the coast during any one period was forbidden, as was the use of boats in areas where carts could be used. The dates for cutting of seaweed were the same as those given by Poingdestre, but another article states that cutting on the east coast was to last for only one tide (marée). On no account was vraic to be torn from the rocks as this was considered injurious to the plants and impaired later growth.

The last major group of articles was concerned with the supervision and administration of the law. The Constables and Centeniers of the parishes were to be general overseers, being available in their parishes particularly in January and February to see that the regulations were properly observed. The "sworn officers" were to abide by the decision of the Constables and for their work were to receive one lot more than their entitlement by virtue of land held.

Each of the inhabitants of St Ouen and St Peter who had the right to collect vraic was required, when asked by the Constable, to help to repair the cart tracks among the rocks.

<sup>1</sup> Gardiner and Hussey quoted in P. Falle, *History of the Island of Jersey*, ed. Durell, 1835, pp. 366-7.

<sup>2</sup> P. Dumaresq, *Survey of the Island of Jersey*, 1685. MS. reprinted in *Bulletin of the Société Jersiaise*, no. 60, XII, Pt 4, pp. 413-46; P. Falle, *Caesarea, or an account of Jersey*, 2nd edn, 1734, p. 149.

If a personal appearance was not possible a proxy might be sent. The inhabitants of St Brelade were exempt from this service. Announcements of this and all other regulations were to be made in the churchyards of each parish.

Fines were levied for contravention of each article. Usually they were of 10 livres of which 5 went to the Crown and the other 5 to the poor of the parish. However, for contravention of the first article, relating to the movement of rocks on the foreshore, the same fine was divided equally between the Crown, the poor, and the informer.

At the beginning of the nineteenth century the first substitutes for seaweed were being introduced to Jersey. 'Plymouth limestone', previously used only in the brick kilns, was being used at this time as a substitute before the sowing of wheat and the laying down of clover. Sea-shells, collected from the eastern end of St Aubin's Bay had also been tried in an attempt to raise the calcium content of the soils but they were difficult to collect and expensive to cart—80 bushels per vergée being required before any improvement was noticeable.

Quayle,<sup>1</sup> in his account of the agriculture of the Channel Islands, published in 1815, devotes almost a whole chapter to the value and use of seaweed. He shows that it was still the most important fertilizing agent in use: "the supply of vraic ashes is not equal to the demand; and on these, in the opinion of many, the agriculture of the Island depends for support." After summarizing most of the regulations printed in 1771, he adds one or two further points of interest. Inland farmers were allowed a portion of 'mielles' (sand dune areas) for drying of vraic. Another feature first mentioned by him is that many people living near the bays kept a horse and cart so that they could collect seaweed, not for their own use, but for sale—a cartload (wet), the

result of two hours work with an iron-pronged vraic rake, was sold for 2 livres. Four wet loads were equal to one dry load. Further confirmation of the general price of vraic is provided by Col. Le Couteur,<sup>2</sup> writing twenty-seven years later, who stated that about this time he had been advised by a local farmer to put 2 livres 5 shillings worth of ashes per acre on wheat land, i.e. about one cartload, and to let it lie on the surface for a month before ploughing it in and that the result would be better quality grain and 3 or 4 livres more profit.

From the rest of Quayle's account we have some measure of the general application of vraic and its use in the Jersey rotations. It was invariably used before wheat, being spread on the land in the form of ashes prior to the November–December ploughing. This process was repeated with other grain crops: barley was planted earlier or later in the spring depending on the supply of seaweed. Rye was found to benefit greatly and Quayle mentions a case of a field producing rye for 40 years without fallow. Parsnips and other root crops as well as cabbages were found to benefit, but Durell<sup>3</sup> in 1835 showed that in the short space of twenty years the use of vraic was becoming slightly more limited:

"The ashes of the summer vraic are particularly valuable for the cultivation of wheat, and there are many poor people along the coast of Island, who get their livelihood by collecting drift vraic and burning it into ashes, which they sell [to] the farmers usually at the rate of one quarter of ashes for one cabot of wheat. . . Vraic is now plowed in mostly for the raising of barley and potatoes. Its manuring effects in the ground are not supposed to last more than one season, and though it increases the crop of potatoes, it is said to make them grow knotty and of an inferior quality. When spread out on grass, its effects will depend on the season: if the weather is moist,

<sup>1</sup> T. Quayle, *General View of the Agriculture . . . of the Islands on the Coast of Normandy*, Board of Agriculture, 1815, p. 148.

<sup>2</sup> Col. J. Le Couteur, 'On the Use of the Great or Jersey Trench-plough', *Jnl Roy. Agric. Soc. Eng.*, III, 1, 1842, pp. 1–11.

<sup>3</sup> Durell, in Falle, *op. cit.*, 1835, p. 367.

and with gentle showers, the vraic soon gets decomposed, and will produce abundant crops of hay; but if there is a drought, it is shrivelled up, and becomes totally useless." Quayle notes that 1 ton of vraic per vergée was the normal application in February and March to meadowland.

Opinion varied as to the use of seaweed in orchards—apples and cider being an important part of the Jersey economy at this time. Practice seems to have differed from that in Normandy inasmuch as vraic was not usually placed nearer than 4 feet from the base of the tree. Fr Le Couteur,<sup>1</sup> the leading authority in the island on cider and orchards, stated that if placed any closer the vraic had a tendency to rot the bark of the trees. He does, however, recommend its use for young transplanted trees. "A composition of cow-dung, clay and wood, or seaweed ashes, in the proportions of weight of 3, 2, and 1 . . . being diluted with urine and soap-suds, and applied in a rope of twisted hay round the young plants, nourishes them, and protects them against field mice and rabbits, and guards them against the effects of frost. . ."

In 1844 guano made its first appearance in the agriculture of the island particularly for potato land but vraic seems, at the same time, to have regained its place as the most general fertilizer in use. Its main function was still as a manure for wheat land though the wheat seed was now sometimes sown on the surface of the vraic before Christmas and then ploughed in to a depth of about 5 inches. If, however, sowing was postponed till January, the seed was sown after the ploughing in of the vraic. The same applied to barley and all root crops except carrots and on occasion mangolds. The disagreeable taste that it imparted to potatoes still prevented its widespread use on potato land. With these crops a good dressing of fresh vraic was used and ploughed in to about 2 or 3 inches. The land

was then left till the end of February or even later. Parsnips usually followed turnips and it was found that this method increased crop returns considerably. Le Cornu<sup>2</sup> states that, during a tour of the island in 1858, he saw only one turnip field free from blight—it had been sown much later than usual, and manured with a seaweed known locally as "vraic-de-mai". It seems more probable that the late sowing and not the seaweed was the cause of the freedom from blight. He describes the variety of seaweed as follows:

" . . . this seaweed is different from all other varieties,—it is of the colour of yellow-ochre, and is washed on the beach at one particular season only, which appears to be its flowering season, for masses resembling flowers come in with it, no other variety is more prized for its ashes than this." This is probably a reference to *Laminaria saccharina*.

Dally,<sup>3</sup> writing in 1860, again emphasizes the value of vraic and gives some details of the varieties of *Algae* used. He divides them into two main groups, those types which were hand-cut (vraic scié), and those which were collected from the shore after being thrown up by the waves (vraic venant). He classes them all as *Fucaceae* but in Table II I have attempted to identify them and to list the modern names, in brackets.

It is interesting to note that this division is similar to the 'round'- and 'flat'-leafed division of Poingdestre: the Wrack family having a morphological tendency to roundness in comparison with the flat form of the *Laminaria* and associated species.<sup>4</sup>

The two types may also be differentiated on the basis of habitat. The cut vraics are found higher on the beach. *Pelvetia canaliculata* (Channelled Wrack) is found near high-water mark, often remaining exposed for many days. Below this are found the bands of *Asco-phylllum nodosum* (Knotted Wrack), *Fucus serratus* (Toothed Wrack), and *Fucus vesicu-*

<sup>1</sup> Fr Le Couteur, *Aperçu sur la culture des pommiers*, 1806. Translated and printed in Pitt, *Survey of the Agriculture of Worcestershire*, Board of Agriculture, p. 352.

<sup>2</sup> C. P. Le Cornu, "The Agriculture of the Islands of Jersey, Guernsey, Alderney, and Sark", *Jnl Roy. Agric. Soc. Eng.*, xx, 1859, pp. 32-67.

<sup>3</sup> F. F. Dally, *An Essay on the Agriculture of the Channel Islands*, 1860.

<sup>4</sup> C. J. Dickinson, *British Seaweeds*, 1963.

TABLE II. VARIETIES OF ALGAE USED IN JERSEY (AFTER DALLY)

<i>Vraic scié</i>	<i>Vraic venant</i>
<i>Fucus nodosus</i> ( <i>Ascophyllum nodosum</i> )	<i>F. lareus</i> (? <i>Himanthalia elongata</i> )
<i>F. vesiculosus</i> (same)	<i>F. saccharinus</i> ( <i>Laminaria saccharina</i> )
<i>F. Canaliculatus</i> ( <i>Pelvetis canaliculata</i> )	<i>F. digitatus</i> ( <i>L. digitata</i> )
<i>F. serratus</i> (same)	<i>F. palmatus</i> ( <i>Rhodymenia palmata</i> )

*losus* (Bladder Wrack), all of which plants require a fairly sheltered beach. The essential feature of the Wrack family is their tendency to rejuvenate vegetatively if damaged or cut—a fact which has given rise to the strict supervision of the cutting. They are “short-lived perennials, and in fact, it has been estimated that winter storms take toll of more than 50 per cent of the plants before they are three years old.”

Below the Wracks, and usually found among rocks or in deep pools, were the types of seaweed which, though valuable, could not be cut. Here the farmers were forced to rely on the action of the sea, increased at storm times, to bring to shore the old growths after they had broken away in the late spring, subsequent to the establishment of the new growths. *Laminaria saccharina* (Sea-Belt), one of the most valuable of this group is found in a wide zone from low-water mark to a depth of several fathoms; *Laminaria digitata* (Tangle) is found about low-water mark along with *Rhodymenia palmata* (Dulse) which often occurs as an epiphyte in this region. *Himanthalia elongata* (Sea Thong) is found just below the *F. serratus* belt in dense colonies occupying deep pools.

Though Le Cornu had used the work of Baron Justus Liebig in explaining the value of seaweed on the Jersey soils, it was F. W. Toms<sup>1</sup> who first applied chemical analysis to the seaweeds to determine the chemistry behind their usefulness. The major disadvantage of vraic had always been the high water content and thus the great cost of cartage. Toms showed that 1 ton of vraic contained 75 per cent water, 20 per cent organic matter, and only 5 per cent or 1 cwt. of “ash”

—that is mineral constituents of direct value to the soil. Further analysis showed that this cwt. included 8–14 lb. nitrogen (producing 10–17 lb. ammonia), 15–20 lb. potash, 10–12 lb. lime, 2–6 lb. phosphoric acid, and 30–40 lb. common salt. The higher soda compounds were found especially in the shoreweeds while the potash, extremely valuable for stimulating clover, pasture, tomato, or potato land, was found to be highest in Tangle, Toothed Wrack, and Knotted Wrack, in that order. A further, more detailed analysis of the seaweeds given by Toms is reproduced, with some omissions, in Table III.

Toms also noted that the time of year was important for cutting: a slight decline in the potash content of *Fucus* was noted later in the year, while percentages of included minerals, except phosphoric acid, were highest in Tangle that was obtained in May. (See Table IV.)

Though of a late date, Toms's study of the chemistry of the seaweeds used by Jersey farmers helps to explain the value that previous generations had placed on it. The collection and use of vraic have been an essential part of the Jersey agrarian economy at least since medieval times, providing, as Toms showed, many of the minerals which were lacking in the Jersey soils. With the introduction of guano in the middle of the last century and the more recent development of artificial manures and fertilizers with a more stable and reliable composition, the position of vraic as the foremost fertilizer has declined. Some farmers still use vraic, and will probably continue to do so, as its cost is now far lower than that of manufactured articles, but it can no longer be regarded as it used to be as Jersey's most valuable natural resource.

<sup>1</sup> F. W. Toms, *Notes on Farm Chemistry in Jersey*, 1905.

## THE AGRICULTURAL HISTORY REVIEW

TABLE III. TABLE OF CONSTITUENTS OF SELECTED SEAWEEDS (AFTER TOMS)

	<i>Ascophyllum Nodosum</i>	<i>Laminaria Digitata</i>	<i>Fucus Serratus</i>	<i>Fucus Vesiculosus</i>
<i>FRESH</i>				
Moisture	75.0	80.3	77.6	77.6
Organic Matter	20.9	14.9	18.2	17.8
Ash	4.1	4.8	4.2	4.6
<i>% of ASH</i>				
Potash	13.2	22.8	15.8	16.0
Soda	24.8	18.3	23.3	27.6
Lime	6.0	6.8	9.7	6.5
Chlorine	15.0	28.1	26.6	18.5
Sulphuric Acid	24.0	11.8	17.0	19.5
Magnesia	6.4	2.3	3.5	3.2
Iron Oxide	6.3	6.5	2.8	2.6
Rest	4.3	3.4	1.3	6.1

TABLE IV. PERCENTAGE COMPOSITION OF WRACK AND COLLEY<sup>1</sup>

	<i>Organic Matter</i>		<i>"Ash"</i>		<i>Nitrogen</i>		<i>Potash</i>		<i>Lime</i>	
	<i>Wrack</i>	<i>Colley</i>	<i>Wrack</i>	<i>Colley</i>	<i>Wrack</i>	<i>Colley</i>	<i>Wrack</i>	<i>Colley</i>	<i>Wrack</i>	<i>Colley</i>
March	81.4	65.0	18.6	35.0	1.91	3.45	2.62	3.45	1.30	1.96
May	79.5	74.0	20.5	26.0	1.98	1.94	2.26	3.93	2.10	1.70
October	79.3	81.7	20.7	19.3	1.16	0.96	2.00	2.34	1.30	1.65

<sup>1</sup> The first two columns represent the percentage composition of the seaweed when dried at 212°F. The last three columns are selected figures showing the percentage of "ash" of three of the most important minerals from the agricultural viewpoint (after Toms).