Water lifting devices

FAO
IRRIGATION
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PAPER

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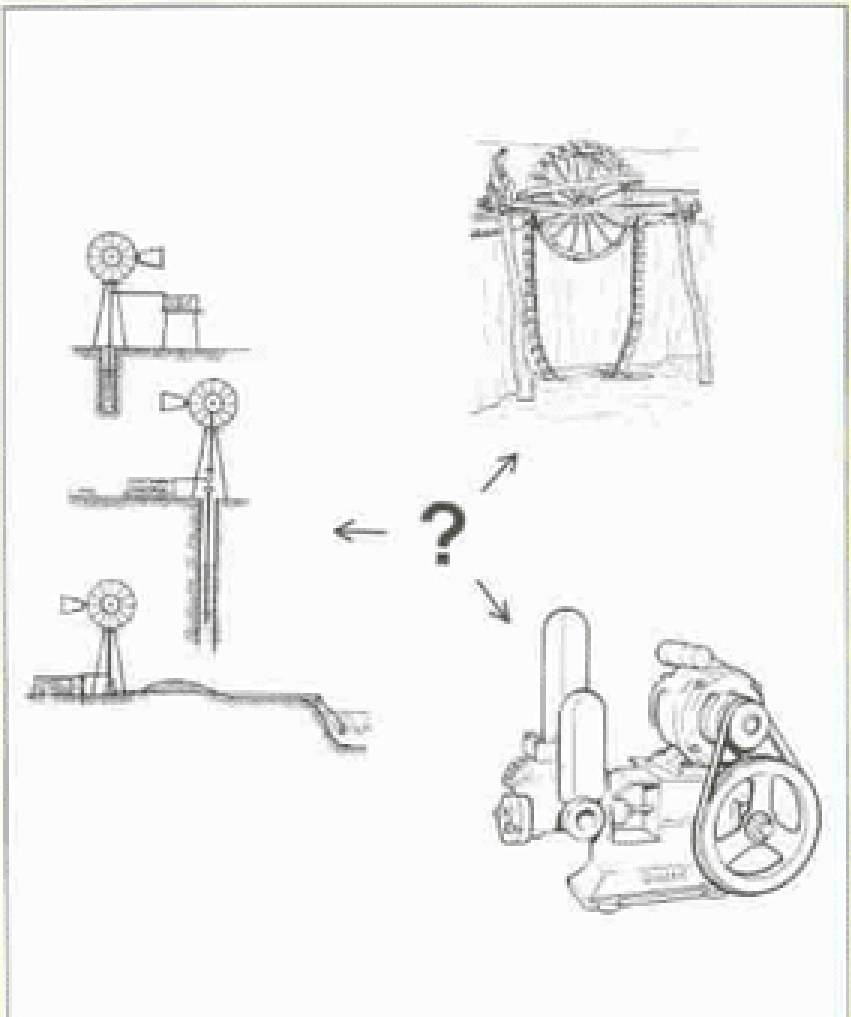

FOOD
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FAO IRRIGATION AND DRAINAGE PAPER 43

Water lifting

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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CONTENTS

Preface

Acknowledgements

1. INTRODUCTION

1.1 Scope and purpose of this paper

1.2 The increasing importance of irrigation

1.3 Irrigation and the "Energy Crisis"

1.4 Small-scale irrigation and development

1.5 The choice of water lifting technique

2. WATER LIFTING FOR IRRIGATION

2.1 General principles of water lifting

2.1.1 Definitions of Work, power, energy and efficiency

2.1.2 Efficiency of components: the importance of matching

2.1.3 Irrigation system losses

2.1.4 Flow through channels and pipes

2.1.5 Suction lift: the atmospheric limit

2.1.6 Drawdown and seasonal variations of water level

2.1.7 Review of a complete lift irrigation system

2.1.8 Practical power requirements

2.2 Outline of principles of small-scale irrigation

2.2.1 Irrigation water requirements

2.2.2 Nett irrigation requirement

2.2.3 Gross irrigation requirement

2.2.4 Pumping requirement

3. REVIEW OF PUMPS AND WATER LIFTING DEVICES

3.1 Principles for moving or lifting water

3.2 Taxonomy of water lifts and pumps

3.3 Reciprocating and cyclic direct lift devices

3.3.1 Watering cans, buckets, scoops, bailers and the swing basket

3.3.2 Suspended scoop, gutters, dhones and the counterpoise- -lift or shadoof

3.3.3 Bucket hoists, windlasses, mohtes and water skips

3.4 Rotary direct lift devices

3.4.1 Bucket elevators, Persian wheels and norias

3.4.2 Improved Persian wheels, (zawaffa or jhallar)

3.4.3 Scoop-wheels; sakia, tympanum or tablia

3.5 Reciprocating displacement pumps

3.5.1 Piston or bucket pumps: basic principles

3.5.2 Double-acting piston pumps and plunger pumps

3.5.3 Pistons and valves

3.5.4 Reciprocating pumps and pipelines

3.5.5 Reciprocating borehole pumps

3.5.6 Hydraulically activated borehole pumps

3.5.7 Diaphragm pumps

3.5.8 Semi-rotary pumps

3.5.9 Gas displacement pumps

3.6 Rotary positive displacement pumps

3.6.1 Flexible vane pumps

3.6.2 Progressive cavity (Mono) pumps

3.6.3 Archimedean screw and open screw pumps

3.6.4 Coil and spiral pumps

3.6.5 Paddle wheels, treadmills and flashwheels

3.6.6 Water-ladders and Dragon Spine pumps

3.6.7 Chain and washer or Paternoster pumps

3.7 Reciprocating inertia (joggle) pumps

3.7.1 Flap valve pump

3.7.2 Resonant joggle pump

3.8 Rotodynamic pumps

3.8.1Rotodynamic pumps: basic principles

3.8.2 Volute, turbine and regenerative centrifugal pumps

3.8.3 Rotodynamic pump characteristics and impeller types

3.8.4 Axial flow (propeller) pumps

3.8.5 Mixed flow pumps

3.8.6 Centrifugal pumps

3.8.7 Multi-stage and borehole rotodynamic pumps

3.8.8 Self-priming rotodynamic pumps

3.8.9 Self-priming jet pumps

3.9 Air-lift pumps

3.10 Impulse (water hammer) devices

3.11 Gravity devices

3.11.1 Syphons

3.11.2 Qanats and foggara

3.12 Materials for water lifting devices

3.13 Summary review of water lifting devices

4 POWER FOR PUMPING

4.1 Prime-movers as part of a pumping system

4.1.1 Importance of cost-effectiveness

4.1.2 Transmission systems

4.1.3 Fuels and energy storage

4.2 Human power

4.2.1 Human beings as power sources

4.2.2 Traditional water lifting devices

4.2.3 Handpumps

4.2.4 Handpump maintenance

4.3 Animal power

4.3.1 Power capabilities of various species

4.3.2 Food requirements

4.3.3 Coupling animals to water-lifting systems

4.4 Internal combustion engines

4.4.1 Different types of i.e. engine

4.4.2 Efficiency of engine powered pumping systems

4.5 External combustion engines

4.5.1 Steam engines

4.5.2 Stirling engines

4.6 Electrical power

4.6.1 Sources and types of electricity

4.6.2 AC mains power

4.6.3 Electric motors

4.6.4 Electrical safety

4.7 Wind power

4.7.1 Background and State-of-the-Art

4.7.2 Principles of Wind Energy Conversion

4.7.3 The Wind Resource

4.7.4 Windpump Performance Estimation

4.8 Solar power

4.8.1 Background and State-of-the-Art

4.8.2 Principles of solar energy conversion

4.8.3 The solar energy resource

4.8.4 Performance estimation

4.9 Hydro power

4.9.1 Background and State-of-the-Art

4.9.2 Use of turbines for water lifting

4.9.3 The hydraulic ram pump (or hydram)

4.9.4 Water wheels and norias

4.9.5 Novel water powered devices

4.10 Biomass and coal (the non-petroleum fuels)

4.10.1 The availability and distribution of fuels

4.10.2 The use of solid fuels

4.10.3 The use of liquid biomass fuels

4.10.4 Gas from biomass: Biogas

5. THE CHOICE OF PUMPING SYSTEMS

5.1 Financial and economic considerations

5.1.1 Criteria for cost comparison

5.1.2 Calculation of costs and benefits

5.1.3 Relative economics of different options

5.2 Practical considerations

5.2.1 Status or availability of the technology

5.2.2 Capital cost versus recurrent costs

5.2.3 Operational convenience

5.2.4 Skill requirements for installation, operation and maintenance

5.2.5 Durability, reliability and useful life

5.2.6 Potential for local manufacture

5.3 Conclusion

REFERENCES

Back Cover

LIST OF TABLES

1 Irrigated areas of the world
2 Suggested maximum flow velocities, coefficients of roughness and side slopes for lined and unlined ditches and flumes
3A. Average conveyance efficiency
B. Average farm ditch efficiency
C. Average application efficiency
4 Average intake rates of water in mm/hr for different soils and corresponding stream size
5 Taxonomy of pumps and water lifts
6 Specifications of Chinese 'dragon spine' water lifts
7 Relative merits of materials for pumps
8 Review of pumps and water lifts
9 Cost attributes of prime movers
10 The calorific values of various staple foods
11 Power capability of human beings
12 Camparison of various water lifts in Bangladesh
13 Power and drawbar pull of various animals
14 Comparison of different petroleum-based engine fuels
15 Comparison of small I.C. engines
16 Power in the wind as a function of wind speed in units of power per unit area of wind stream
17 Variation of air density with altitude
18 Comparison between different rotor types
19 Calculation of windpump output using "binned" windspeed data combined with performance data
20 Factors affecting windpump system efficiency
21 Efficiency of hydro-powered systems
22 Typical sizes and prices of Chinese turbine pumps
23 Comparison of irrigation costs in China
24 Some performance data of small turbine pumps
25 Hydram input capacity
26 Hydram performance
27 Power density in water currents as a function of water velocity
28 Land requirements in Brazil to produce grain for food or for fuel alcohol
29 Principal crop residues in developing countries
30 Typical cereal crop residues
31 Photosynthetic carbon production rates
32 Relative heat value of various fuels
33 Potential biomass values of selected crops
34 Biogas yield from various feedstocks
35 Quantities of excreta from various species
36 Principal operating parameters for farm biogas digesters
37 Sizing example to run an irrigation pump on biogas
38 Present value factors up to 25 years
39 Annualization factors up to 25 years

40 Analysis of unit water costs for four types of irrigation pumping systems
41 Cost and performance assumptions used for comparison of alternative pumping methods

LIST OF FIGURES

1 Typical pump installation
2 Key components of an irrigation system
3 The concept of an hydraulic gradient
4 Determination of head friction losses in straight pipes
5 Head loss nomogram calculated for rigid PVC pipes using Blasius formula
6 How pipeline and efficiency vary with flow
7 Effects of various physical conditions on the elevation of water surfaces in wells
8 Factors affecting system hydraulic efficiency
9 Energy flow through typical irrigation system
10 Hydraulic power requirements to lift water
11 Relationship between power, head and flow
12 Relationship between energy, head and daily output
13 Nomogram for calculating power needs for a given area, depth of irrigation and head
14 Rate of growth as a function of soil moisture content
15 Example of a crop coefficient curve for corn planted in mid-May at Cairo, Egypt
16 Typical curves showing relationship between head, flow, speed and efficiency
17 The scoop used as a simple hand tool
18 The swing basket in use
19 Scoop with a rope support
20 Dhone as used in Bangladesh
21 Counterpoise lift
22 Self-emptying mohte with inclined tow path
23 Persian wheel
24 Noria
25 Zawaffa type Persian wheel
26 Sakia or tympanum
27 The fathi is the optimum design of sakia
28 Basic principles of positive displacement pumps
29 Hand pump with single-acting, bucket piston
30 Piston pump for use in borehole
31 Crank operated piston pump
32 Different types of reciprocating displacement pumps
33 Vertical section through a borehole pump
34 Typical pump valve
35 Piston pump connected to a pipeline
36 Three methods for isolating reciprocating pumps from pipelines
37 Hydraulic shock absorber can serve as an alternative to an air chamber
38 Schematic cross-section through a borehole
39 The Vergnet hydraulic foot-pump
40 Cross-section of a diaphragm pump
41 Schematic drawing of the IRRI foot-operated diaphragm pump
42 Commercial portable double acting diaphragm pump
43 Detail of the New Alchemy Institute (USA) tyre pump

44 The Humphrey pump: a liquid piston internal combustion engine and pump combined
45 A flexible vane pump
46 The Permaprop tooth pump
47 Progressivity cavity or 'Mono' pump
48 An Archimedean screw
49 Cross-section through an open screw
50 Hydrostatic pressure pumps
51 Paddle-wheel or tread-wheel
52 Water ladder or Chinese 'dragon spine' pump
53a. Chinese Liberation wheel chain and washer pump
53b. A view of a hand-operation Liberation pump
54 Flap valve pump
55 Joggle pump
56 Early types of centrifugal pumps
57 The relationship between pressure and velocity through both a jet and diffuser
58 Centrifugal pumps
59 Typical rotodynamic pump characteristics
60 Axial flow (or propeller) pump
61 Surface mounted mixed flow pump
62 Submerged mixed flow pump
63 Portable axial flow pump (IRRI)
64 Typical surface mounted pedestal centrifugal pump
65 Surface mountd centrifugal pump installation
66 Below-surface (sump) centrifugal pump installation
67 Various types of centrifugal pump impellers
68 Effect of direction of curvature of vanes of centrifugal pump impellers
69 Combining centrifugal pumps in series or parallels
70 Multi-stage submersible electric borehole pumps
71 Schematic of complete electric submersible borehole pumping installation
72 Direct-coupled air-cooled diesel engine and pump installation with hand-operated diaphragm pump for priming
73 Self-priming centrifugal pump
74 Schematic of a surface-suction jet pump
75 Borehole jet pump installation
76 Air lift pump (schematic)
77 Syphon arrangements
78 Cross-section through a qanat
79 Animal-powered Chinese Liberation pump mechanism uses steel components
80a. Typical head and discharge capacities for different types of pumps and water-lifting devices
80b. Discharge
80c. Discharge
81. Linkages between energy resources and appropriate prime movers
82A. How diminishing returns eventually defeat the benefits of seeking increased efficiency beyond certain levels
82B. The influence of efficiency on costs
83 Illustration of how correct speedmatching of a prime mover to a pump can be more

important than the efficiency of the prime mover
84 Two stage speed reduction transmission used in China to connect an electric motor to a chain and washer pump
85 The number of people required to provide a specified quantity of water at different lifts
86 Rope and bag water lift from a dug well
87 Relative performance of the swing basket and the dhone
88 Nomograph for calculating hand pump discharge
89 Rotary drive hand pump
90 Power pump
91 The number of oxen required to provide a specified quantity of water at different lifts
92 Cross-section view of a mohte
93 Circular mohte utilizing two buckets with flap-valves in the bottom
94 A bullock-driven Persian wheel of the conventional chain and bucket type
95 Camel-driven Persian wheel showing over-head drive mechanism
96 Animal-powered Chinese Liberation pump
97 The back-axle from a car used as an animal-driven power transmission for an Archimedean screw pump
98 Open flywheel low-speed single-cylinder diesel engine
99 Belt-driven 3 cylinder Lister diesel engine coupled to a centrifugal pump via multiple "V" belts
100 Principle components of a small engine pumping system and their efficiencies
101 Effect of increasing the suction head on the output of a typical engine pump set
102 Schematic arrangement of a condensing steam engine
103 Rider-Ericsson hot air pumping engine
104 The four main types of electric motors
105 Direct coupled electric motor and centrifugal pump
106 Electric motor powered, belt-driven piston pump
107 Wooden indigenous windmill pump for pumping sea water into salt pans on the Island of Sal, Cape Verde
108 All-steel 'American' farm wind pump
109 Gearbox from a typical back-geared 'American' farm windmill
110 Chinese chain windmill
111 Thai windpump
112 'Cretan' type of windmill used on an irrigation project in Southern Ethiopia
113 2 kw Dunlite wind electricity generator
114 55 kw Windamatic wind electricity generator
115 Typical farm windpump installation configurations
116 IT windpump, made in Kenya as the ' Kijito' and in Pakistan as the 'Tawana'
117 Savonius Rotor vertical-axis windpump in Ethiopia
118 Typical Troposkien shaped Darriens vertical-axis wind turbine
119 Turks and Caicos islands vertical-axis sail rotor
120 The power (A) and torque (B) of a wind rotor as a function of rotational speed for different wind speeds
121 T he power coefficients (above) and the torque coefficients of various types of wind turbine rotor plotted against tip-speed ratio
122 The trade-off between starting windspeed and output for differently loaded wind pumps

123 The operating characteristics of a windpump showing how the power output and matching efficiency vary with windspeed
124 Typical windpump storm protection method in which rotor is yawed edge-on to the wind
125 Annual mean wind speeds
126 Typical presentation of long term wind data as monthly averages
127 Wind rose
128 Wind velocity-frequency histogram
129 Manufacturers' performance data for the Kenyan-made 'Kijito' windpump range based on the IT windpump
130 Example of how to calculate the energy output of a windmill
131 Feasible options for solar-powered pumping systems
132 Losses in a typical solar thermodynamic pumping system
133 Construction of a silicon photovoltaic cell
134 Examples of solar pump configuration
135 Performance characteristics of silicon photovoltaic cells
136 Schematic arrangements of a photovoltaic solar pumping system
137 Losses in a typical solar photovoltaic pumping system
138 Solar energy availability compared with crop irrigation water demand
139 World map giving average annual Clearness Index for solar distribution
140 Flow measurement with rectangular weir
141 Method of stream gauging without the need to build a weir
142 Some of the main types of hydro turbine for low, medium and high heads
143 Single stage high lift turbine pump
144 Multi-stage high lift turbine pump
145 Turbine pump fitted with extension drive shaft
146 Typical turbine pump installation
147 Schematic diagram of hydram installation
148 Traditional European hydram design
149 South-east Asian type of hydram
150 Low-cost hydraulic ram using standard pipe fittings
151 Bamboo water wheels, Vietnam
152 Chinese type of small-scale Noria
153 Water wheel driven coil pump
154 Cut-away view showing general arrangement of a Plata pump installation
155 IT river current turbine pump
156 Routes for processing biomass fuels
157 2 kw Ricardo steam engine
158 The three main types of gasifier
159 Small producer gas irrigation pumping system
160 Fixed dome biogas digester
161 Biogas digester with floating gas holder and no water seal
162 Chinese two-wheel tractor running on biogas and being used to pump digester slurry on to the field
163 Step-by-step procedure for a cost appraisal of a water pumping system
164 Human and animal power: output cost versus scale
165 Diesel and kerosene pumping sets

166 Windpumps at various mean windspeeds
167 Solar pumps at various mean insolation levels
168 Hydrams
169 Mean values of the results of Figs. 164-168 plotted with linear scales on the same axes for daily hydraulic requirements of 1 000 m^3 m
170 Expected range of unit energy costs for three levels of demand

PREFACE

Since the first rudimentary agriculture started with man cultivating plants near his dwelling, he has had to carry water to keep his crops alive. He developed simple systems to raise water, like the shadoof, and later more sophisticated systems, such as norias, Persian wheels and qanats. The power to move such devices came from man himself, animals or the force of gravity. Over the years man learned to harness other sources of energy.

This publication has been prepared to help planners and engineers consider the potential and application of alternative sources of energy for prime movers. Research and field application are continuous in many parts of the world, but the degree of success varies. As new information becomes available, systems developed over recent decades, and even long before that, may be modified or refined to take advantage of new ideas and modern technology. It is an old subject, but innovations continue.

Consequently, this publication cannot be regarded as a comprehensive treatise on the subject of alternatives for water lifting devices, nor can it be considered as the final state of the art. It does, however, seek to provide enough technical background on promising systems for possible application in the field, and as a base for further evolution.

This first edition has been prepared with a view to eliciting expert comment and further contributions which would be considered for incorporation into and updated and possibly more comprehensive publication. It is hoped that the document will serve as a practical reference for the guidance not only of experts and counterparts in the field, but also for government officers and others concerned with the planning, design and operation of projects using these techniques in FAO's member countries.

Comments and suggestions for improvement of this Irrigation and Drainage Paper will be welcome and should be addressed to:

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